PROFESSIONAL DEVELOPMENT SYSTEM AS AN ECOLOGY FOR SUSTAINABLE LEARNING: A STUDY TO EMPOWER INSTRUCTORS TO USE TECHNOLOGY INTEGRATION IN ADULT LANGUAGE CLASSROOMS

A Dissertation

by

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Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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May 2018

Major Subject: Educational Human Resource Development

ABSTRACT

The need of professional development for improving the use of technology integration in the classroom evolves continuously as technologies change and develop, and students and instructors follow new tendencies. The purpose of this study was to determine the impact of a professional development system (PDS) on instructors' self-empowerment to integrate technology into their practice. This study used mixed methods: triangulation design in order to acquire diverse but complementary information of the same phenomenon. Quantitative data collection involved 56 HE instructors from Lima, Peru and used pre-post questionnaires based on TPACK and UTAUT instruments, Solomon four-group, and SPSS version 22 for analysis. Qualitative data collection involved 28 participants and observations, interviews, one-on-one mentoring, instructors' journals created during EL Training, and exit evaluations with Atlas.ti 8.0 software for analysis.

A three part theoretical framework guided the design of the PDS. This enables the PDS to offer more opportunities to make the learning process sustainable because it is comprised of three components: (a) Experiential Learning Training delivered face-to-face and online, (b) Application and Feedback to encourage transfer, and (c) Ongoing Support for Continuous Improvement instead of just one workshop or isolated component.

The findings of this study expanded the work of previous researchers in the area of professional development models. The qualitative data in the study revealed that PDS created an ecology for sustainable learning that allowed participants to be empowered to integrate technology in their classrooms. Instructors in PDS changed their teaching attitudes and practices, increased their job performance and furthered their career development, a multifaceted change

that depends on a multifaceted learning environment. Additionally, the quantitative data determined that participants in the Professional Development System group (Treatment) scored significantly higher in their composite average of technology integration scores than the control group ($F(1,51) = 65.18$, $p = .01$), while the average main effect Sensitization was not significantly different ($F(1,51) = .73$, $p = .40$).

PDS models how instructors could design their classes, serves as a change tool for empowering instructors to integrate technology into their practice to improve the learning environment, and supports continuous improvement, life-long learning and collaboration.

DEDICATION

I dedicate this dissertation to my family

Carlos Sinfon Mac-Long, my husband

Carla Sinfon Liau-Hing, my daughter

Ana Sinfon Liau-Hing, my daughter

To my husband, for believing in me and offering his reassurance throughout the process. To Carla (24) for checking the final draft and Ana (23) for listening to my rehearsal several times. I could not have accomplished as much as I have without your support and encouragement. Without your love, understanding, strength, and personal sacrifices, I would not have make this dream a reality.

In loving memory to

Carlos Liau-Hing Castillo, my father

Thank you for showing us with your example how we can achieve anything we decide as long as we put all our effort on it: *the importance and great difference of going the extra mile*. You taught us to be strong together as a family, and support and encourage each other. We missed you in our lives but keep you alive in our memories.

ACKNOWLEDGEMENTS

Special mention goes to my committee chair, Dr. Michael Beyerlein, who patiently met with me for almost two years every week to help me plan, design, and discuss all the parts of my proposal and dissertation. It has been a long but rewarding journey; I especially appreciate his moral support, dedication, technical guidance, challenge of ideas, and encouragement. Each of the members of my Dissertation Committee has provided me extensive personal and professional guidance: Dr. Lisa Baumgartner, Dr. Rafael Lara-Alecio, and Dr. Nancy Watson, I value your counseling and strength throughout the course of this research.

Thanks also go to my friends and colleagues in the Department of Educational Human Resource Development; and the faculty, particularly Dr. Tolson for his statistical expertise; and staff, especially Marie Shelfer for making my time at Texas A&M University a great experience, I have very fond memories of my time here. I also appreciate the support from the Center for Teaching Excellence, specifically Dr. Sandoval, who provided me with technical advice and support when needed.

Exceptional gratitude and recognition extends to Maria de la Lama, director of the language institute from tier-1 University in Lima, Peru for consenting to perform the professional development system with her instructors.

Finally, but most important of all, thanks to my husband, Carlos Sinfon Mac-Long for his unconditional support, and my two daughters: Carla and Ana Sinfon Liau-Hing for their encouragement, patience and love. They are the most important people in my world and I dedicate this dissertation to them.

CONTRIBUTORS AND FUNDING SOURCES

This work was supported by a dissertation committee consisting of Professor Michael Beyerlein, Chair from the Department of Educational Administration & Human Resource Development; Professor Lisa Baumgartner, Department of Educational Administration & Human Resource Development; Professor Nancy Watson, Department of Educational Administration & Human Resource Development; and Professor Rafael Lara-Alecio of the Department of Educational Psychology.

All work for the dissertation was completed independently by the student without outside financial support.

NOMENCLATURE

CD	Career Development
CoP	Communities of Practice
CALL	Computer-assisted language learning
CG1/2	Control Group 1 or Control Group 2
EFL	English as a Foreign Language
ESL	English as a Second Language
EL	Experiential Learning
EG1/2	Experimental Group 1 or Experimental Group 2
F2F	Face-to-face
HRD	Human Resource Development
ICT	Information and Communication Technology
IRB	Institutional Review Board
LMS	Learning Management System
NETP	National Education Technology Plan
OD	Organizational Development
PDS	Professional Development System
PLC	Professional Learning Community
SAMR	Substitution, Augmentation, Modification, Redefinition
TPACK	Technological Pedagogical Content Knowledge
TD	Training Development
UTAUT	United Theory of Acceptance and Use of Technology

TABLE OF CONTENTS

Page

LIST OF FIGURES

Page

LIST OF TABLES

Page

CHAPTER I

INTRODUCTION

Over the past decade, the use of modern technology in teaching languages has been dramatically increasing worldwide (Warner, 2004). With the creation of the World Wide Web, it has become possible and feasible for language teachers to make effective use of new types of instructional materials, especially in teaching language and culture (O'Dowd, 2003). For example, computer-assisted language learning (CALL) programs provide multimedia with video, sound, graphics, and text, which allow learners to be exposed to the target language and the culture (Susser & Robb, 2004). However, one main reason for the postponed use of technology in education is not the lack of funding but rather, the limited technology knowledge especially among experienced instructors, usually with fifteen or more years in the classroom (Plair, 2010). Deficiency of skills and fear or anxiety keep instructors from trying to change what has worked consistently and reliably in their perception for many years.

Professional development has been identified as one of the most influential factors in providing instructors with the knowledge and practice needed for successful instructional technology integration; however, not all professional development programs are of adequate quality (Lawless & Pellegrino, 2007). Additionally, an integrated learning model to inform professional development practice in educational technology has not been proposed (King, 2009). Moreover, the process of technology integration in the classroom is one of continuous change, learning, and improvement: technologies change and develop; students and teachers follow new tendencies; therefore, both contexts and players change.

Statement of the Problem

Although personal computers have been in schools for almost 40 years and networked computers are now available in most classrooms, Ertmer and Ottenbreit-Leftwich (2013) noted that most teachers are not using technology to effect meaningful changes in student outcomes but primarily as aids to delivering content. Technology integration has the power to change class dynamics and the practice of teachers; however, full integration requires development and understanding of the possibilities technology offers (Wachira & Keengwe, 2011). Teaching with technology seems to be oversimplified when consisting merely of the addition of technology resources to currently existing practices and expecting to see a change (Forthe, 2012).

Professional development refers to a variety of educational experiences related to an individual's work and is designed to improve practice and outcomes (Darling-Hammond & McLaughlin, 2011). These opportunities may be voluntary or mandatory, individual or collaborative, and formal or informal (Desimone, 2011). The idea that professional development can foster improvements in teaching is widely accepted; however, there is little consensus on how professional development works, how it fosters teacher learning, and how it is expected to alter teaching practice (Kennedy, 2016). The literature offers guidelines how to conduct an effective professional development or doing what works but the process is unclear. Knowing what to do is not the same as knowing how to do it (Patton, Parker, & Pratt, 2013). There is no "one-size-fits-all" solution because educators use and implement technology in a variety of ways (Forthe, 2012). According to the *Study of Faculty and Information Technology, 2014* from Educause Center for Analysis and Research (ECAR) 78% of faculty recognize that they could be instructors that are more effective if they were better skilled at integrating technology into their courses.

Researchers have examined how teachers make use of modern technology in teaching language (Adair-Hauck, Willingham-McLain, & Youngs, 2000; Al-Seghayer,2001; Labrie, 2000) but few have examined why teachers incorporate technology into language teaching and learning (Chen, 2008) or study more than one single application which was used for only a few days (Zhao, 2003). Additionally, the literature on educational technology offers suggestions for content and structure of training sessions (King, 2009); however, to the best of my knowledge there is no research about creating a system for professional development in order to integrate technology in the adult language classroom. Therefore, more investigation is needed on how to empower instructors to use technology integration in adult language classrooms.

Purpose of the Study

To prepare teachers to integrate technology in more student-centered ways, a model of technology integration is needed that is robust to the many barriers that teachers face as they learn to use technology and align their beliefs with new instructional practices (Kopcha, 2010). The purpose of this study was to determine the impact of a professional development system (PDS) on instructors' self-empowerment to integrate technology into their practice. PDS was based on experiential learning theory, innovation diffusion theory, and a conceptual training transfer model in order to empower instructors to use technology integration in adult language classrooms and it was comprised of three components: Experiential Learning (EL) Training delivered face-to-face and online; Application and Feedback to encourage transfer; and Ongoing Support for Continuous Improvement.

The purpose of the PDS was to create a system that supported continuous integration of technology in the classroom as part of an experiential learning process and in order to encourage continuous improvement based on ongoing and collaborative support. The ongoing support for

continuous improvement started with EL Training and it was encouraged to continue indefinitely as part of the community of practice (CoP) and professional learning communities (PLC).

As Swanson and Holton (2009) stated, "HRD has numerous definitions" (p. 4). My definition of Human Resource Development (HRD) is based on those of Watkins and Marsick (1997), Garavan (2007), and Swason (2009): HRD is a synergetic process that improves performance by enhancing employees' skills and knowledge (Training and Development – TD), by improving organizational efficiency and effectiveness (Organization Development – OD) and by offering opportunities to fit individual orientations, interests, values and abilities with organizational goals to engage and commit employees (Career Development – CD) in order to become a strategic partner responsible of a sustainable organization. In the present environment of accelerated rate of change, focus on quality, and globalization of business, the research of technology integration offer HRD the context to become a strategic partner. PDS focused on investing in human capital through training and development in order to increase its value and performance. By participating in PDS, instructors were investing in their career development because they became more technology prepared for applying to other institutions as language instructors with technology integration capabilities. As Garavan (2007) articulated, strategic HRD creates core capabilities which make an organization more change-ready by connecting internal, external, prior, and new knowledge to ensure sustained competitive advantage.

Theoretical Framework

Empowering instructors to use technology integration in adult language classrooms is a complicated phenomenon, which can hardly be explained by a single theory. The current study was guided by the underlying theoretical framework built upon two theories and one conceptual model.

Experiential Learning Theory

The first theory, experiential learning theory (Kolb, 1984), was primarily utilized as a framework for selecting the main characteristics and components of the professional development system (PDS) emphasizing the critical role experience plays in learning and change in order to empower instructors to use technology integration in adult language classrooms. Experiential learning teaching concepts and methods have been developed to facilitate this form of learning such as experiential education, i.e., learning through direct experience (Bruenig, 2005), working with community partners or service learning (Grossman, Patel, & Drinkwater, 2010), working cooperatively within groups to find solutions to real problems or problem-based learning (Bethell & Morgan, 2011), and case studies (Quinn & Shurville, 2009).

Innovation Diffusion Theory

The second theory, innovation diffusion theory (Rogers, 1995), served to illuminate factors influencing the rate and extent to which change and technology integration is spread and adopted by instructors of adult language classrooms. Prior to examining how a particular innovation disperses and distributes within a population, it is necessary to define what is meant by the term innovation. In the broadest sense, an innovation can be any new idea for a population. Rogers (1995) defined an innovation as "an idea, practice or object that is perceived as new by an individual or other unit of adoption" (p. 11). Innovation diffusion theory examines the individual and the choices an individual makes to accept or reject a particular innovation. Diffusion theory describes how an innovation spreads through a population. It considers factors like time and social pressures to explain the process of how a population adopts, adapts to, or rejects a particular innovation (Straub, 2009).

Conceptual Model of Training Transfer

The conceptual model of training transfer proposed by Burke and Hutchins (2008) was selected to identify influential predictors of training transfer in the PDS. The main reason for selecting this model was its contribution to performance when evaluating transfer, which according to Swanson (1997) is the major outcome of training. Swanson and Holton (2009) defined human resource development (HRD) as the "process of developing and unleashing expertise for the purpose of improving organizational system, work process, team, and individual performance" (p. 8). These three frameworks are described in more detail in Chapter II, Literature Review.

Significance of the Study

This study contributes to expanding our understanding of professional development by proposing a model to create a professional development system to empower instructors to use technology integration in adult language classrooms in order to improve the quality and sustainability of the learning process, thus students in the classroom have a better learning environment. Technology integration in the adult language classroom is valued for specific and unique types of learning activities. For example, computer-based communication tools can enhance students' language skills by enabling interaction between students and native speakers (Golonka, Bowles, Frank, Richardson, & Freynik, 2014). Audio and video materials allow students to see and hear language used in real contexts by different speakers including native and non-native speakers (Bernhardt, 2010). Technology integration enhances ESL learner motivation, expands opportunities for authentic interaction, increases learner engagement and participation, supports individuals' learning styles, and promotes educational equity (McClanahan, 2014).

This study may contribute to the literature of human resource development (HRD) in two ways. First, the proposed professional development system is aligned with the overarching learning system suggested by Watkins and Marsick (2014) in the invited feature article published in Human Resource Development Quarterly in 2014 *What do the next 25 years hold for HRD in areas of our interest?* (Russ- Eft, Watkins, Marsick, Jacobs, & McLean, 2014). Second, Burke and Hutchins (2008) training transfer model has not been tested with empirical data even though it has been available for eight years. PDS used the model for the first time experimentally in this study.

Teachers in the 21st century can use technology to improve students' learning processes by personalizing learning, enabling real-time feedback and adjusting pace, or creating learner agency. PDS empowers instructors to take advantage of the expanding possibilities of technology integration efficiently and effectively. Kabilan and Khan's (2012) study showed that technology not only enabled instructors to deal with teaching issues and to be more motivated, but also influenced their students' learning attitudes and efficiency. PDS enables instructors to be aware of technological alternatives to engage students, enhance learning, and increase achievement by creating experiential learning, authentic, cooperative, and active assignments to wisely decide when and how to use them. Instructors must decide on the use of technology according to their objectives and students' characteristics, but in order to make informed decisions, educators must be aware of the multifaceted tools that can be selected from an assortment of online educational resources.

The significance of researching the effects of the PDS and to what extent such PDS leads to empowering instructors to use technology integration in adult language classrooms has implications for practice. The PDS model could guide participant administrators and instructors

to develop a greater relationship that develops through experiential learning principles not only during the EL Training and Application and Feedback, but after the intervention as well during the Ongoing Support and serve as a platform for communication and continuous improvement for the instructor long term. Ongoing collaboration and communication is a central component of PDS, which according to literature (Scheirer, 2005) improves the results in sustainable technology integration by allowing colleagues to share information and knowledge or even to facilitate cross-curricular connections and create a network to support thinking in new ways, to problem-solve, and become more confident to successfully integrate technology. Additionally, by having the training as a group (experimental groups), adult language instructors could take advantage of the synergy of the process by tapping into the power of group learning and creating an organizational culture that values continuing learning. Moreover, the implementation of PDS at a Higher Education language institute provided valuable insights of the issues related to its implementation: benefits and challenges. Finally, adopting PDS could foster a climate of experimentation focusing on instructors' leadership, change, and transformation recommended by 2016 NETP (US Department of Education, 2016) and the state of professional development in Higher Education (Mrig, Fush, & Kientz, 2016).

Research Question

The guiding research question for quantitative and qualitative data collection and analysis is: How does a professional development system (PDS) affect technology integration in adult language classrooms?

The research question can be considered quantitative because numeric data analysis from 2x2 ANOVA post-test questionnaires and t-tests answered it. The research question can also be considered qualitative because data analysis from journals, field notes, interview transcripts, and

exit evaluations were used to explore the effects of the PDS in adult language classroom technology integration.

Methodology and Methods

Mixed methods were selected to better understand the impact of PDS on empowering instructors to use technology with the intention of taking advantage of the structure of quantitative research and the flexibility of qualitative inquiry. The purpose of the triangulation design was "to obtain different but complementary data on the same topic" (Morse, 1991, p. 1229). As Creswell and Plano Cark (2007) stated "the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone" (p.5).

To provide the rigor of a mixed methods study, this research was conducted using a pre-post questionnaire for the quantitative data collection. Observations, interviews, one-on-one mentoring, instructors' journals created during EL Training, and exit evaluations were used for the qualitative data collection. The data collection was done in a Higher Education adult language institute in Peru.

Quantitative analysis employed Solomon four-group design (Braver & Braver, 1988). Qualitative analysis used Atlas.ti 8.0 software for text data collected in the journals, interview transcripts, and exit evaluations to validate and expand quantitative results with qualitative data (Creswell & Plano Clark, 2007).

Operational Definitions

The operational definitions of the concepts employed in this study are defined below.

Contextualized data

Contextualized data refers to the process of taking into consideration the contextual environment within the information is being extracted; for example, type of document: interview, journal, or evaluation.

Empowered Instructor

Instructors that had been given the power and are supported and encouraged to take risks and engage in continuous professional development while collaborating with their colleagues in order to provide every student with the education they deserve by personalizing learning and feedback, using technology in the classroom, and accessing the necessary resources to keep updated.

Professional Development

Professional development refers to a variety of educational experiences related to an individual's work and is designed to improve practice and outcomes (Darling-Hammond & McLaughlin, 2011). These opportunities may be voluntary or mandatory, individual or collaborative, and formal or informal (Desimone, 2011). The idea that professional development can foster improvements in teaching is widely accepted; however, there is little consensus on how professional development works, how it fosters teacher learning, and how it is expected to alter teaching practice (Kennedy, 2016).

Professional development system (PDS)

A model based on experiential learning theory, innovation diffusion theory, and a conceptual training transfer model in order to empower instructors to use technology integration in adult language classroom. PDS is comprised of three components: experiential learning (EL) Training delivered face-to-face and online; Application and Feedback to encourage transfer; and

Ongoing Support for Continuous Improvement. For this study, merely adding knowledge or informational learning is not considered PDS.

Technology Integration

The synergetic process that improves teaching and learning by selecting and using strategic technology according to learner's requirements, instructor's objectives, and related standards or benchmarks in order to create an intentional partnership that encourage engagement, performance, and sustainable results.

Sustainable Technology Integration

Technology integration that becomes ever lasting but flexible enough to be adapted and/or altered according to changes in the organization or the environment. Rapid changes in technology means instructors need support not only during the training but mostly ongoing. Creating CoP and PLC groups in the PDS allows this through networking and collaboration.

Dissertation Overview

This chapter presented the statement of the problem, purpose and significance of the study, and well as the research question. It also provided an overview of the theoretical framework, methodology and methods used, and basic operational definitions.

Chapter II presents the literature review of experiential learning theory, innovation diffusion theory, and a training transfer model examining applications and its implications for the study. It also provides insights about technology integration and professional development. Finally, the professional development system (PDS) model is presented.

Chapter III provides the research design, methodology, and procedures for performing this study. It presents the population and study participants, quantitative and qualitative instrumentation. It also provides the rationale for employing mixed method methodology to

capture the perspectives and experiences of the participants. The data collection procedures for quantitative and qualitative data are described in detail, including the process for coding the transcripts and establishing the axial codes. Furthermore, the researcher's role was analyzed as well as some strategies to ensure quality of research findings.

Chapter IV reports the quantitative and qualitative findings. A 2x2 ANOVA presents the results of the post-test questionnaires while a selection of quotations from participant journals, interviews, and exit evaluations provides an overview of the thematic categories that emerged from the analysis of qualitative data. A word cloud analysis helps summarize the teaching attitudes, practice, and new competencies developed to answer the research question.

Chapter V presents the answer to the research question, including the interpretation and discussion of the findings, implications for practice, recommendations for future research, and conclusions. The major study finding demonstrates that instructors who participated in PDS were significantly more successful at integrating a range of digital technologies in their classrooms than instructors who do not.

CHAPTER II

LITERATURE REVIEW

This study focuses on investigating the effects of a professional development system (PDS) based on experiential learning theory (Kolb, 1984), innovation diffusion theory (Rogers, 1995), and conceptual model of training transfer (Burke & Hutchins, 2008) for empowering instructors to use technology integration in adult language classrooms. In this chapter, the theoretical framework related to this study is discussed first: experiential learning theory, innovation diffusion theory, and conceptual model of training transfer.

Next, the context of technology integration and professional development were reviewed in the literature. In the technology integration section, literature relevant to its definition, levels, learning language without and with technology, computer assisted language learning (CALL), learning theories, and technology integration sustainability are presented. Literature sources in professional development for technology integration were reviewed to identify the state of professional development in Higher Education, characteristics of effective professional development, examples, diversity, technological alternatives, and how professional development can improve teaching practice that led to instructor-practice change based on experiential learning, development, and growth.

Lastly, the conceptual professional development system (PDS) which creates an approach to generate, practice, and sustain change is presented, as well as its components. A graphic representation of the model is also included showing the relationship with its theoretical framework (See Figure 1).

The literature review starts with experiential learning theory. It also includes research based on the theory and the implications for this study.

Experiential Learning Theory (EL)

One of the most influential writers on experiential learning, David Kolb (1984) stressed its importance and stated:

> Experiential leaning theory offers… the foundation for an approach to education and leaning as a lifelong process that is soundly based in intellectual traditions of social psychology, philosophy, and cognitive psychology. The experiential learning model pursues a framework for examining and strengthening the critical linkages among education, work, and personal development. It offers a system of competencies for describing job demands and corresponding educational objectives and emphasizes the critical linkages that can be developed between the classroom and the 'real world' with experiential learning methods. It pictures the workplace as a learning environment that can enhance and supplement formal education and can foster personal development through meaningful work and career development opportunities. And it stresses the role of formal education in lifelong learning and the development of individuals to their full potential as citizens, family members, and human beings. (p. 3-4)

According to experiential learning theory, students learn from experience in a four-mode process: (a) *concrete experiences* in which students involve themselves fully, openly, and without bias in new experiences; (b) *reflective observation* in which students reflect on and observe experiences from many perspectives; (c) *abstract conceptualization* in which students create concepts that integrate observations into logical and sound theories; and (d) *active experimentation* in which students use theories to make decisions and solve problems (Kolb,

1984). The experiential learning process is a continuous cycle where concrete experiences are the basis for reflection, reflections are assimilated into abstract concepts from which new implications can be drawn, actively tested, and finally, can serve as guides for new concrete experiences (Kolb & Kolb, 2005). Individuals need to experience all four stages of learning to gain maximum development benefits from work assignments (Ng, Dyne & Ang, 2009).

Experiential learning is a term that refers to learning by doing, and is further defined as authentic, student centered, hands-on, and situated in relevant learning contexts (Kolb & Kolb, 2005). However, not all experiences lead to new insights and new learning. To become an experiential learning, the individual have to engage with the experience and reflect on what happened, how, and why (Beard & Wilson, 2002).

All learning experiences are personal and unique to each participant; they are influenced by the unique past of the learner, its filters, and bias (Muller, 2012). Kolb's (1984) experiential learning model acknowledges four learning styles: activist, reflector, theorist, and pragmatist. Thi does not mean each person has only one style; it can be a combination with one more dominant than another. Activists are individuals who like to engage in new learning experiences and try things out. Reflectors enjoy examining situations from a variety of perspectives while observing and thinking about events. Theorists prefer problem-solving and developing concepts and frameworks within which to predict and explain events. Whereas, pragmatists are practical by nature and keen to try out new theories or ideas (Kolb, 1984).

Several criticisms have been levelled at Kolb's model. Beard and Wilson (2002) discussed several additional considerations in experiential learning such as working with emotions, the senses, and imagination. Fenwick's (2001) critiques include the learner's context, unconscious dimensions, or issues of power not being taken into consideration. Recognizing the

value of the critiques in Kolb's model, I have included innovation diffusion theory and training transfer model in the development and design of PDS.

Research Based on the Theory

Burch, Batchelor, Heller, Shaw, Kendall, and Turner (2014) performed a meta-analysis of 40 years of research of every article published in *Developments in Business Simulation & Experiential Learning* (ABSEL-Association for Business Simulation and Experiential Learning Proceedings) from 1974 to 2013. It examined the empirical evidence with the focus of determining if experiential exercises lead to increased learning outcomes above that it could be obtained in less active forms of instruction. Three hundred and eleven empirical papers were selected for review but only 16 were usable because they had control and treatment groups evaluated (1,048 individual respondents). The results of the study show strong support for continued use of experiential exercises, and the need to continue conducting empirical analysis grounded in sound measures and using control groups.

A couple of studies were selected to demonstrate how experiential learning theory has been used in education, specifically in Higher Education classes' subjects. The study by Ferguson, Makarem, and Jones (2016) focused on how a class blog can be used specifically as a reflection tool in the experiential learning cycle. Their sample was two marketing classes with a total of 54 students and it used mixed methods. For the qualitative analysis, content analysis was used to better understand the cognition and emotions students expressed in their reflective blogs. For the quantitative analysis, a survey to measure students' attitudes toward the assignment was employed. After a semester-long group project, the results from the survey of student attitudes toward the blog assignment indicated positive affective responses and perceived effectiveness of the blog task as a tool for reflection. Ferguson, Makarem and Jones (2016) provided guidelines

for incorporating a reflective blog task as part of hands-on group projects in two marketing courses, buyer behavior and experiential marketing. These types of group projects provide opportunities for experiential learning. Educators could use the reflective blog task to achieve experiential learning objectives, for both real world project reflection and realistic, but synthetic, project reflection. Their attitudinal survey findings provided evidence of positive student attitudes toward the task in different contexts with flexible implementation options based on instructor preferences. They also lend support to the effectiveness of the reflective blog post task, given the level of student familiarity with posting blogs and sharing content online through social media.

In another study combining science with practice across courses, quantitative research conducted by Mahoney and Retallick (2015) explored the impact of participation in two integrated, experiential learning programs in a College of Agriculture and Life Sciences. Of the 123 graduates contacted, 62 responded for an overall response rate of 50.41%. Some graduates did not complete the entire survey and the usable response rate was 43.90% (n = 54). The purpose of Agriculture Students Providing Integrated Solutions for Agronomy and Farm Business Management Questions (AgPAQ) was to provide students the opportunity to successfully solve professional, real-world, work-based, agricultural problems by integrating skills from the linked courses. The purpose of Science with Practice (SWP) was to provide opportunities for agriculture students to learn while working with faculty and staff mentors in university research laboratories, farms, greenhouses and other units through a planned education and work experience program. Graduates believed their experience positively affected development of their skills and abilities and had a positive influence on their career and graduate school aspirations. Graduates reported that the programs enhanced their preparation for careers

and graduate school by helping them transition from the role of undergraduate student to that of employee or graduate student.

Both studies, Ferguson, Makarem, and Jones (2016), and Mahoney and Retallick (2015) indicated benefits from experiential learning used in business and agriculture context. Their findings provide further confirmation that experiential learning is an effective way to meet course outcomes while using the real-world, hands-on, experiential learning methods that students often prefer and that was the base of PDS.

Implications for this Study

Experiential learning theory assists on understanding the value of experience as a lifelong process and how to apply experiential learning methods into technology integration in the adult language classroom. Firstly, as Kolb (1984) pointed out "The experiential learning model pursues a framework for examining and strengthening the critical linkages among education, work, and personal development" (p.3). Technology integration in the adult language classroom is a process, which requires continuous learning and the stance of lifelong learning for continuous improvement. Experiential learning methods have been recognized as superior to traditional teaching methods in the enhancement of student performance and the promotion of critical learning (Breunig, 2005).

Secondly, this theory addresses the importance of building a "system of competencies for describing job demands and corresponding educational objectives and emphasizes the critical linkages that can be developed between the classroom and the 'real world' with experiential learning methods" (Kolb, 1984, p. 3). The PDS for this research project created a system of competencies through its three main components: EL Training, Application and Feedback, and Ongoing Support for Continuous Improvement embedded in experiential learning strategies such

as teacher modeling (Haston, 2007), think-aloud (Neilsen, 2002), and reciprocal-peer teaching (Meister, 2012; Doolittle, Hicks, Triplett, Nichols, & Young, 2006).

Thirdly, the PDS originated meaningful experiences in the four experiential learning mode processes during its three main components: *concrete experience* such as the final project of the EL Training, *reflective observation* such as class journals entries, *abstract conceptualization* such as lectures, and *active experimentation* such as class exercises.

Fourthly, experiential learning theory envisions performance, personal, and career development, as Kolb (1984) stated "It pictures the workplace as a learning environment that can enhance and supplement formal education and can foster personal development through meaningful work and career development opportunities" (p. 4). HRD practitioners are increasingly emphasizing experiential learning as a means to improve performance (Bates, Holton, Seyler, & Carvalho, 2000) which was also considered in the design of the PDS including the improvement suggested by the critiques of Kolb's model such as emotions, the senses, and learner's context.

Finally, experiential learning approaches have the dual benefit of appealing to adult learner's experience base, as well as increasing the likelihood of performance change after training (Swanson & Holton, 2009). This was supported in the PDS by its three main components: EL Training, Application and Feedback, and Ongoing Support for Continuous Improvement.

Next, the innovation diffusion theory is presented. It also contains research based on the theory and the implications for this study.

Innovation Diffusion Theory

The process of adopting innovations has been studied for over 30 years, and one of the most popular adoption models is described by Rogers in his book, *Diffusion of Innovations* (Sahin, 2006). For Rogers (2003), adoption is a decision of "full use of an innovation as the best course of action available" and rejection is a decision "not to adopt an innovation" (p. 177). Rogers defines diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). As expressed in this definition, innovation, communication channels, time, and social system are the four key components of the diffusion of innovations.

The body of research on diffusion is enormous and is often overlooked by HRD professionals (Sheehan, Garavan & Carbery, 2014). An extremely useful part of this research is the work on the rate at which change is adopted which is reasonably predictable and almost always follows a normal distribution (Swanson & Holton, 2009). Rogers (2003) defines five categories of adopters of change or innovation:

- *Innovators* are the venturesome who are interested in the technical aspects, and are risk takers. They represent the first 2.5% of the individuals in a system to adopt an innovation.
- *Early Adopters* are respected and considered as change agents with the greatest degree of opinion about the new ideas. They examine the innovation as regards its benefits and are willing to try it out, provide help and advice to other adopters. They embody the next 13.5% of the individuals in a system to adopt an innovation.
- The *Early Majority* is deliberate and more concerned with professionalism. They are willing to adopt the innovation once the majority in society has adopted it and are the next 34% of the individuals in a system to adopt an innovation.

- The *Late Majority* is skeptical and believes less in new ideas and always makes sure that there are people ready to solve their problems before adoption. They embody the next 34% of the individuals in a system to adopt an innovation.
- *Laggards* are most likely to stick to the "old and traditional" ways. They are very critical towards adopting new ideas, and innovation is accepted only if it becomes tradition. They are the last 16% of the individuals in a system to adopt an innovation.

These five categories of adopters of change were used in the development of PDS by planning to use each of the categories to promote the integration of technology in the classroom. For example, ask innovators to share their success stories when integrating technology with colleagues to encourage its utilization.

Research Based on the Theory

The use of technology in teaching has involved significant transfer issues. Jacobsen (1998) attempted to accurately reflect and describe faculty innovativeness with technology for teaching and learning based upon Rogers (1995). A web-based survey was used to collect information from 76 faculty members from across disciplines at two major North American universities regarding technology use patterns, computer experience, use of technology for teaching, general self-efficacy, changes to teaching and learning, incentives, and barriers. Data were analyzed for the differences between early adopters and mainstream faculty, the rate of adoption of educational technology by faculty, resulting changes to the teaching and learning environment, the incentives and barriers to integrating technology, preferred methods for learning about technology, and methods for evaluating the outcomes of integration. Previous explanations for why the majority of faculty did not adopt technology for teaching and learning focused on blame. Faculty were blamed for being stuck in traditional methods of course delivery,

were labeled as resistors and charged with negative attitudes towards technology (Gordon, 1983). According to Jacobsen (1998), the challenge for researchers interested in the adoption of technology is not to assign blame nor to attempt to fix faculty attitudes but instead is to draft technology integration plans and design new educational systems within the logic and meaning of the emerging paradigms that are informed by our growing understanding of the complexity and interconnectedness of faculty social systems, communication channels, and patterns of diffusion. A different support infrastructure is clearly needed for mainstream faculty than that which sufficed for early adopters of technology.

Jacobsen (1998) study provided additional support for three trends identified by Jacobson and Weller (1988) to describe faculty adoption patterns: (a) the use of computers for one purpose may encourage enthusiasm for further computer use, (b) mainstream faculty may be limited adopters because of the lack of technical support and training, and (c) colleague supported training is a viable way to encourage diffusion of computer technologies. The key to diffusion in PDS was combining training, support, and the knowledge that the rate at which change is adopted is expected to follow a normal distribution bell curve. Without investment in the human infrastructure nothing of sustainable value would be achieved (Foa, 1993).

Quantitative research conducted by Penjor and Zander (2016), applied Rogers' diffusion of innovations theory with regard to the use of a virtual learning environment (VLE) at the Royal University of Bhutan (RUB). The focus was on different adoption types and characteristics of users. Rogers' diffusion of innovations theory was applied to investigate the influence of five predictors (relative advantage, complexity, compatibility, trialability and observability) and their significance in the perception of academic staff at the RUB in relation to the probability of VLE adoption. These predictors were attributes of the VLE that determine the rate of adoption by

various adopter group memberships (innovators, early adopters, early majority, late majority, laggards). In total, 201 staff members participated from all Colleges of the RUB, resulting in a response rate of 41.61% out of 483 staff, including expatriates. Descriptive statistics and regression analyses were deployed to analyze adopter group memberships and predictor significance in VLE adoption and use. The results revealed varying attitudes towards VLE adoption by academic staff at the RUB. Even though the majority of the population (about 65%) belonged to the categories of innovators, early adopters, and early majority at the RUB, as compared to 50% in the case of the Rogers, Penjor and Zander (2016) study, it might be due to top management championing of VLE and making it compulsory or because there is an innovation culture.

Penjor and Zander (2016) suggested that universities should be aware that the adoption distribution may not predict the adoption very well at college-level. On one hand, some colleges have large bases of early adopters. On the contrary, in some colleges, the majority of adopter groups are under the category of late majority and laggards, which signifies that the college management need to offer more assistance and add more importance to the significant predictors that can help them implement the adoption. This applies in particular to late majority and laggards to make sure that they do not remain undetected. A diversified strategy for broadening the user base seems important.

Jacobsen's (1998) study raised an awareness of how taking into consideration diffusion of innovations theory could stop blaming instructors for not integrating technology and instead concentrate on each of the possible adoption personalities in order to be more effective in the process. Penjor and Zander (2016) warned about how the distribution might not be a normal

curve as Rogers stated, but the main concept of different characteristics in each adoption stage is still relevant.

Implications for this Study

Innovation diffusion theory was used as the theoretical framework for this study to determine the factors influencing the rate and extent to which technology integration is spread among and adopted in adult language classrooms. Furthermore, PDS helped identify strategies to improve the diffusion and use of technology integration in its three main components.

First, during the EL Training stage, the identification and use of opinion leaders, change agents, or early adopters promoted rapid use of technology integration. Innovators and early adopters encouraged and supported technology integration by demonstrating their benefits or easy use. To make the efforts of early adopters more widespread and their results used more comprehensively, incentives, training, support and reward structures "from above" are needed to build a strong human infrastructure (Foa, 1993) which was included in PDS with the addition of peer support and mentoring.

Second, in the Application and Feedback, understanding the needs of different user segments based on their propensity to adopt technology integration and their personalities helped the process. For example, *innovators* were invited to share their success technology integration stories; *early adopters* were recruited as peer educators; *early majority* assisted providing support; *late majority* were able to hear what plenty of other conservative instructors like themselves thought using technology integration was indispensable; and *laggards* were given high levels of personal control over when, where, and how they integrate technology while familiarizing with its use, benefits, and how other laggards have successfully adopted technology integration.

Finally, during the Ongoing Support for Continuous Improvement, the use of peer networks facilitated dissemination and technology integration. Diffusion is a social process and people talking about it, F2F or online can foster it. Anything that can be done to encourage peer communication encourages adoption (Martin, Herie, Turner & Cunningham, 1998) and PDS had several elements embedded to encourage it such as continuous online ongoing support, and active and collaborative F2F classes, which included activities that encouraged interaction among peers.

Subsequent, the conceptual training transfer model is presented. It also contains research based on the theory and the implications for this study.

Training Transfer Model

Although there are multiple definitions of transfer of learning, it is generally agreed that transfer involves the application, generalizability, and maintenance of new knowledge and skills (Ford & Weissbein, 1997). The development of a theory of training transfer has been an on-going process. Initial studies evaluating training programs captured a very practical and basic portrayal of the constructs involved in the transfer of training while more recent ones provide a more comprehensive view of transfer from a systemic (rather than linear) multilevel perspective (Burke & Hutchins, 2007).

Kirkpatrick's Levels of Training Evaluation

Kirkpatrick created the first attempt at a model of training evaluation in 1959 that illustrated causal relationships among the variables involved in the transfer of training. Kirkpatrick's model of training evaluation included four levels of analysis for determining the effectiveness of a training program. The four levels consisted of the participant's *reaction* to the

training, the content *learning* that takes place because of training, the changes in *behavior* that result from training, and the final *results* that occur due to training (Kirkpatrick, 2005).

Baldwin and Ford's Model of the Transfer Process

As a result of the questions raised due to the simplicity of Kirkpatrick's model, research began to focus on the various interrelated constructs involved in the transfer of training, capturing a more systematic view of the transfer process. Baldwin and Ford (1988) summarized the factors in the transfer of training and proposed a model of the transfer process that divided the process into *training inputs*, *training outputs*, and *conditions for transfer*. The *training inputs* include the trainee characteristics, design of the training, and environmental factors, while the *training outputs* refer to the amount of original learning that occurs because of the training program and the retention of that material. The *conditions for transfer* include both the generalization of the material learned in the training program and the maintenance of the learned material over time. Despite their detailed summary and compilation of the training transfer literature, Baldwin and Ford (1988) neglected to include any performance outcome factors in their model of the transfer process.

Holton's Evaluation Research and Measurement Model

Expanding on Baldwin and Ford's (1988) review and model of the transfer process, Holton (1996) compiled a summative review of the state of training evaluation research and the development of a theory of training transfer. Holton's (1996) model recognized the roles that each intervening variable (motivational, environmental, and ability/enabling elements) and outcome variable (learning, individual performance, and organizational results) play in the transfer of training. Based on his model, the learning transfer system inventory (LTSI) was developed as an empirically derived self-report inventory designed to assess individual

perceptions of catalysts and barriers to transfer of learning from work-related training and as a concerted effort to investigate, compare, and report a core set of individual, training design, and contextual factors known to be critical for successful transfer (Holton, Bates, Seyler, & Carvalho, 1997; Holton, Bates, & Ruona, 2000).

Burke and Hutchins' Model of Transfer

As a result of a study of best practices from selected training professionals who were members of an ASTD (American Society for Training & Development) chapter in a large US metropolitan city, Burke and Hutchins (2008) proposed a model of transfer. Of 413 surveys distributed to valid e-mail addresses, 172 surveys were returned (41.6%), of which 139 supplied usable data, yielding a 33.7% final response rate. The relevant open-ended survey question read: "We are very interested in what you consider to be 'best practices' in supporting training transfer. Please type a brief statement about what practices you consider effective for supporting training transfer." The question resulted in 195 intact original responses from 92 of the 139 participants. Content analysis was used to guide the categorization and the unit of analysis was at the phrase and sentence level: 228 total items after deleting ambiguous meanings. Single classification approach was used for categorizing the data in three major categories generated from existing models of transfer to ensure face validity: primary influences on transfer, time period, and stakeholders.

Burke and Hutchins (2008) created the first category based on primary influences on transfer such as widely accepted models of transfer, including the subcategories of learner characteristics, intervention design/delivery, and work environment (Alvarez, Salas & Garofano, 2004; Baldwin & Ford, 1988; Ford & Weissbein, 1997). The second major category used on Burke and Hutchins (2008) study was based on the work of Broad (2005), which specified the

time period when the activity or action occurs: before, during, or after the learning intervention. The third major category used was also based on Broad (2005), which specified the stakeholder or party who is most heavily involved in the transfer support action-taking place: trainees, trainers, and supervisors.

A pilot of initial coding was conducted by Burke and Hutchins averaging interrater agreement across the three categories in the last pilot of 86.7%. The test-retest reliability results for each rater were 93.3% and interrater agreement was 87.4%, discrepancies were resolved in person.

The best practices data largely reflected established categories represented in the literature for major transfer influences (Alvarez et al., 2004; Baldwin & Ford, 1988; Ford & Weissbein, 1997), primary stakeholders, and timing of interventions (Broad, 2005; Saks & Belcourt, 2006). In terms of transfer influences, training professionals most frequently identified strategies used in the work environment (49%) and in the training design and delivery phase (46%) to support transfer. In terms of primary stakeholders, respondents commented on the role of trainers (48%) and supervisors (25%) as most involved in supporting transfer best practices. Finally, training professionals identified the time after (32%) and during (31%) training interventions as most pivotal for affecting transfer.

Several new subcategories emerged based on 33% of the total coded data, indicating four categories to be added:

- In transfer influences, *trainer characteristics* such as subject matter knowledge, professional experience, and knowledge of teaching principles.
- In time period, *not time-bound* such as best practices that could not be isolated to a single period or does not strongly imply a time phase.

- In stakeholder support, two categories appeared: *peer* (co-worker, colleague) and *organization* (organizational culture or organizational commitment to training transfer and support).

The Burke and Hutchins (2008) model included a first dimension of moderating variables which are not present in previous transfer frameworks but can affect trainees' use of trained skills on the job such as work design and job content, training content, and organization size and structure. The second dimension is comprised by transfer influences: learner characteristics, trainer characteristics, design and development, and work environment. The third dimension includes the time period: before, during, after, and not time-bound. The fourth dimension encompass stakeholder support: trainee, trainer, supervisor, peer, organization. The fifth and last dimension, which represent causality, is learning, transfer, and job performance. The most important contribution of Burke and Hutchins' (2008) model is their focus on performance as the ultimate criterion variable in training transfer which is often absent in transfer models and research, yet consistent with the performance improvement literature and HRD researchers who suggest that performance—rather than learning—is the major outcome of training (Swanson, 1997).

Research Based on the Model

To the best of my knowledge, no experimental study has used the Burke and Hutchins model as framework for its research. According to a search in Google Scholar as of May 23, 2016 Burke and Hutchins proposed model of transfer has been cited 679 times. A search within citing articles with the words "table mean standard deviation correlation" trying to find any experimental study revealed 42 results, none of which were experimental studies using this model of transfer which implies that more rigorous studies are needed.

Implications for this Study

Burke and Hutchins' (2008) model of transfer influenced the development of this study's conceptual framework by adding the emphasis on performance in the PDS as well as not being constrained by time in the temporal dimension. The PDS and support for transfer was designed as an iterative and pervasive process. Additionally, best practices strategies for transfer including supervisory support activities, coaching, opportunities to perform, interactive training activities, transfer measurement, and job-relevant training suggested by Burke and Hutchins (2008) were used in PDS. Finally, their model was used to guide PDS creation, usage, and evaluation in the field in order to evaluate job performance in the learning transfer of instructors that participated in PDS: Empowered instructors and ecology for sustainable learning.

In the following section, a literature review of technology integration is presented. It includes literature relevant to definition, levels, learning language without and with technology, computer assisted language learning (CALL), learning theories, and technology integration sustainability are presented.

Technology Integration

As of 2016, there is no consensus in technology integration's definition (Roblyer & Doering, 2013) predominantly for three reasons. The first reason is that technology is transforming and evolving daily which constantly offers changes and new possibilities. The second reason is the context where technology is applied affects its integration (schools, universities, organizations, etc.) due to the unique social processes of those settings. The third reason is the different levels in which integration can be achieved. Technology integration in the foreign language classroom is ever-changing and can be accomplished by numerous approaches and at different levels.

Technology Integration Definitions

Most technology integration definitions focus only in one aspect of the process: (a) its output, for instance enhanced learning (Shelly, Cashman, Gunter & Gunter, 2008), support, inspiration, and creation of learning (Redmann & Kotrlik, 2004) or encouragement of student's involvement and creativity (Rao, 2013); (b) input, for example, a combination of all tech parts, such as hardware and software (Shelly, Cashman, Gunter & Gunter, 2008), employing internet, computer, or other technology means in instruction (Redmann & Kotrlik, 2004), technology-based practices in all aspects of teaching (Wachira & Keengwe, 2011); (c) its process such as incorporation of the technological skill and ability to use pedagogical knowledge as a basis for integrating technology into teaching and content (Mishra, Koehler & Zhao, 2007) especially in objectives, lessons and assessments (Wachira & Keengwe, 2011); or (d) its purpose in supporting curricular goals (Rao, 2013), and the sociological issue of being connected to institutional culture, social, and individual needs (Mishra, Koehler & Zhao, 2007). According to the reviewed literature, technology integration definitions have focused on inputs, outputs, processes, or purposes instead of a more holistic approach.

In this study, I define technology integration as a synergetic process that improves teaching and learning by selecting and using technology according to learner's requirements, instructor's objectives, and related standards or benchmarks. When a selection is made in such a way, it is possible to create an intentional partnership between instructor and student that encourages engagement, performance, and sustainable results.

The emphasis of my definition is on the synergetic process because technology integration can generate a greater combined impact than just the use of each unrelated individual technology, application or tool. It creates a system or a learning environment that needs to be

managed and sustained – not a mere tool, technique, or method. Additionally, the creation of the intentional partnership includes the social context, culture, and relationship of trust, care, and encouragement between instructor and students, which is supported by the experiential learning environment.

Moreover, the focus of the process allows instructors to: (a) plan higher order thinking, collaborative, and engaging activities; (b) reflect (reflection-in-action and reflection-on-action); (c) act; and (d) react according to students' responses, objectives attained, and feedback; which were modeled in the PDS. Finally, it is vital to consider the different levels of technology integration that can be achieved, which is covered in the next section.

Levels of Technology Integration

Several differing models have been created for classifying technology integration. For example, Moersch's model (1995) uses seven levels: non-use, awareness, exploration, infusion, integration-mechanical, integration-routine, expansion, or refinement. Whereas, the University of Florida's model (2007) proposes five levels of technology integration: entry, adoption, adaptation, infusion, and transformation. On the other hand, Puentedura's model (2006) includes four levels: substitution, augmentation, modification, or redefinition (SAMR). It can be observed that all these models have in common the hierarchy progression from an entry or non-use of technology point to an increased proficiency.

Out of the three models, I chose SAMR (Substitution, Adaptation, Modification, and Redefinition) model (Puentedura, 2006) because it was the most supported in the literature of technology integration. SAMR makes a clear distinction between enhancement (substitution and adaptation) and transformation (modification and redefinition) of learning due to technology integration. The four parts of SAMR are described below.

Substitution is the most basic level of technology integration (Puentedura, 2006). For example, the textbook is replaced with a digital textbook or allowing a student to use a computer to produce written text rather than having them write the text using a pen or pencil. This basic substitution of technology for traditional delivery methods of instruction does not significantly affect student outcomes or achievement.

Augmentation enhances how a student carries out a task, while the task remains the same or without changing it. At this level, the student uses the technology to make their learning more efficient or improved (Puentedura, 2006). For example, instead of researching a particular topic in the library or media center, the student uses the computer and Internet resources. Augmentation results in very small improvements in student achievement and outcome. Substitution and augmentation represent just enhancement strategies for integrating technology but not transformation that is achieved with modification and redefinition.

Modification changes the basic task. While the purpose of the task may remain the same, it is the modification of the task that allows the student to demonstrate their knowledge and learning in ways that may not have been possible using previous traditional methods of instruction (Puentedura, 2006). For example, if a student is working on preparing for a job interview in the foreign language, it is now possible with technology to be exposed to real-life examples interviews even target to desired field, or the student could be asked to produce a video of a job interview and reflect on what questions he/she could expect and prepare to answer them. Modification results in significant increases in student achievement and outcomes.

Redefinition replaces the traditional task with new tasks that are made uniquely possible by integrating the new technologies. It allows for accomplishing objectives that were not possible prior to the use of the technology (Puentedura, 2006). For example, a student could

replace a written essay with digital storytelling. In addition, it enhances creativity and provides a mechanism for demonstrating depth of knowledge at levels that were not previously possible. Another example is that students can serve as peer mentors for their fellow students, provide ideas, and expand their own learning experiences.

Redefinition could prompt the most dramatic increases in student outcomes and achievement. On one hand, students who are failing may experience a level of success by being able to demonstrate their knowledge in ways in which they were previously unable. On the other hand, successful students experience significant differentiation in their learning experiences and move to levels that were previously thought impossible.

The PDS encouraged the use of modification and redefinition levels but instructors needed to start by substituting and augmenting their technology integration first in order to be able to advance. The PDS had given instructors the ability to use technology for language learning in a wider range according to the objectives of the lesson, students' needs, and available resources; therefore, technology integration was not limited by instructors' lack of expertise. In the next section, I present four tables that compare how technology integration can make the foreign language learning process more effective and engaging by suggesting examples of technology use.

Learning Language Without and With Technology Integration

The integration of technology in the process of teaching and learning a foreign language can deepen and enhance the learning process; therefore, the skills can be developed more effectively, interactively, and collaboratively for the students. The following tables show the scenario of language learning without and with the contribution of technology, as well as examples of how technology can enhance the process and how language learning can be enriched

with technology use in the different aspects in the teaching process for learning foreign languages. The information had been compiled and adapted from *Innovation in learning technologies for English language teaching* (Motteram, 2013) published by British Council and my own experience as ESL and English for Business instructor. Teaching style examples are shown in Table 1, which include how the teacher role changes by using technology from a teacher-centered to a student-centered practice, including the opportunity to native accents and idiomatic expressions. An example is the creation of own videos or presentations.

Table 1. Teaching Style Without, With Technology, and Examples Using Technology

Teaching Style		
Without Technology	With Technology	Examples
Teacher-centered instruction	Student-centered learning with teacher as guide	Students have the spotlight, create presentations, blogs, websites, or videos
Mostly lectures	Active collaborative creative learning	Allow record and analyze learners' own speech, provide scaffolding to read
Same content and time for learning	Choose activities based on interest, differentiate learning	Own devices allow greater level of independence, look things up, and different activities
Delayed feedback	Immediate feedback	Personalized and independent learning, interactive and immediate feedback
Information delivery	Information exchange	Applications, Tools, Use own device (BYOD) allows voting, formative assessment and interaction
Motivated mostly by grade	Increased motivation by variety formats and interactive	Active participation using internet, software, applications gives ownership to increase engagement and variety
Single-sense stimulation	Multisensory stimulation	Cater to a range of learning styles; computer game use video, audio, and touch
Student learn about language (grammar, culture)	Student learn to use language and understand culture	Virtual tours, watch TV, listen radio to authentic material
Factual, knowledge-based learning	Critical thinking and informed decision-making	Produce videos telling news in the foreign language or act out a job interview
If teacher not native, not access to native accent	Access to different accents & idiomatic expressions	Can watch videos using internet, listen to native TV and radio to get used to accent and expressions

Student interaction examples are presented in Table 2. Without technology most of the time students have passive participation, while using technology allow a more active and interactive participation due to different content that can be presented to each participant according to their interests and needs. An example is the use of games, which can motivate greater participation in a more relaxed environment.

Table 2. Student Interaction Without, With Technology, and Examples Using Technology

Student Interaction		
Without Technology	With Technology	Examples
Passive participation most of the time	Active, interactive, exploratory, inquiry-based learning	E-portfolios, interactive games or exercises, web case studies, web scavenger hunts
Teacher must advance at the same level	Personalize learning based on feedback (analytics)	Software recognize patterns mistakes, time spent, and select activities and topics
Single-path progression: If repetition needed, everyone listen same	Multipath progression: Different levels and timeframe to cover material	Software select material or order based on previous assessments and provide reports
Doesn't allow recording or sharing lecture	Watch many times, record, listen and share	Applications, Tools, Software allow digital record to improve and boost confidence

Context of learning examples are shown in Table 3. Without technology most of the time students are limited to class time and isolated work, while using technology allow 24x7 access and a more collaborative approach due to real world audience. An example is the use of social media, which can motivate greater participation and add time to class by practicing outside the classroom.

Table 3. Context for Learning Without, With Technology, and Examples Using Technology

Context of Learning		
Without Technology	With Technology	Examples
Limited to the classroom	Real-life situations	Virtual learning environments can be accessed 24x7 from tablets, cell, laptops
Isolated work	Collaborative work	Make videos promote creativity, use multiple intelligences and fosters collaboration
Focus on isolated skills directed by teacher	Communicative use of language in and out the classroom	Use of Twitter, email, discussion forums, Skype provide authentic communication
Decontextualized information on book	Information up-to-date and can be customized	Flipping allows more class time for discussing and using higher-order thinking skills
Non-authentic data individually used	Real world authentic data including group games	Gain points for efforts and ability to compare scores: gamification engage

Assessment examples are presented in Table 4. Without technology, most assessments are reactive and summative, just as required for grading, while using technology can be formative as well. The instructor does not even have to grade them because it can be from a website that already has programmed immediate feedback.

Table 4. Assessment Without, With Technology, and Examples Using Technology

Assessment		
Without Technology	With Technology	Examples
Reactive response in assessments	Proactive and planned action assessments	Access to plans, assessments, activities save time and select best option for learning
Student present work to teacher only	Learners publish their work to selected audiences	Real audience, facilitates peer assessment and encourages raise students' standards
Only teacher knows criteria for grading	Rubric for assessment, formative and summative test	Learning Management System allows publication of rubrics and clear instructions

Technology integration provides opportunities to motivate students to use authentic linguistic input as well as chances to use the language with a real communicative purpose. By introducing well-organized and structured tasks into the foreign language class, teachers have started to redefine the kind of activities they prepare for their lessons and have enhanced their students' motivation successfully (Lin, 2009). Technology integration also helps with the social aspect of being able to use the foreign language with native speakers in genuine situations, which normally does not happen in the class, offering more exposure to learners. Moreover, technology integration influences language learning by increasing students' self-esteem, language proficiency, learning autonomy, and especially providing immediate feedback (Liu, Moore, Graham, & Lee, 2002).

A clear example of how technology integration affects Higher Education foreign language learning classrooms was articulated by Hu and McGrath (2011) "Information and Communication Technology (ICT) helped build links between teachers and students, broadened

students' thinking space. Teaching with ICT is tridimensional, intuitive and visual, which couldn't be achieved in our traditional classroom teaching" (Individual interview with teacher) and "ICT is gaining in popularity among our students … actually I like it with all my heart. It benefitted students in my own classes" (p. 47). Even instructors are surprised at the effects technology integration could have and PDS main purpose was to make instructors aware of its possibilities while transforming their practice at least on technology use.

Another demonstration of the impact technology integration could have on language learning, which might even have a transformative education experience (Freire, 2000) was described in the radio journalism project presented by Preuss and Morway (2012). The instructors in this study implemented alternative teaching approaches that challenge practices and status quo of current power relationships by allowing students to also be considered knowers in charge of conducting interviews and writing essays about their experiences as young women or men in Azerbaijan, with the goal of broadcasting them via radio throughout the country.

Both studies, Hu and McGrath (2011), and Preuss and Morway (2012) exhibited the same pattern on how language learning can be enhanced by using technology integration in the process while promoting student-centered, collaborative, active, and real-life situations learning. In Preuss and Morway (2012) study, participants not only were able to practice the foreign language with real audience but present their content and have their voice heard publicly. Additionally, technology integration allows the creation of proactive, formative, and summative assessments as illustrated on Hu and McGrath (2011) study. Next, I introduce Computer Assisted Language Learning (CALL), the main reasons for using it in foreign language learning, and its potential benefits and challenges.

Computer Assisted Language Learning (CALL)

Technology integration enhances foreign language learning mostly through the use of Computer Assisted Language Learning (CALL). Beatty (2003) defines CALL as the foreign language learning in which a learner uses a computer and, as a result, improves his or her foreign language. The main reasons for using CALL in foreign language learning are: (a) hypermedia can be used to provide learners with samples of authentic input and materials, (b) four skills (listening, speaking, reading, writing) are integrated, (c) top-down and bottom-up processing skills are integrated, (d) texts coupled with visual aids and multimedia annotations facilitate foreign language being acquired as well as reading comprehension, and (e) students are able to self-control their own learning at their own pace, as well as on their own path (Wang, 2006).

CALL applications are numerous such as multimedia environments that have been used for many years as a delivery tool: text, motion video, images, sound, animations, and/or graphics in foreign language learning. In addition, Internet language learning presents a unique venue for delivering authentic materials and learning content, searching for information, incorporating oral and written interaction, enhancing learners' language abilities, and developing creativity (Kavaliauskiene & Suchanova, 2009). Moreover, using mobile devices for language education allows the use of SMS (short message service) to enhance vocabulary learning (Lu, 2008), and to connect inside and outside language learning environments by promoting interaction and improving foreign language learning in the classrooms (Meurant, 2007).

The use of CALL and other technology applications has the potential benefits of academic achievement, accessing authentic language input, giving student's autonomy while offering self-pace learning and motivation, as well as changing foreign language learners' attitudes and perceptions. However, it also has challenges such as using technology integration

only to practice and complete drilling exercises instead of promoting interactive activities (Chamorro & Rey, 2013), neglecting the potential of local student's preferred technologies such as cell phones (Preuss & Morway, 2012), or not using technological tools in class (Fuchs & Akbar, 2013). Without an understanding of these challenges or problems, it is difficult for teachers to effectively adopt and integrate CALL resources into foreign language classrooms.

Furthermore, CALL can be used in every level of SAMR depending on instructors' objectives. In the next section, I explain how technology integration can use different learning theories according to instructor's objectives and beliefs.

Behaviorism, Constructivism, Connectivism

The impact of technology integration on foreign language learning is varied according to the approach and the technology used. Technology integration can be implemented using different learning approaches according to instructors' objectives and beliefs: behaviorism, constructivism, and connectivism.

Behaviorism. In brief, behaviorists define learning as a change in behavior, the purpose of leaning is to produce behavioral change, and the instructor's role is to arrange the environment to elicit desired responses (Merriam, Caffarella, & Baumgartner, 2012). Computer programs can provide consistent, reliable stimuli and reinforcement on an individual basis. One approach for technology integration could be to use teacher-centered instruction grounded on behaviorism if the following requirements are met: skills and content to be learned are clearly defined and concrete and a specific behavioral response can indicate learning (Roblyer & Doering, 2013). For example, the practice of basic grammar, or review and practice of new vocabulary in foreign language acquisition.

Constructivism. In short, constructivists define learning as construction of meaning from experience, the purpose of learning is to construct knowledge, and the instructor's role is to facilitate and negotiate meaning making with learners (Merriam, Caffarella, & Baumgartner, 2012). Another approach based on constructivism, is that instruction should stress collaborative activities and real-world connections, tailored to each student's individual preferences, providing opportunities for exploration on self-discovery unstructured activities, and allowing different ways of learning, and showing competence. Technology integration that supports opportunities for collaboration include visual presentations which help students connect abstract concepts with real-world applications, multiple paths to studying the same material and support exploration activities, internet access to a rich collection of information and environments for students to investigate, and multimedia support of many channels for learning the same content while permitting students to present their work in different formats as well (Roblyer & Doering, 2013).

Constructivist technology integration can encourage collaboration among students such as when exchanging information via e-mail with students from another class is coordinated. Another example of student-centered strategies involves motivating students and helping them discover their own interests through scavenger hunts or project-based learning. The use of different technologies also influences the impact of technology integration as discussed on the studies presented as CALL examples by changing the status quo and hegemonies (Preuss & Morway, 2012), and broading students' thinking space (Hu & McGrath, 2011).

Connectivism. Technology has changed substantially in the past several decades; therefore, a new learning theory that accommodates the new processes that technology makes possible has been created: connectivism. According to this theory, learners generate new knowledge through networking, critical thinking, relevancy and currency. The basic principles of

connectivism include (Siemens, 2005): (a) learning and knowledge resting in diversity of opinions; (b) learning as a process of connecting specialized nodes or information sources; (c) learning residing in non-human appliances; (d) capacity to know more is more critical than what is currently known; (e) nurturing and maintaining connections needed to facilitate continual learning; (f) ability to see connections between fields, ideas, and concepts as a core skill; (g) currency (accurate, up-to-date knowledge) as the intent of all connectivist learning activities; and (h) decision making as a learning process by itself.

According to Siemens (2005), perhaps the most profound pedagogical implication of connectivism is that retention of information is no longer important. Thus, what is important is the development of rich and powerful connections to sources of information that are accessible quickly and easily whenever someone wants to use them. Based on these studies, learning becomes the critical recognition of connections that change the network itself, simultaneously adding new connections, potentially in the absence of an instructor or authority (Barnett, McPherson, & Sandieson, 2013). The instructor's position shifts from one of control to one of influence; teaching becomes the process of helping students to critically examine connections in their courses and in their present and future lives.

Choosing the right learning theory helps plan activities according to instructor's objectives. Next, I discuss the features needed in order to promote sustainable technology integration in adult foreign language classrooms and portray examples of technology integration that can be used to enhance students' experience.

Technology Integration Sustainability

In order to promote a sustainable technology integration PDS first made the instructors feel comfortable using technology even on a personal level before using it in the classroom

during the EL Training. They need to practice and experiment at their own pace (McCrory, 2006). Second, PDS demonstrated and modeled to instructors during the F2F and online components of the EL Training how to accept and utilize educational technology resources by being perceived as useable and useful (Holden & Rada, 2011). Third, also engrained in PDS in the observation, mentoring, and positive feedback, the culture and peer pressure was developed to have a positive effect on instructors' technology integration (Ertmer & Ottenbreit-Leftwich, 2010). Finally, through the Ongoing Support for Continuous Improvement, PDS fulfilled the instructors' need of continued help and development to integrate educational technology resources effectively (Lee & Tsai, 2010).

After reviewing the literature, I believe that sustainability could come in the form of learning communities or networks either F2F or virtual via internet. Social network sites, professional development sites, blogs, and wikis can be influential in keeping teachers informed of innovations in educational technology. Continued professional development for instructors is necessary to increase frequency and intensity of implementation in this ever-changing field.

In order to succeed in technology integration, instructors need to gain the knowledge and skills that would increase their levels of comfort and confidence in using technology. Additionally, in order to enhance student motivation and efficient work on the computer, instructors must be familiar with programs and tasks used in class, ready to offer effective feedback on student's questions, and organize peer or group activities to promote collaboration.

Finally, unless the culture and structure of the organization is compatible with and supportive of specific uses of technology, technology integration is not likely to succeed. Aspects of organizational support for technology integration include: a culture that promotes technology use and the adoption of new teaching practices; a coherent, shared pedagogical vision

for technology use, and support from peers, administration, and the community; availability of technical support; technology policies (e.g., regarding cell phone use and access to Internet resources) that allow instructors to make use of the wealth of technological resources available; a culture of collaboration in which teachers work together to explore more effective uses of technology; assessment systems that go beyond multiple choice tests and that measure changes such as deeper understanding and improved problem solving that result from effective technology use (Kopcha, 2010).

Following, a literature review in professional development for technology integration is presented. It includes the state of professional development in Higher Education, characteristics of effective professional development, examples, diversity, technological alternatives, and how professional development can change teaching practice, which can lead to instructor-practice change based on experiential learning, development and growth.

Professional Development

The 2016 National Educational Technology Plan (NETP) from the Office of Educational Technology, US Department of Education entitled: *Future Ready Learning Reimagining the Role of Technology in Education* states that "technology can be a powerful tool for transforming learning… However, to realize fully the benefits of technology in our education system and provide authentic learning experiences, educators need to use technology effectively in their practice" (p. 5). A key constituent from the 2016 NETP is professional development for educators and education leaders in order to have the knowledge and skills needed to take full advantage of technology-rich environments by preparing instructors to teach effectively with technology and by selecting engaging and relevant digital learning content. Professional development is also presented as creating a robust infrastructure for learning, teaching, and

assessment to measure a broader range of desired educational outcomes. A total of 53 examples are included in the 2016 NETP to deepen an understanding of the innovative use of technology to enhance teaching and learning in formal and informal settings across the five areas of: Learning, Teaching, Leadership, Assessment, and Infrastructure.

The PDS was aligned with the 2016 NETP because both promote the innovative use of technology to enhance teaching and learning. Additionally, in order to be able to take full advantage of the technology, instructors' must be prepared and PDS accomplished this requirement through its three main components: EL Training, Application and Feedback, and Ongoing Support for Continuous Improvement.

Professional Development in Higher Education

The State of Professional Development in Higher Education 2016 by Academic Impressions (Mrig, Fusch, & Kientz, 2016) presented its 2nd annual survey report based on a random sampling of 971 Higher Education professionals (56% of the participants control or influence spending on professional development and 44% were frontline faculty and staff). Respondents represented small (less than 3,000 students, 20%) and large colleges (more than 20,000 students, 28%) and public (62%), private (35%), and for-profit colleges (3%). The 2015 professional development scorecard reported 52% view professional development mission critical (up 10% from 42% in 2014) but 42% managers and 51% frontline faculty and staff said that institutions provide limited actual support of professional development and their commitment is seen as "lots of talk, very little walk" (p. 10).

In respect of flexibility in funding professional development, 56% answered that if needs for new professional development opportunities arise; they are able to reallocate their professional development budget quickly or secure additional funds (up 13% from 43% in 2014).

Across colleges and universities, most managers (70%) do not have written professional development plans for their team members. Managers whose team members have written plans are more likely to factor professional development into performance appraisal, less likely to see departmental politics interfere with team members' ability to attend professional development events, and more likely to be able to reallocate funds as needed to meet new professional development needs. Professional development plans need to be written to be part of an intentional talent development strategy, in order to retain frontline faculty and staff, and to create opportunities for succession planning.

There is a huge gap between managers and frontline faculty and staff perceptions of professional development, and even when managers say it is important to performance and a factor in performance appraisal (72%), frontline faculty and staff do not believe this to be true (43%). In 2015, fewer frontline faculty and staff were expected to debrief the professional development event in written form 6% (down from 12% in 2014), fewer did a presentation 12% (down from 16% in 2014), and slightly fewer were asked to share resources from the event 40% (down from 46% in 2014).

Some colleges and universities may not be taking advantage of their most strategic asset: the learning potential of their own people. The report (Mrig, Fusch, & Kientz, 2016) ends with a call to best practice which is translating professional development into action: On an individual level, managers need to ensure that team members write into their professional development plans a process for debriefing a professional development event, disseminating learning across the team, and identifying action items. One example for doing this is to encourage team members who are attending a professional development event to identify, before the event is over, one

action they can take in their first week back on campus, based on what they have learned, one action they can take in the first month, and one action they can take over the next year.

The professional development system (PDS) was consistent and aligned with the 2016 National Educational Technology Plan (NETP) and *The State of Professional Development in Higher Education 2016.* PDS not only trained instructors through experiential learning but also supported the integration of the new skills through mentoring, feedback, and one-on-one counseling, and its sustainability by creating online networks and peer collaboration.

Characteristics of Effective Professional Development for Technology Integration

Researchers have found that professional development training that is effective and promotes sustainability of the technological skills learned have common characteristics: quality time, targeting content, active learning, collaboration and support, and ongoing support for continuous improvement and variety of learning opportunities in formal and informal settings.

Quality time. A superior program consists of an ongoing series of professional development trainings over a period of time, including time to practice what has been learned. Teachers need to practice and experiment at their own pace until they feel comfortable in their use, even on a personal level (McCrory, 2006).

Targeting content. Using applications that are relevant for instructors with possibility of immediate use and highly situated in context. "Teacher learning is most likely to occur when educators can concentrate on instruction and student outcomes in the specific contexts in which they teach" (King & Newmann, 2000, p. 576). The Technical Pedagogical Content Knowledge (TPACK) learning framework shows that integrating educational technology resources requires more than just technical skills because an important link exists between technology, pedagogy, and content (Koehler & Mishra, 2005). When teachers apply TPACK to teaching and learning

environments, teachers are attempting to find a perfect balance between technology, content, and pedagogy.

Active learning. Participants need hands-on practice in a high-tech environment to be able to apply what is being taught. Instructors, like their students, need to be actively involved in inquiry-based learning by using questions, problems, and scenarios to help them learn through their own agency and investigation. Teachers accept and utilize educational technology resources as long as they are perceived as useable and useful (Holden & Rada, 2011).

Collaboration and support. Not only from supervisors and leadership but also from other instructors since they need the support of their peers where there is an opportunity to share and learn from professional discourse. Culture and peer pressure can have a positive effect on instructors' technology integration (Ertmer & Ottenbreit-Leftwich, 2010).

Ongoing support for continuous improvement and variety of learning opportunities in formal and informal settings. Teachers need continued support and development to integrate educational technology resources effectively (Lee & Tsai, 2010). Sustainability could come in the form of learning communities or networks either face-to-face or virtual via internet. Social network sites, professional development sites, blogs, and wikis can be influential in keeping teachers informed of innovations in educational technology. Continued professional development for instructors formal and informally is necessary to increase frequency and intensity of implementation in this ever-changing field.

Examples of Professional Development for Technology Integration

With the aim of validating the characteristics of effective professional development for technology integration in real-world scenarios, I selected a couple of examples showing how

technology integration was implemented in Australia and New Jersey. Both of them were experimental studies using college-level courses and mixed methods.

Australia. A professional development case study at an Australian University (Oakley & Pegrum, 2014) used Technological Pedagogical Content Knowledge (TPACK, Mishra & Koehler, 2006) framework complemented with the Substitution, Augmentation, Modification, Redefinition (SAMR, Puentedura, 2006) model and planned professional development opportunities to help university instructors integrate digital technologies into their teaching. Data collection included nine online questionnaires; one focus group with four participants; four semi-structured interviews; and review of unit outlines.

Results indicated that participating professors succeeded in integrating a range of digital technologies, with some lecturers transforming their teaching practices substantially. A key finding was that the provision of formal professional development was only a catalyst – much unplanned and unanticipated professional learning occurred through informal interaction, with lecturers co-learning with colleagues, and indeed with students, in an environment of discovery and experimentation. Formal learning was thus complemented by a networked model among colleagues, students, and wider educational communities.

New Jersey. A study of a college-level teacher education program in New Jersey (Cydis, 2015) based on mixed method design including surveys, content analysis and observation of 43 preservice teachers found that the use of technology in teaching and learning is a valuable practice for supporting students', or in this case preservice teachers, learning and engagement. By modelling the pedagogical practices that integrate authentic, performance-based opportunities for technology integration such as providing a web-based program for creating an electronic portfolio, use of hand-held devices to respond to prompts presented by the instructor during class

discussions, use of a web-based program to create visual representations of information, and online discussion forums: 93% of the students included technology tools in the lesson plan they created even though its use was not required, 51% chose to integrate technology tools demonstrated and used in class, and another 21% integrated a tool not introduced in the course which is an indication of a growing confidence and a more sophisticated understanding of how technology could support learning.

Both studies, Oakley and Pegrum (2014), and Cydis (2015) suggested that technology integration could change teaching practice substantively not only thru formal professional development but informally as well. For this reason, PDS included not only experiential learning training but also personalized feedback on application and ongoing support for continuous improvement. Moreover, Cydis' (2015) study demonstrated that modeling technology integration in the classroom positively influenced its use, which resulted in PDS offering not only F2F classes but an online component which offered resources for different level application and scaffolding.

Diversity, Technological Alternatives, Change Teaching Practice

Instructors must be prepared to teach students from different social, ethnic, racial, and economic backgrounds (Chung & Miller, 2011). Educational technology allows instructors to customize instructional materials and lessons to meet the needs of diverse learners (Manochehri, & Sharif, 2010).

Trained teachers shift their mindset from leader to facilitator (Weimer, 2013), improving students learning and better preparing students for the 21st century. However, not every learning experience requires the use of technology. Technology professional development enables instructors to be aware of technological alternatives to engage students, enhance learning, and

increase achievement by creating real-life, cooperative, and active assignments to wisely decide when and how to use them.

Instructors must decide the use of technology according to their objectives and students' characteristics, but in order to make informed decisions, educators must be aware of the multifaceted tools that can be selected from an assortment of online educational resources. Successful integration of technology is dependent upon the teacher's vision and the availability of modeling to demonstrate examples of technology integration that support new and better ways of teaching and learning.

In the next section, the conceptual professional development system (PDS), which creates an approach to generate, practice, and sustain change, based on experiential learning theory (Kolb, 1984), innovation diffusion theory (Rogers, 1995), and conceptual model of training transfer (Burke & Hutchins, 2008) is presented. A graphic representation of the model (see Figure 1) has been created and it is also included in this section showing the relationship with its theoretical framework.

Professional Development System (PDS)

A model was developed (Figure 1) based on experiential learning theory, innovation diffusion theory, and a conceptual training transfer model in order to empower instructors to use technology integration in adult language classroom. PDS is comprised of three components: (a) Experiential Learning (EL) Training delivered face-to-face and online; (b) Application and Feedback to encourage transfer, ensure knowledge acquisition, offer mentoring and coaching; and (c) Ongoing Support for Continuous Improvement, online and F2F by promoting collaborations, use of networks, Communities of Practice, and Professional Learning Communities. The model in Figure 1 is a system because it requires of all the components in

order to be effective and create the ecology for sustainable learning and the synergy to empower instructors to use technology integration in adult language classroom.

In the beginning of the Literature Review section, the two theories: experiential learning and innovation diffusion, and Burke and Hutchins (2008) model of transfer were expounded in detail, including a couple of research examples and the implications for this study. Fundamentally, experiential learning theory was used to establish the environment of active, student-centered, life-long learning process. Innovation diffusion theory helped to encourage the promotion of adoption of technology by using the five categories of adopters of change: innovators, early adopters, early majority, late majority, and laggards; and their characteristics during PDS process. Burke and Hutchins (2008) model of transfer focused on performance change after training (Swanson & Holton, 2009). The components of the model are described below in three phases: EL Training, Ongoing Support for Continuous Improvement, and Application and Feedback.

The arrows among components represent how they are related and their dynamic interaction to achieve the final goal of empowered instructors to use technology integration in adult language classroom. Finally, as a system, it has boundaries that symbolize the synergy that can be created by having all its components function with the same goal: change in performance after training.

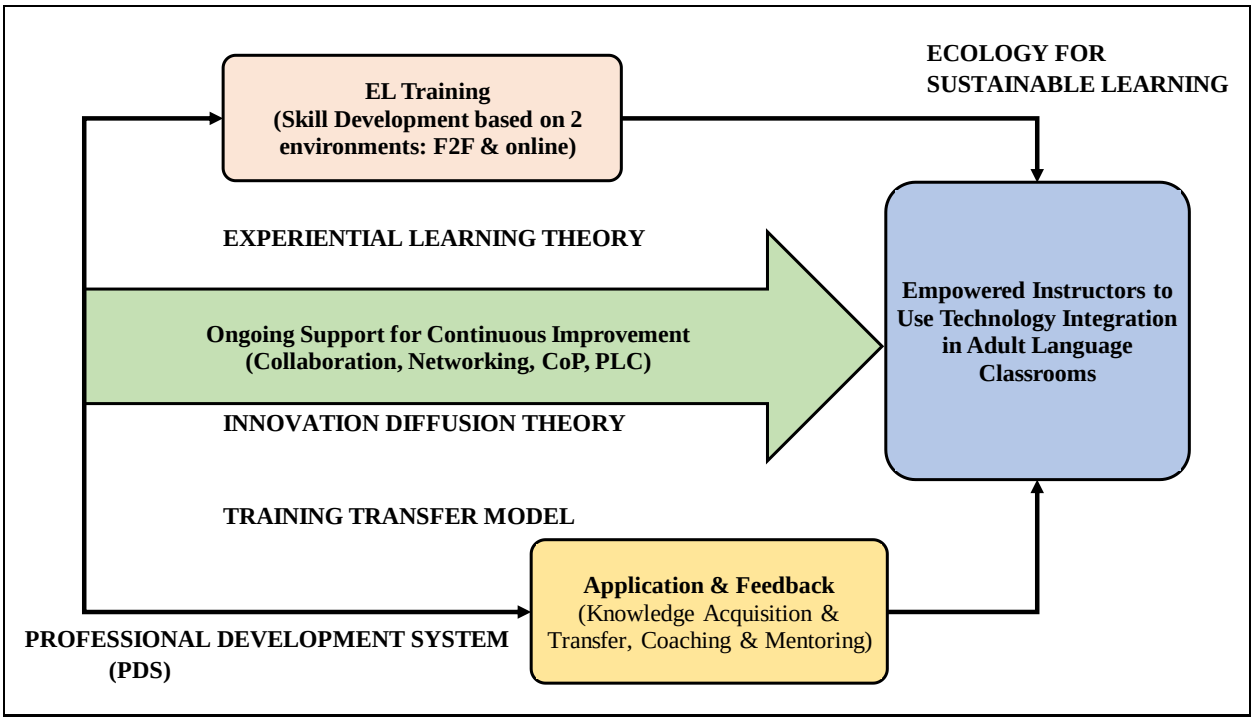

Figure 1. Conceptual Model of Professional Development System (PDS).

Experiential Learning (EL) Training

The first stage of PDS was the EL Training and it started by acquiring the knowledge or training in the skills to become an empowered teacher to use technology integration. As explained in more detailed in Chapter III, EL Training consisted of four modules based on experiential learning and packed with personalized content using the flexible capabilities of the online component. Participant instructors experienced effective technology integration in the classroom for four-weeks while experiencing first-hand the benefits that could be gained by using technology as demonstrated by the online component of the training. The EL Training had two elements, a blended environment composed of 16 hours of face-to-face (F2F) meetings to review the content and develop relationships and an online component to model the different uses and advantages technology integration can offer in the language learning process.

Throughout this study, the term Experiential Learning (EL) Training was used to refer to the first component of PDS, where instructors participated in the four-week F2F and online training with the ultimate goal to empower instructors to use technology integration in the adult language classroom.

Application and Feedback

The second phase of PDS was to observe participant instructors in the actual use of the technology learned in EL Training and applied in their own classrooms. After the observation, the instructor was provided with one-on-one mentoring of the application of EL Training, giving personalized feedback, and offering comments on the effective transfer of the knowledge acquired. The observation, interview, and one-on-one mentoring was done by the researcher. The feedback was offered not as an evaluation, but as an opportunity to individually receive any suggestions or comments for technology integration in adult language classrooms, and also voice any question from EL Training F2F or online components. Moreover, the participants were interviewed to give them the opportunity to voice their opinions and their perspective on any change that might have occurred in the EL Training process.

Ongoing Support for Continuous Improvement

During and even after EL Training, instructors were offered ongoing support for continuous improvement from their peers and the researcher by promoting online networks through communities of practice (CoP), professional learning communities (PLC), networking, and collaboration. Online support was encouraged not only with participants of PDS forming their own CoP but also showing participants how to connect with PLC of their own interest outside the PDS network.

A CoP is formed when a group of individuals who have a shared interest to which they are committed connect to learn from each other about professional issues they experience in their work (e.g., technology integration to improve foreign language leaning). Participants built relationships in the F2F and online components, ultimately creating a sense of community that enabled them to share and learn from each other (Courduff & Szapkiw, 2015).

A professional learning community (PLC) provides an extended learning opportunity to foster collaborative learning among colleagues within a particular work environment or field (Visone 2016). The participants on PDS might have different interests or ideas on how to improve technology integration in the foreign language classroom based on their objectives or student levels. For example, a participant might be more interested in making his/her students practice reading skills while another participant could favor listening skills. Each participant might join a different PLC based on his or her own concerns.

CoP were formed with participants from PDS only, at least at the beginning, while trusting relationship were built and knowledge was shared based on F2F classes. PLC were an additional option available open to all online community. Both options were accessible in the online component of PDS to offer participants a variety of choices depending on their own interests.

Summary

Chapter II reviewed the literature concerning experiential learning theory, innovation diffusion theory, conceptual training transfer model, technology integration, and professional development. Technology integration definitions were presented first to give an overview of the topic. Next, attention to levels of technology integration were reviewed, selecting SAMR model as the one to be used in the present study. Then, learning language without and with technology

was evaluated, offering examples of technology use for enhancing learning. Afterward, CALL and learning theories were introduced. Finally, attributes for technology integration sustainability were examined.

The concluding and constant idea when examining technology integration literature is that it is not possible without professional development of instructors; consequently, I revised professional development next. I started with its definition, process, and concentrated on professional development in Higher Education. Thereafter, I emphasized in the features of an effective professional development process for technology integration and examples to be used as the base to design PDS. Finally, diversity and technological alternatives were contemplated in order to empower teaching practice.

Once again, the main thought agreed upon was technology integration can be achieved by professional development that has training transfer as the main goal; which is the reason I selected Burke and Hutchins (2008) model which emphasizes performance. The results of the literature review were incorporated in the design of PDS to have as final goal to empower instructors to use technology integration in adult language classrooms. PDS models an ongoing support for continuous improvement through its F2F and online components while encouraging mentoring and support using collaboration, networking, and CoP.

CHAPTER III

METHODOLOGY

This chapter explains the research design, population and participants of the present experimental study, and instruments to measure quantitative and qualitative components. Additionally, it describes data collection procedures, timeline, and analysis methods. Mixed methods were selected to best understand the effects of a professional development system (PDS) on empowering instructors to use technology integration in adult language classrooms and at the same time be able to take advantage of the structure of quantitative research and the flexibility of qualitative inquiry. Creswell and Plano Clark (2007) defined mixed method research as "a research design with philosophical assumptions as well as methods of inquiry. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems than either approach alone" (p. 5). Mixed methods allow the use of both, open- and closed-ended questions while analyzing statistics and text.

Research Design

The method used in this experimental design study was mixed methods: triangulation design. The purpose of this design is "to obtain different but complementary data on the same topic" (Morse, 1991, p. 122) to best understand the research problem. This design is used when a researcher wants to directly compare and contrast quantitative statistical results with qualitative findings or to validate or expand quantitative results with qualitative data (Creswell & Plano Clark, 2007). Using quantitative and qualitative data provided a more complete understanding of the effects of the professional development system (PDS) on empowering instructors to use technology integration in adult language classroom by comparing and contrasting quantitative

and qualitative data during the interpretation while also allowing the validation and expansion of quantitative results with qualitative data.

The term *Experiential Learning (EL) Training* was used to refer to the first component of PDS, where instructors participate in the four-week face-to-face (F2F) and online training to change and empower their teaching practice. On one hand, quantitative data measured instructor's knowledge and experience with technological pedagogical content knowledge in the EFL (English as a Foreign Language) context (TPACK-EFL) and the impact of EL Training on technology integration (UTAUT) using Solomon four-group design. On the other hand, qualitative data gathered more in-depth and personalized information about the application or not of technology integration thru observations, one-on-one mentoring, interviews, and exit evaluations. Therefore, a mixed methods design for this research provided a combination of quantitative and qualitative data to furnish a more complete understanding of the research problem than either approach by itself in order to examine the complex effects of a PDS on empowering instructors to use technology integration in adult language classrooms.

The triangulation design formulated richer and more reliable findings not only based on quantitative information but also advocated by detailed qualitative data, which permitted instructors to voice their opinion on what worked in PDS while making suggestions to change PDS to be more effective. An advantage of triangulation design is that each type of data can be collected and analyzed separately and independently, using the techniques traditionally associated with each data type, which was the case in this study, and it is explained in more detailed in the following section.

For quantitative data collection and analysis, Solomon four-group design was used and for qualitative data collection, observations, journals, interviews, and exit evaluations were

employed. The main challenge in using the triangulation design is much effort and expertise is required, mainly because of the concurrent data collection and the fact that equal weight is usually given to each type. To address this challenge, this experimental study planned a sequential data collection, quantitative first and qualitative second but without changing the data analysis or results interpretation, which allowed to maintain the triangulation design.

Solomon Four-Group Design

The Solomon four-group design was created in 1949 by Solomon as a recommendation to psychologist working in the fields of (a) transfer of training experiments; (b) experiments on induced changes in existing attitudes, opinions, and personal values; and (c) experiments on the effects of controlled experience on responses, skills, and performance already existing in the behavior repertoire. It combines the standard pre-test post-test two-group design and the post-test only control design (Solomon, 1949). Solomon four-group design was chosen for this experimental study because the two extra groups served to reduce the influence of confounding variables (other factors that influence variables under investigation) and allowed testing of whether the pre-test itself had an effect on the participants (pre-test sensitization). The various combinations of tested and untested groups with treatment and control groups allowed to ensure that confounding variables and extraneous factors had not influenced the results, to avoid threats due to bias, sensitization, or random assignment among others.

The Solomon four-group design uses: (a) an experimental group (EG1) that receives a pre-test, EL Training, and a post-test; (b) a control group (CG1) that receives a pre-test and a post-test; (c) another experimental group (EG2) that receives EL Training, and a post-test but no pre-test; and (d) another control group (CG2) that receives only a post-test (Michel & Haight, 1996). The graphic design of the Solomon four-group is shown on Figure 2.

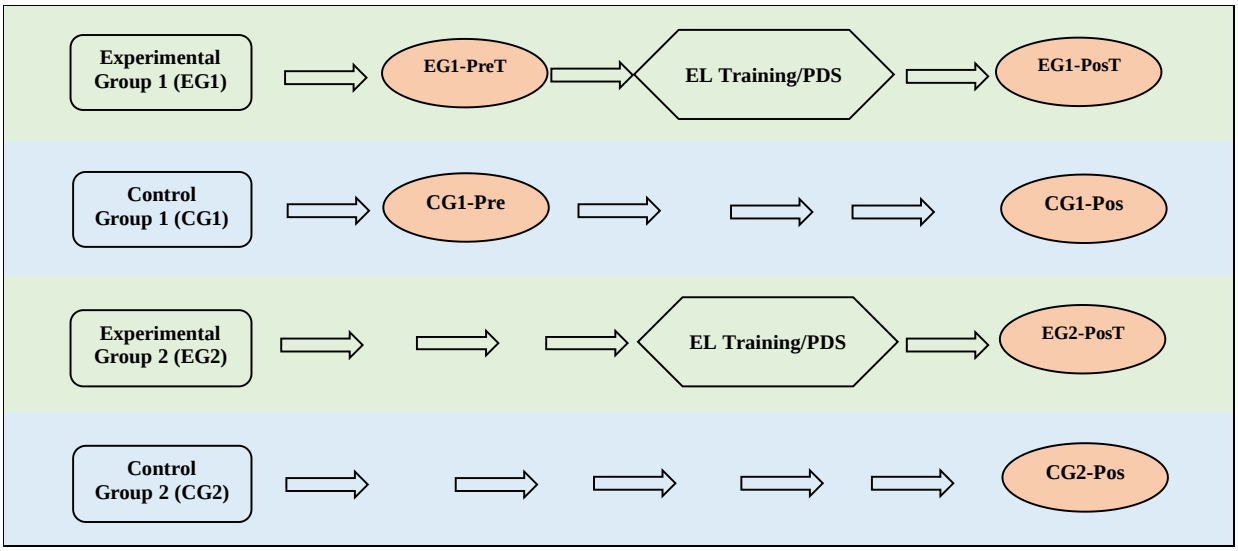

Figure 2. Solomon Four-Group Design for PDS.

While the Solomon four-group design is recognized as one of the more powerful research designs available (Braver & Braver, 1988) due to its protection against threats to internal and external validity, it is often discussed as impractical in an applied setting due to costs and the availability of random assignment of participants into four groups. For example, in the present study, I had access to all instructors/participants (114 as of March 2016) through their Director, which made random assignment to groups possible.

Advantages of the Solomon Four-Group Design

The Solomon four-group design is recommended for use with true experimental research (Chang, et.al, 2014), but can also be used in quasi-experimental studies. It has the advantages of the pre-test post-test control group design and the post-test only design, with the additional advantage of being able to test and control for instrument reactivity (McGahee & Tingen, 2009). It allows examination of both the main effects of testing, the interaction of testing and treatment,

and the combined effect of maturation and history by comparing the post-test only control group and the pre-test control group.

This design is the only type of experimental design that is able to assess the presence of pre-test sensitization. In other words, the post-test measure may be affected not only by the training or intervention, but could also be distorted by exposure to the pre-test (McGahee & Tingen, 2009).

Obstacles and How to Overcome Them

One of the major barriers to its use is the large number of subjects needed. Although this design does require twice the number of groups as others, it does not necessarily require twice the number of subjects. Braver and Braver (1988) showed that it is possible to have the same number of subjects that other designs would employ, and simply cut the size of each group in half. Their approach demonstrated that by doing this, the statistical power was still adequate, and even greater than the power of the post-test only control group design. In the present study, I had access to all instructors but participation was voluntary, as it is explained in detail in the Population and Study Participants section.

Another barrier in using the Solomon four-design is the difficulty in introducing the training simultaneously to both groups. If possible, this is desirable, in order to avoid extraneous temporal effects. A potential approach for this obstacle is to have the same researcher conduct the intervention to both groups within a narrow timeframe, which was the case in the present study. This minimize treatment differences and potential bias in the delivery of the intervention (Brink & Wood, 1989 as cited in McGahee & Tingen, 2009). EL Training of PDS were administered at exactly the same time for both groups: morning and afternoon F2F sessions at the same location.

Another reason cited for this design being used infrequently is the difficulty of randomizing subjects into one of the four groups. This may be approached by changing the design from true experimental to quasi-experimental. Sometimes it is not feasible to randomly assign individual subjects to groups, but it might be possible to randomly assign groups of subjects to treatment arms (McGahee & Tingen, 2009). In this study, I randomly assigned participants that signed the consent form.

A last barrier to the use of this design is the complex statistical analysis needed (Spector, 1981 as cited in McGahee & Tingen, 2009). There is more than one method for analyzing data gathered using this design. In the Data Analysis section, I present the various analyses I performed for the Solomon four-group design.

Observations, One-on-One Mentoring, Interviews, Journals Entries, Exit Evaluations

The rationale for including a qualitative dimension to the study was to expand the understanding of each instructor's complex experiences and the meaning they attribute to those experiences, which added depth of knowledge to the multifaceted multilevel learning transfer process. Qualitative data collection was done at three different points in time. During EL Training, journal entries were collected in the learning management system: BlackBoard. After F2F EL Training was complete, observations, one-on-one mentoring, and interviews were conducted. Finally, after PDS was finished, exit evaluations were performed by Higher Education language institute.

Most of the qualitative data collection was done after EL Training and consisted of approximately two hours per participant: Roughly one-hour observation, 30 minutes interview, and 30 minutes one-on-one mentoring. Twenty four participants in EL Training contributed in the observations, one-on-one mentoring, and interviews data collection. The decision to have all

three qualitative data collection at the same time was to create a positive environment of useful advice and avoid a perception of control or evaluation during the observation. The interviews were done after the observation to gather instructor's perceptions and experiences of PDS as well as their suggestion for improvement. The one-on-one mentoring started with a positive feedback offering detailed observation of personalized use of technology integration focusing on achievement and successful accomplishments.

Journal entries were collected as part of each module during EL Training, starting on Module 2. The exit evaluations were created by the Higher Education language institute to evaluate the training.

Entry to the Higher Education institution was achieved through their Director but a formal consent from each participant was sought according to IRB protocol (see Appendix 1). While obtaining consent, participants were also informed about confidentiality, right to withdraw, honesty, ethics and integrity of the research process. It is relevant to state that I worked at the Institute prior to beginning graduate school which allows me to count with some basis for building credibility and trust with the subjects but I am also aware of the bias I might bring.

Population and Study Participants

The target population for the current study consisted of English as a Second Language (ESL) instructors in Higher Education language institutions. For convenience, and because I had complete support from its Director, a Higher Education language institute from Lima, Peru was chosen as the location to implement the PDS. In the current study, I had access to all instructors' participants (114 in March 2016) through their Director. The private institute for ESL belongs to a top tier University (Higher Education) in Peru.

Peru is one of South America's fastest growing economies. According to World Bank website (2017), over the last decade, the average growth rate was 5.9% in a context of low inflation (2.9%, on average). The energy, mining, oil and retail sectors are major industries with headquarters in English-speaking countries. These companies require partners with good English skills, including the US, South Africa, Australia, and Canada to name a few. Peruvians recognize the benefits of learning English such as better employment prospects, the ability to communicate to do business with more people, access to a wider range of scientific and cultural information sources and the opportunity to pursue a better education.

In July 2014, Peru's President Humala announced that bilingual education in Spanish and English was a priority (British Council, 2015), setting a goal to achieve bilingualism by 2021. In 2015, the government almost doubled the education budget, which affected English language teaching by allowing instructors to travel to English-speaking countries to practice their language skills while improving their pedagogical competences. Peru is also developing international partnerships to help with training teachers, curriculum, and methodology. Currently, the National English Plan is being developed by the Ministry of Education (MINEDU).

Participants were professional non-native English teachers who were asked to participate voluntarily and were willing to attend all eight sessions in F2F and dynamically participate in the online component during EL Training. The participants were randomly assigned to each of the four groups as required by the Solomon four-group design, 14 per group as per Braver and Braver (1988) minimum sample recommendation for Solomon four-group design. My participants' existing knowledge of technology is varied, from almost non-existent to adequate technology user.

Selection of Participants

Quantitative. A Solomon four-group design requires four groups of participants and Braver and Braver (1998) hypothetical data for a Solomon four-group design example showed 14 participants per group, which according to their research "had only the two post-test groups been used, concentrating the total N into these groups (resulting in a double N of 28 per group), an informative result would have been obtained… there is no loss of power for the Solomon design analyzed meta-analytically as compared to the use of the post-test only design" (p. 153). In this study, the participants had to be willing to attend all eight two-hour training sessions and actively contribute in the online component of the Professional Development System (PDS). The 56 participants who signed the Texas A&M IRB approved Consent Form were randomly assigned to one of four groups: Experimental Group 1 (EG1), Control Group 1 (CG1), Experimental Group 2 (EG2), and Control Group 2 (CG2). EG1 and CG1 were administered a questionnaire pre and post intervention while EG2 and CG2 completed only a questionnaire at post intervention.

Qualitative. A total of twenty-eight instructors participated in the Professional Development System (PDS) and were also part of the qualitative data collection through journals during the EL Training and exit evaluations. Only twenty-four of the 28 participated in one-on-one mentoring, interviews, and observations due to conflict in schedules or not having a class that month. The demographics of the group (gender, age, and years of experience) as well as their group participation (EG1: AM or EG2: PM) are shown in Table 5.

Table 5. Participants' Names List and Demographics (used pseudonyms to keep anonymity)

Number	Pseudonym	Years old	Years' Experience	AM / PM	Interview transcript
1	BenM5020P	50	20	P	*
2	AmyF2808A	28	8	A	*
3	BobM2506A	25	6	A	*
4	DanM3208P	32	8	P	
5	AnaF3104A	31	4	A	
6	DebF4618P	46	18	P	
7	EmaF4215A	42	15	A	*
8	GusM3406A	34	6	A	
9	IanM4425A	44	25	A	
10	DonM6952P	69	52	P	*
11	EvaF3812A	38	12	A	
12	LizF5321P	53	21	P	
13	LuzF2910P	29	10	P	
14	MaeF4510P	45	10	P	
15	IkeM4220P	42	20	P	
16	MayF5930P	59	30	P	
17	JimM5310A	53	10	A	*
18	JoeM4813P	48	13	P	*
19	MiaF2803P	28	3	P	*
20	JoyF2503A	25	3	A	*
21	PamF5008A	50	8	A	*
22	LeoM5304P	53	4	P	
23	SueF3009P	30	9	P	*
24	ZoeF6046A	60	46	A	*
25	NoeF5120A	51	20	A	*
26	ValF3506A	35	6	A	
27	MegF3010P	30	10	P	
28	TomM4714A	47	14	A	*

Instrumentation

The quantitative instrument for the study is the instructors' questionnaire assembled for this experimental study and it was piloted with Hispanic international students at Texas A&M to verify if statistical results of pilot matched the results of published literature. The qualitative

instruments for the research were the semi-structured interviews, classroom observations, one-on-one mentoring and feedback after the EL Training while offering support as part of the PDS. Journal entries were created during EL Training and exit evaluations were taken after PDS was concluded. The instruments are explained in more detailed in the next section.

Instructor's Questionnaire

The instructors' questionnaire was compiled for this study from two previous instruments: TPACK and UTAUT to determine teacher knowledge required for technology integration and intention of technology use. The pre- and post-test questionnaire instruments were adapted from Technological Pedagogical Content Knowledge (TPACK, Schmidt, Baran, Thompson, Koehler, & Mishra, 2009) and United Theory of Acceptance and Use of Technology (UTAUT, Venkatesh, Morris, Davis, and Davis (2003). These two instruments were chosen based on their wide acceptance in the technology integration literature and because they had been used internationally and with experimental studies. According to a search made in Google Scholar on May 24, 2016 Mishra and Koehler (2006) *Technological pedagogical content knowledge: A framework for teacher knowledge* has been cited 3,899 times and Venkatesh, Morris, Davis, and Davis (2003) *User acceptance of information technology: Toward a unified view* has been cited 13,727. In order to find experimental studies a search within citing articles with words such as table, mean, standard deviation, and correlation were reviewed.

Pre-test Questionnaire

The pre-test questionnaire was be given to Experimental 1 and Control Group 1 to measure any previous knowledge, experience, and use of technological pedagogical content knowledge in the English as Foreign Language context (TPACK-EFL), and a variety of beliefs and behaviors with respect to classroom technology use which might affect instructor's

technology integration practices (United Theory of Acceptance and Use of Technology (UTAUT). The detailed pre-test and post-test questionnaire is exhibited in Appendix 7.

The central intention for the pre-test questionnaire was not only to determine instructor's knowledge of pedagogy, content, and technology in the EFL context; but most importantly, of their interaction and rich connections between technology, the subject matter (content), and the means of teaching it (pedagogy). As Mishra, Koehler, and Zhao (2007) stated, "the development of flexible understanding of the generative ability to use technology requires intensive, meaningful, and authentic interactions with technology" (p. 9). The pre-test questionnaire measured the TPACK-EFL use before instructors were exposed to PDS, which addresses EL Training focused on developing skills for using technologies including pedagogical techniques and content to allow instructors to apply technology in smart, interesting, and useful ways (Mishra & Koehler, 2006).

A consideration in questionnaire research is that the data is self-reported: instructors might be telling what they believe is true or what they think the supervisor wants to hear (Leedy & Ormrod, 2005) which is why this experimental study used triangulation of data and a mixed method design. Triangulation is generally used to increase accuracy and expand understanding of the phenomenon under study (Hussein, 2015). Solomon four-group design was chosen to measure if the pre-test influence had any effect on the post-test responses; to reduce threats to internal validity such as selection of participants and mortality; and to reduce threats to external validity such as reactive effect of experimental procedures, or multiple-treatment interference (Braver & Braver, 1988). Following there is an overview of the instruments used: TPACK and UTAUT.

Technological Pedagogical Content Knowledge (TPACK)

TPACK framework is the result of 5 years of work on a program of research focused on teacher professional development and faculty development in Higher Education by Mishra and Koehler (2006). They attempted to capture some of the essential qualities of teacher knowledge required for technology integration in teaching, while addressing the complex, multifaceted, and situated nature of this knowledge. Mishra and Koehler (2006) argued that thoughtful pedagogical uses of technology require the development of a complex, situated form of knowledge they called technological pedagogical content knowledge (TPCK) by postulating the complex roles of, and interplay among, three main components of learning environments: content, pedagogy, and technology.

For this experimental study, I first chose version 1.1 of the TPACK instrument, updated September 1, 2009. The revision was based on research done by Schmidt, Baran, Thompson, Koehler, and Mishra during the 2008-2009 and 2009-2010 academic years. The survey was created to measure preservice teachers' knowledge of teaching and technology. It has reliability scores for the four subscales of .87 on PCK, .93 on TPK, .86 TCK, and .89 overall on TPACK according to Schmidt et al, 2009. There were 46 core items used to measure the components of TPACK. For instance, in the TPK subscale, (Technological Pedagogical Knowledge) an example question was "I can choose technologies that enhance the teaching approaches for a lesson". TPACK used a 5-point Likert-scale which are strongly disagree, disagree, neither agree or disagree, agree, and strongly agree.

Seven components were included in the TPACK framework according to Mishra & Koehler (2006). They were defined as:

- Technology knowledge (TK): Technology knowledge refers to the knowledge about various technologies, ranging from low-tech technologies such as pencil and paper to digital technologies such as the Internet, digital video, interactive whiteboards, and software programs.
- Content knowledge (CK): Content knowledge is the knowledge about actual subject matter that is to be learned or taught. Teachers must know about the content they are going to teach and how the nature of knowledge is different for various content areas.
- Pedagogical knowledge (PK): Pedagogical knowledge refers to the methods and processes of teaching and includes knowledge in classroom management, assessment, lesson plan development, and student learning.
- Pedagogical content knowledge (PCK): Pedagogical content knowledge refers to the content knowledge that deals with the teaching process (Shulman, 1986). Pedagogical content knowledge is different for various content areas, as it blends both content and pedagogy with the goal being to develop better teaching practices in the content areas.
- Technological content knowledge (TCK): Technological content knowledge refers to the knowledge of how technology can create new representations for specific content. It suggests that teachers understand that, by using a specific technology, they can change the way learners practice and understand concepts in a specific content area.
- Technological pedagogical knowledge (TPK): Technological pedagogical knowledge refers to the knowledge of how various technologies can be used in teaching, and to understanding that using technology may change the way teachers teach.
- Technological pedagogical content knowledge (TPACK): Technological pedagogical content knowledge refers to the knowledge required by teachers for integrating technology into their

teaching in any content area. Teachers have an intuitive understanding of the complex interplay between the three basic components of knowledge (CK, PK, TK) by teaching content using appropriate pedagogical methods and technologies.

A recently published instrument in CALL 2016 by Baser, Kopcha, and Ozden, *Developing a technological pedagogical content knowledge (TPACK) assessment for preservice teachers learning to teach English as a foreign language* based on TPACK and especially designed for instructors of EFL made me consider using their instrument since it had been tested for reliability and validity and it was consistent with the original TPACK. Additionally, it had the specific language and context of EFL instructors. The survey, called TPACK-EFL, was a self-assessment for preservice teachers that focuses specifically on TPACK within the EFL content area.

Validation occurred over two rounds of testing; both rounds employed the quantitative method of exploratory factor analysis (EFA) with maximum likelihood estimation (MLE) and oblique rotation. The seven-factor solution explained the largest percent of the variance in the model (70.42%) while having the fewest number of cross-loaded items. The seven factors were labeled in accordance with the TPACK framework (i.e. TK, CK, PK, PCK, TCK, TPK, and TPACK). Items with loading coefficients at or below .30 were dropped. The final TPACK-EFL survey included a total of 39 items: 9 TK items, 5 CK items, 6 PK items, 5 PCK items, 3 TCK items, 7 TPK items, and 4 TPACK items. Evidence for internal consistency of the developed TPACK instrument was maintained through Cronbach's alpha. When the items for each factor were analyzed separately, the reliability coefficients for the TPACK factors ranged from .81 to .92. (TK=.89, CK=.88, PK=.92, PCK=.91, TCK=.81, TPK=.91, and overall on TPACK=.86). These scores indicate a high level of reliability associated with the items in each construct.

Baser, Kopcha, and Ozden (2016) TPACK-EFL had 39 core items to measure the components of TPACK. For instance, in the TPACK subscale, (Technological pedagogical content knowledge) an example question was "I can support students as they use technology to support their development of language skills in an independent manner". TPACK-EFL used a 5-point Likert-scale which are strongly disagree, disagree, neither agree or disagree, agree, and strongly agree.

Chai, Koh, & Tsai (2010) used the technological, pedagogical and content knowledge (TPACK) framework (Mishra & Koehler, 2006) to examine the effects of a preservice teacher education information and communication technologies (ICT) course. Using the postulations of the TPACK framework, a course entitled *ICT for Meaningful Learning* was designed to prepare Singapore preservice teachers for technology integration. The course was comprised of 12 two-hour sessions providing preservice teachers with pedagogical, technological, and technology-integrated lesson plan ideas which ended in a final project with evaluating rubrics including TK, PK, CK, and TPACK.

The cohort of 889 preservice teachers entering the Postgraduate Diploma in Education (Secondary) program at a Singapore teacher education institution during the August 2009 semester was selected for the study. They were invited to participate in course evaluations via an e-mail that explicated the purpose of the study. The e-mail also included a link to a web-based version of the survey. The pre-course survey and post-course survey were administered during the first and last weeks of semester respectively. Participation was voluntary. The response rates to the surveys were: Pre-course (n=439, 49.3%), post-course (n=365, 41%). Both surveys had high Cronbach alphas, indicating adequate internal reliability: Pre-course (α=.93), post-course (α=.95). Exploratory factor analysis (EFA) yielded four factors in both cases, each with high

Cronbach alphas: Pre-course (TK=0.85, PK=0.91, CK=0.99, TPACK=0.96), Post-course (TK=0.85, PK=0.93, CK=0.89, TPACK=0.94).

Chai, Koh, & Tsai (2010) results in the pre and post course surveys found significant differences between preservice teachers' TK, PK, CK, and TPACK with moderately large effect sizes. These results were in general agreement with previous research that ICT courses can enhance the teachers' perception of their competencies in using ICT for teaching and learning. This is one of the reasons TPACK was chosen to measure PDS. Next, I introduce the other instrument chosen to measure PDS: United Theory of Acceptance and Use of Technology (UTAUT).

United Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh, Morris, Davis, and Davis (2003) reviewed the extant literature of user acceptance models and empirically compared eight: theory of reasoned action, the technology acceptance model, the motivational model, the theory of planned behavior, a model combining the technology acceptance model and the theory of planned behavior, the model of PC utilization, the innovation diffusion theory, and the social cognitive theory. Based upon conceptual and empirical similarities using data from four organizations (total sample size of 215) over a six-month period with three points of measurement, the eight models explained between 17 percent and 53 percent of the variance in user intentions to use information technology. Next, Venkatesh, Morris, Davis, and Davis (2003) formulated a unified model, called the United Theory of Acceptance and Use of Technology (UTAUT), with four core determinants of intention and usage, and up to four moderators of key relationships.

UTAUT was then tested using the original data and found to outperform the eight individual models (adjusted R^2 of 69 percent). UTAUT was then confirmed with data from two

new organizations (sample size of 133). Specifically, 48 separate validity tests (two studies, eight models, three time periods each) were run to examine convergent and discriminant validity. In testing the various models, only the direct effects on intention were modeled as the goal was to examine the prediction of intention rather than interrelationships among determinants of intention (adjusted R^2 of 70 percent). The loading pattern was found to be acceptable with most loadings being .70 or higher. All internal consistency reliabilities were greater than .70 with similar results.

Seven constructs appeared to be significant direct determinants of intention or usage in one or more of the individual models. Venkatesh, Morris, Davis, and Davis (2003) established four constructs as direct determinants of user acceptance and usage behavior or behavioral intention (BI):

- Performance expectancy (PE) is defined as the degree to which an individual believes that using the system will help him or her to attain gains in job performance (p. 447)
- Effort expectancy (EE) is defined as the degree of ease associated with the use of the system (p. 450)
- Social influence (SI) is defined as the degree to which an Individual perceives that important others believe he or she should use the new system (p. 451) and
- Facilitating conditions (FC) are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system.

However, based on previous research (Venkatesh, 2000), attitude toward using technology, self-efficacy, and anxiety were theorized not to be direct determinants of intention. Self-efficacy and anxiety had been modeled as indirect determinants of intention fully mediated by perceived ease of use. Attitude toward using technology was defined as an individual's overall affective

reaction to using a system, also theorized by Venkatesh, Morris, Davis, and Davis (2003) not to have a direct or interactive influence on intention.

UTAUT and its four determinants had been validated in various studies and contexts. Jung and Lee (2015) study attempted to predict and compare factors influencing You Tube acceptance among university students and educators in two very different cultures, Japan and the USA. Five hundred and sixty-nine students and 56 educators from Japanese and American universities were surveyed to assess the influence of UTAUT related factors on YouTube acceptance in these two countries. Four versions of the survey (English and Japanese for both educators and students) were created and the link to the survey was sent to students and educators in 10 American and 10 Japanese public and private colleges in 2010. A series of multiple regression analyses were conducted for each of the four groups–American educators, American students, Japanese educators, and Japanese students–to see the effect of each predictor variable on BI. PE had a significant positive effect on BI for all groups ($\beta = .51$, $p < .001$ for the American student group, $\beta = .65$, $p < .01$ for the American educator group, $\beta = .40$, $p < .001$ for the Japanese student group and $\beta = .51$, $p < .05$ for the Japanese educator group). SI had a significant positive influence on BI for two student groups ($\beta = .19$, $p < .05$ for the American student group and $\beta = .11$, $p < .05$ for the Japanese student group). FC had a significant positive influence on BI only for the Japanese student group ($\beta = .22$, $p < .001$).

Jung and Lee (2015) concluded that even though UTAUT's four predictors can explain YouTube acceptance to a high degree, the influence of each predictor on YouTube acceptance varies significantly according to the cultural environment and the role of the teachers and the learners. This suggested that there may be a need to add cultural and role-related dimensions to the UTAUT.

Oshkyansky, Cairns, and Thimbleby (2007) conducted a study with the aim to collect data for countries around the world to cross-culturally validate UTAUT tool. UTAUT was translated into six languages: Arabic (Saudi Arabian), Czech, Dutch, French, Greek, and Malay. Each translation was completed by at least two bilingual speakers, using the back-translation process. The translated questionnaires were distributed to university students in the Czech Republic, France, Greece, India, Malaysia, Netherlands, New Zealand, Saudi Arabia, South Africa, the United Kingdom, and United States. In all countries students were recruited from diverse faculties including, Humanities, Science, Health Science, Medicine, Engineering, Computer Science, Business and Economics. No sample was represented by less than five academic disciplines. A total of 1,570 questionnaires were returned. Only those countries returning close to 100 or more questionnaires were left in for analysis. This meant that France (N=38) and Netherlands (N=43) were not used in further analysis.

An analysis of UTAUT country-by-country provided evidence that the questionnaire was working as intended in each of the sample countries. Furthermore, translation did not hinder the performance of UTAUT. Oshkyansky, Cairns, and Thimbleby (2007) concluded that the results presented showed that UTAUT was robust enough to withstand translation and to be used cross culturally, outside its original country and language of origin.

Even though Jung and Lee (2015) and Oshkyansky, Cairns, and Thimbleby (2007) studies concluded that UTAUT's four predictors can be used across countries, Jung and Lee (2015) forewarn about culture differences which is one of the reason the present experimental study decided to triangulate information through quantitative and qualitative data collection.

Post-test Questionnaire

The post-test questionnaire was given to Experimental and Control Groups 1 and 2. The post-test questionnaire was similar to the pre-test but it measured the knowledge, experience, and use of technological pedagogical content knowledge in the English as Foreign Language context (TPACK-EFL), and beliefs and behaviors with respect to classroom technology use which might affect instructor's technology integration practices (United Theory of Acceptance and Use of Technology (UTAUT) gained during EL Training. In Appendix 7, the post-questionnaire, with IRB approval is presented.

Even though one month is relatively a short time for a EL Training / PDS treatment, I expected to have some results due to the PDS intervention's nature and characteristics which focused on specific transferable knowledge, active learning, collaboration, ongoing support for continuous improvement, and variety of learning opportunities through its online and F2F components.

Semi-Structured Interviews

Twenty-four participants in the EL Training (both experimental groups) were interviewed after their observation for approximately 30 minutes. There was only one round of interviews after EL Training and quantitative pre and post-test to circumvent sensitizing participants. The broad aims of the semi-structured interviews after the EL Training and PDS were: (a) explore instructors perceptions of the relative success and challenges of EL Training while examining if any change occurred in their technology integration and their use in teaching-learning; (b) instructors' willingness to use contemporary approaches to learning and classroom instruction such as active, student-centered, collaborative, experiential, and problem-based learning; and (c) instructors views and feedback about the processes they experienced during the EL Training and

PDS. Semi-structured interviews were chosen to expand the understanding of instructor's complex experiences and the meaning they attribute to those experiences. As Kvale and Brinkmann (2009) commented, "If you want to know how people understand their world and their lives, why not talk with them" (p. xvii).

Descriptive, feeling, or meaning-making questions can generate useful data in interviews. According to Forrester (2010), interviews are a way of formulating, rather than collecting data, which means than any interview situation relies on the interaction between two people and that personal thoughts, feelings, attitudes, beliefs, and memories may be influenced by several factors such as what is being talked about or how they choose to tell it. It is important to consider that even the best thought-out questions cannot guarantee that the interviewee give a lengthy response. I prepared some back-up questions in the form of prompts and probes. Forrester (2010) define prompts as sub-questions to help interviewees who find hard to answer the initial question. Probes are a type of searching sub-question that are useful to explore interviewee responses further but be aware that they can become too leading.

Interviews were conducted in English to avoid translation but the last question was in their native language: Spanish to allow participants to include any insight they had not feel comfortable translating. According to Hesse-Biber and Leavy (2011), a qualitative interview is more of a conversation between co-participants, with information flowing back and forth during the course of the interview. Although researches may want to pursue some specific questions of interest, their primary focus is to listen intently and take cues from the interviewee. The heart of the qualitative interview requires much reflexivity, the process through which researchers recognize, examine, and understand how their own social background and assumptions can intervene in the research process. It is also a recognition of the importance of the role played by

situational dynamics between the interviewer and interviewee, which can impact the creation of knowledge. I was conscious of my reflexivity and the bias I could bring to the interviews due to my previous employment in the Institute. See examples of semi-structured interview questions on Appendix 8. A small fragment of and interview transcript is displayed in Appendix 13 as an illustration.

Classroom Observations

Data gathered through direct classroom observation provided an accurate description of how instructors used technology integration in the teaching-learning process. Twenty-four participants in the EL Training (both experimental groups) were observed for approximately one hour. I witnessed the technology integration in the adult language classroom. It added value to the interviews because it permitted observation of genuine behaviors and practice without having to rely on willingness and ability of respondents to report data accurately. It was essential not to confuse actual observation with the researcher's interpretation in order to maintain objectivity and avoid bias (Leedy & Ormrod, 2005). The purpose of classroom observations after EL Training and PDS was not only to confirm instructors' technology integration but more significantly, allow instructors to showcase their empowerment through use of technology. Even though a classroom observation form was created, see Appendix 9, mostly the observation was treated as an unstructured observation to avoid the evaluation feeling. Field notes were taken separating actual observations from researcher interpretation. A completed observation protocol is exhibited in Appendix 15 as an example.

One-on-one Mentoring

Twenty-four participants in the EL Training (both experimental groups) were offered one-on-one mentoring after their interview for approximately 30 minutes. After the observation

and interview, each instructor was asked for any uncertainty related to the EL Training or PDS. By giving the opportunity to have one-on-one time for mentoring, instructors felt free to voice any concern or reservation that they did not want to share in front of colleagues, allowing more specific guiding in any aspect not covered in training for their particular concerns. Most importantly, the one-on-one mentoring offered positive personal feedback and allowed the instructor the opportunity to receive personalized support and encouragement to participate in the online ongoing collaboration and support such as networks, communities of practice (CoP) and professional learning communities (PLC).

Journal Entries Created in EL Training

All participants were given time to reflect at the beginning of each week on the F2F component and wrote a journal for 10 minutes about their experience or what they were doing with the material they were learning in EL Training F2F and online components. Before starting the class for the day, in order not to contaminate with content from the new class and allow more profound deliberation, participants were asked to "think back on the last week, what are they thoughts, ideas, or experiences about what they have been learning in EL Training / PDS; please write how you have used the new knowledge, or how do you might think it might be helpful for you, or what would you need to add in order to be able to use this new knowledge". The use of open-ended questions permitted instructors to reflect on their particular experience and usage according to their own circumstances, allowing more detailed and accurate insights while encouraging creative answers and self-expression. Each participant wrote three electronic journals for 10 minutes each during class in Word (one at the beginning of each week starting the 2nd week of EL Training). Journals were collected at the end of EL Training directly from

BlackBoard (learning management system used to deliver PDS). Examples from journal entries from modules 2, 3, and 4 are displayed in Appendix 14.

Exit Evaluation

The Higher Education language institute created an exit evaluation to gauge PDS effectiveness and value. It was given to all PDS participants after it was finished, certificates were distributed, and the researcher has finished all qualitative and quantitative data collection. Exit evaluations were shared by the director with the researcher to aid into the qualitative research. See example of an exit evaluation in Appendix 16.

Data Collection Procedure

The director of the Higher Education Peruvian language institute supported the participation of the instructors on the EL Training and PDS. The Higher Education language institute offered certificates to the instructors who participated. Additionally, instructors were benefited as being classified as PDS participants with the possibility of being a resource for training more instructors.

The first step involved applying to Institutional Review Board (IRB) for approval that this research complied with the research ethics protocols established by Texas A&M University IRB. A copy of IRB approval is in Appendix 1 with an extension until April 1, 2018 in Appendix 2. A flyer to promote PDS was distributed among instructors (see Appendix 3) and the director emailed instructors to introduce PDS (see email in Appendix 4). Next, instructors received a participation invitation email directly from me (see Appendix 5) which included the consent form (see Appendix 6). After language instructors signed the consent form, I assigned them to the four groups randomly (EG1, CG1, EG2, and CG2) in August 2016.

The online component of the EL Training/PDS was developed during the Summer 2016 based on best practices according to the literature review. After finishing the PDS online component, I registered for an Online Course Design workshops scheduled for August 3 and 10, 2016 by Texas A&M Instructional Technology Services. The workshop was cancelled due to low enrollment but I was offered an individual consultation with Carolyn Sandoval, PhD, Instructional Consultant and online course design specialist from Center for Teaching Excellence at Texas A&M University and Sharon Gibson-Mainka, Lead Information Technology Consultant and BlackBoard subject matter expert from Instructional Technology Services at Texas A&M. We met on July 29, 2016 and both specialists made small suggestions about PDS online component, which was ready to be launched with optimal design and use of BlackBoard for delivery (personal communication, July 29, 2016). I also pilot tested the pre-post questionnaire and first F2F session with Texas A&M faculty, students, and staff members in August 4, 2016.

The EL Training was scheduled during four weeks in September-October 2016 (Sep 8 to Oct 6). The F2F was comprised of 16 hours divided into sessions held twice a week (Tuesdays and Thursdays) for four weeks. The online component was accessed by instructors outside F2F time and it was complementary to F2F instruction as well as leveled to allow scaffolding while covering various topics to engage instructors. Instructors were able to have access to the online component once they were assigned to the four groups, only Experimental Group 1 and 2 had access from the moment they agree to participate in the PDS until the Higher Education language institute keeps the course available. See the welcome screen of PDS online component in Appendix 10, as well as an example of the content of the modules: learning objectives, check list of activities to do, required instructional materials, activities or assessments, and additional

resources. For consistency, all four modules had the same main folders, just different content, according to the objectives of the module.

The online component was designed to offer scaffolding to instructors. For example, for a participant who had never created a website and needed help to start, the leveled online component offered basic videos how to start from scratch while at the same time offering more advance features, tips, and suggestions for more advanced participants. The online component had discussion boards to offer the possibility of having colleague's comments and reactions as well as questions for instructor to compel instructor's participation or have a more concrete response. The availability of the online component was expected to remain active indefinitely with the creation of CoP supporting it and as repository to start a knowledge database for technology integration in the adult language classroom. As of January 2018, during the analysis of the data, I verified that is still available to instructors that participated in PDS.

The observations and semi-structured interviews were done at the end of EL training to allow one-on-one mentoring based on what it was observed while offering support and promoting online participation and ongoing assistance through PDS. The exit evaluation were done by the Higher Education language institute after all other data collection was finished. See timeline in Figure 3.

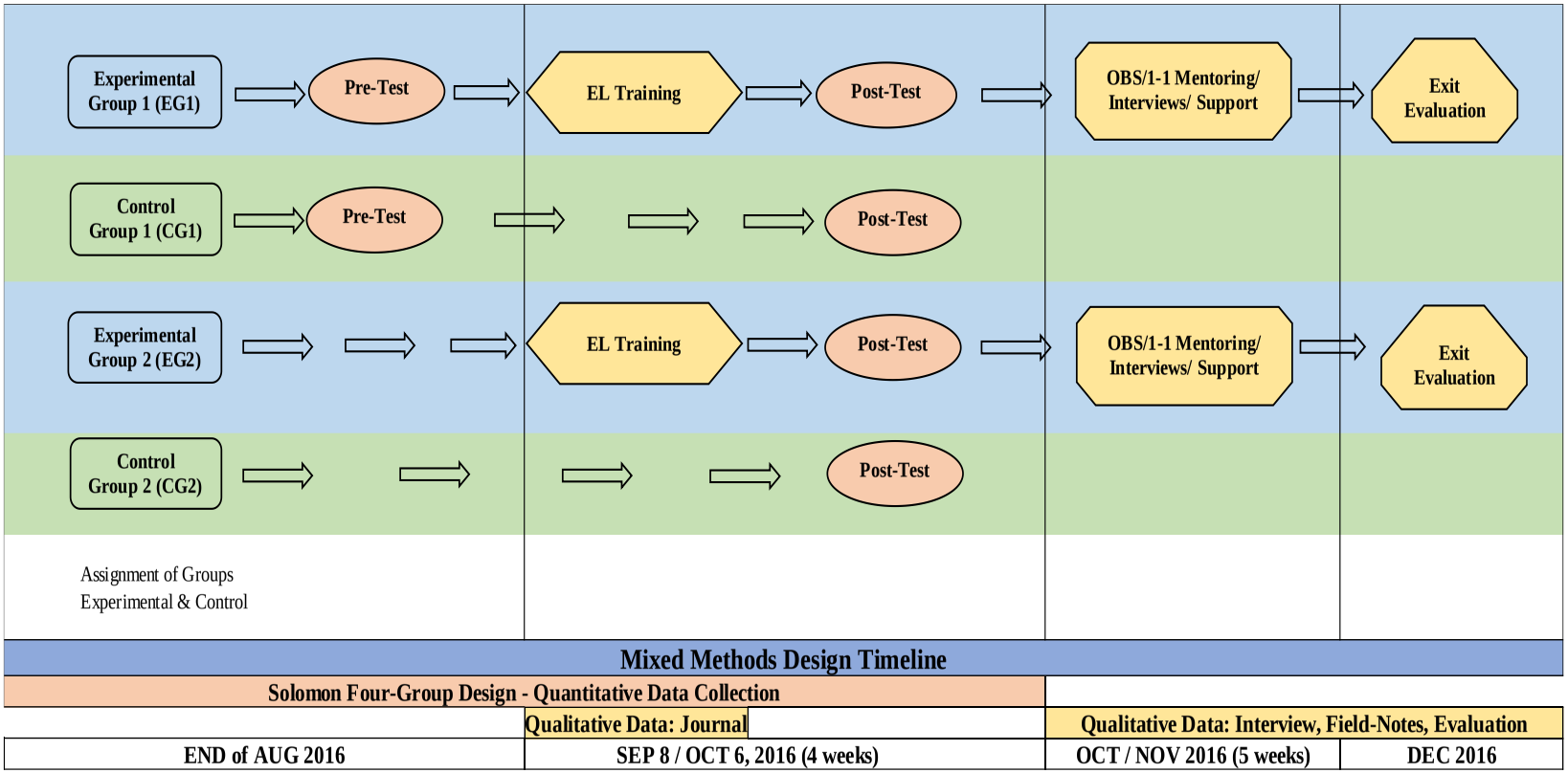

Figure 3. Professional Development System (PDS) Timeline.

EL Training / PDS

The course used a blended design to allow participants to experiment first-hand the convenience and flexibility of the use of technology while balancing life-work responsibilities. The program lasted four weeks. It started with a F2F meeting to build a community while ensuring understanding of the commitment, activities, and the overall purpose of the program. The course was designed to meet F2F twice a week for two hours to discuss the material and make sure the participants were progressing accordingly while absolving any doubts from assignments and showcasing projects. F2F classes and projects were also designed to promote and incentivize collaboration not only during the four weeks period of EL Training but also when it was finalized, creating lifelong connections for development across disciplines such networks and CoP through PDS.

Modules of PD Training Based on Experiential Learning

The EL Training consisted of four modules depicted in Figure 4. It started with an overview of the PDS, F2F and online components; a review of the objectives while encouraging active learning and basic concepts such as TPACK and SAMR to introduce the concept of improving instructors' practice. The second module reviewed the use of Learning Management System (LMS): Blackboard, course design, feedback, and assessment. The third module focused on technology applications for language learning and sustainability offering different levels according to instructor's interests and starting technology use. The last module emphasized the final project, collaboration, and creating a CoP.

The main purpose of the program was to change instructor's technology integration in adult language classroom while reviewing some fundamental principles of instructional design and best practices for learning, teaching, and technology integration as well as how to apply

those principles to engage, develop, and improve students learning by using available technology. For the mentioned reasons, experiential learning, diffusion of innovations, and a training transfer model were selected to design the EL Training and PDS in order to allow instructors to experience the power of becoming change agents themselves in technology integration to enhance students' learning and increase achievement by creating authentic, cooperative, and active assignments. As their final project, participants had to select an application to present to their colleagues explaining the rationale for selecting it and how it was going to be useful in their course, or participants could also choose to present a mini lesson using that technology. The final project had learning objectives, instruction content, activities using technology, and an explanation of how assessment could be done. Online participant-instructor and participant-participant interaction were facilitated and encouraged throughout the course.

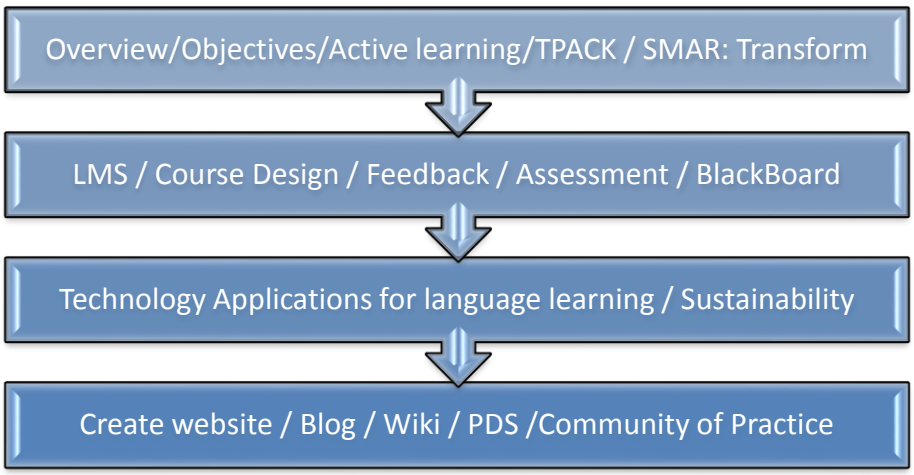

Figure 4. Modules for F2F and Online EL Training.

During the first F2F meeting, participants were shown the content of the online portion of EL Training as well as allowed to navigate the different options while emphasizing the personalization and flexibility of online elements of the course to cater to different levels, abilities, and learning styles. Reviewing the modules, policies, requirements for certificate of completion, technical support, getting to know the instructor as well as introductions were also reviewed during the first 2-hour F2F meeting. See an example of the first F2F agenda in Appendix 11.

Online Component of EL Training

Participants were given a clear program schedule, activity checklist with due dates, and a final project grading rubric to ensure they have understood the structure and purpose of the online component. All the modules started with their own objectives and some instruction or readings followed by participation in activities such as journal entries, watching videos, preparing assignments, building final project, or participating in peer review forums. On the online portion of the EL Training there were also self-checked quizzes and additional resources such as articles related to the topic of instruction, specific websites on the topic, or recommended best practices to provide participants an opportunity to experience the benefits technology integration could offer.

Two elements of this PDS, EL Training and Ongoing Support for Continuous Improvement had an online component in their design that was reinforced by growing interest in employing web tools to enhance experiential learning (Granitz & Koernig, 2011; Levin & Davis, 2007). Blogs, social media, and other web tools had been used by business educators as ways to collaborate (Granitz & Koernig, 2011); share opinions, experiences, and examples of course

concepts in practice (Hazari, Brown, & Rutledge, 2013; Kaplan, Piskin, & Bol, 2010); and encourage active participation from students (Levin & Davis, 2007).

Offering the certificate of completion added motivation to participants to finish the program because time management is one of the frequent barriers instructors mention for not being able to implement technology into their classroom. Additionally, having the opportunity to have the online component allowed participants to practice hands-on what they were learning while practicing and discovering its usefulness. Moreover, from the beginning, each participant was aware of the purpose, objectives, and timeframe of activities and assessments, which was based on Knowles (as cited in Merriam, Caffarella & Baumgartner, 2012, p. 84) assumption "adults need to know why they need to learn something." More importantly, knowing the objectives of the learning helped participants prepare for it, while taking into consideration the culture and social context where it was applied.

Having a clear understanding of the reason we have to learn something helps us to be more motivated and engaged in the course but taking into consideration the social and cultural context also allowed us to be more sensitive and aware of the diversity of our learners. For instance, having closed captioned on the videos helped not only people with disabilities but also participants whose native language was not English. Being able to read while at the same time listening to the instructions on how to use a technology or application and having subtitles made the difference between understanding clearly or not the spoken language. Finally, having the possibility to be chosen to become a technology trainer was a reward in itself as it is considered a privilege and better status among the Higher Education institute language instructors.

Learning Structure

The structure of the course was clearly stated from the beginning, reviewed during the first F2F session, and also posted on the 'Start Here' section of the online component, demonstrating practically to instructors the benefits of being able to deliver the same information to participants without having to waste class time or having the flexibility of receiving the information when a student misses a class. The online component included a checklist of activities and assessments to make sure participants progressed effectively and understood clearly what was required and the content that was optional or available to enhance knowledge. Having specific objectives and a timeline of the course schedule, activities, and assessments identified realistic goals.

The expected feedback time from the instructor was stated clearly and followed, which according to Artino and McCoach (2008) helped developing and supporting student's self-efficacy. Participants also had available a forum with *Questions for Instructors* with the policy of having an answer before 24 hours after any post to help participants develop self-efficacy while at the same time displaying another advantage of technology use in the classroom. Having the immediate response established in the online component allowed participants to plan their workload confidently knowing that if they had any problem, the instructor could be able to help them. The feedback time must be established previously; it does not have to be before 24 hours or during the weekends, but a realistic timeframe must be established according to instructor's availability.

A collaborative, interactive, learning environment, as opposed to a passive learning environment was found to be better able to help students learn more actively and effectively (Murphy, Mahoney, Chen, Mendoza-Diaz & Yang, 2005). The PDS model based on experiential

learning fostered active learning, provided scaffolding for participants to become facilitators of learning, and suggested creative ways for online instructors to manage different types of teaching responsibilities. F2F meetings required participants to contribute consistently and timely to enrich each other's experience. During the online and F2F classes, participants learned to construct knowledge collaboratively and socially through the online community using forums, technology integration plans, and sharing assignments. Having timely, honest, and explicit feedback in all the required activities and assessments demonstrated to participants how EL Training could encourage learner's participation and interaction. The PDS is a model for how the instructors can design their classes as a change tool. During the first F2F, I explained each of the steps in the learning system, which additionally was reinforced with the online component and the ongoing support for continuous improvement.

Key Online Components

The modules for the EL Training and key components are included in Table 6. In the first column, there is the module number and in the second, the module topic. The third column presents the basic practice to be covered as well as some websites with recommended readings or websites to visit. Finally, the fourth column contains additional resources for participants that have more knowledge about the topic or that want to research more deeply into it. The advantage of this design, as previously mentioned, is its flexibility to accommodate different levels of technology integration as well as diverse interests of participants and learning styles.

Table 6. Key Online Components for EL Training

Md	Topic	Practice/Information websites	Additional Resources
1	TPACK SMAR	What Is Technological Pedagogical Content Knowledge? Koehler, M. J., & Mishra, P. (2009). http://www.citejournal.org/articles/v9i1general1.pdf SAMR and TPCK: A Hands-On Approach to Classroom Practice http://www.hippasus.com/rrpweblog/archives/2014/12/11/SAMRandTPCK_HandsOnApproachClassroomPractice.pdf	What is TPACK? Using the TPACK image http://www.tpack.org/ Using SAMR to Teach Above the Line http://gettingsmart.com/2013/07/using-samr-to-teach-above-the-line/ Ruben R. Puentedura's Weblog Ongoing thoughts on education and technology. http://www.hippasus.com/rrpweblog/
2	LMS Course Design	BlackBoard Help for Instructors https://en-us.help.blackboard.com/Learn/9.1_2014_04/Instructor Designing Your Course. Use these pages to guide you in planning or revising a course. http://cte.cornell.edu/teaching-ideas/designing-your-course/index.html	Course Preparation Handbook https://teachingcommons.stanford.edu/resources/course-preparation-resources/course-preparation-handbook Effective teaching depends on effective planning and design. https://cft.vanderbilt.edu/guides-sub-pages/course-design/
3	Technology Applications ESL	Teaching English with technology. EdTechTeacher presents Teaching English with Technology, a resource created to help K-12 English and Language Arts teachers incorporate technology effectively into their courses. http://tewt.org/ Kathy Schrock's Guide to Everything! http://www.schrockguide.net/index.html Cyber English. Articles, resources, other cyber classes. http://www.tnellen.com/cybereng/	Cambridge Dictionaries Online http://dictionary.cambridge.org/us/ ESL Cyber Listening Lab http://www.esl-lab.com/ Free Audio Books http://www.openculture.com/freeaudiobooks English Grammar Online https://www.ego4u.com/en/cram-up/grammar Record your own voice: Speak http://www.englishcentral.com/video/11131/golden-rules-in-presenting

Table 6. Continued

Md	Topic	Practice/Information websites	Additional Resources
4	Create a website, Blog, Community of Practice	The easiest way to create a website! http://www.weebly.com/ Create your free stunning website. http://www.wix.com/ Make your own free website. http://www.webstarts.com/ Make a free professional looking website. http://www.webs.com/	Create your own website (More powerful). http://wordpress.com/ Google Sites makes creating and sharing a group website easy. https://sites.google.com/ Create a Free Class Website and let your students build sites too. http://education.weebly.com/

Active, Learner-Centered, Collaborative, Experiential, and Problem-Based Learning

The web provides endless resources for adult learners by allowing one to search actively and discover rich resources to solve problems or construct one's own knowledge. The EL Training not only offered content but also suggested other web resources for instructor enrichment or development in different topics while demonstrating first-hand the benefits of differentiated learning and flexibility. The web can be a tool for learner-centered learning.

In developing the EL Training, Huang's (2002) instructional principles to guide the practice of teaching and the design of online learning were followed: (a) Interactive learning: EL Training allowed interaction with other participants not only through activities and online discussion but also encouraging and supporting reflection on the content presented; (b) collaborative learning: EL Training fostered development not only through instructor's guidance and feedback but also collaboration with more experienced peers; (c) facilitating learning: EL Training created a safe environment to express freely but appropriately, using netiquette in a trusted environment; (d) authentic learning: EL Training allowed to choose the topic of final project, which could be related to real-world experiences, any course instructors was teaching, or

felt curious about; (e) learner-centered learning: EL Training was a learner-centered course, where participants had the ownership of their learning process. It used experiential and self-directed learning; and (f) high quality learning: EL Training promoted high-order thinking skills to help determine the authenticity and quality of the information on the web in order to assess its authority and legitimacy.

PDS originated meaningful experiences in the four experiential learning mode processes during its three main components: *concrete experience* such as the final project of the EL Training which is a real world technology integration in the instructor classroom at his/her level of expertise and mentoring during Application and Feedback; *reflective observation* such as class journals entries and discussion boards in EL Training and communities of practice (CoP) during Ongoing Support for Continuous Improvement; *abstract conceptualization* such as lectures, readings and PowerPoints reviewed during face-to-face (F2F) classes in EL Training; and *active experimentation* such as class exercises or mock scenarios in EL Training and active online participation during Ongoing Support for Continuous Improvement.

In the experiential learning environment, participants were encouraged to become continuous learners, to extract meaning from experiences, and to pass the learning along in collaborative contexts. Requiring learners to engage in experiences was not enough. Experiences, whether simulated, or in the job, must be processed through reflection and debriefing in order to maximize their value (Jackson & Caffarella, 1994). The EL Training was designed to provide the learning context and activities to facilitate an experiential learning based course. At the same time participants were learning the content, they had the opportunity to socially construct knowledge through the online community using forums, technology integration plans, and sharing assignments. They also had the opportunity to discuss any doubt or question F2F with

the instructor or colleagues during EL Training while also being trained and getting familiar with having the availability of the online CoP to keep learning continuously and not only during PDS. An explanation on how the content was approached in order to model technology integration to develop cognitive skills while using experiential learning in the PDS is shown in Table 7. In the first column, there is a description of the topic to be introduced. The second column shows the planned technology to be used to accomplish the objective or website to gather information about the topic. The third column presents the cognitive skills to be developed or demonstrated. Finally, the fourth column explains and rationalizes how experiential learning is expected to be used or achieved.

Table 7. Technology Integration for Experiential Learning

Content	Technology integration	Cognitive skill	Experiential Learning
Introduction	Watch video		Visualize END project / Form community: Safe learning environment
Overview & Objectives		Clear and measurable SMART objectives	Intentional: Why is important? How will practice? What will learn?
Active Learning		Framework: Guided instruction, Collaboration, Independent	Modeling and Scaffolding WHILE being self-reflective
Online Component	PDS Start Here, Course Orientation, Welcome from Instructor	Demonstration/use/explore content & tools available in website	Critical reflection, validating discourse, taking action
Select ONE tool & create video	Kizoa, Animoto, Wevideo. Easiest Kizoa	Create own introductory video and upload it to website	Use deliberate repeated practice / Constructive feedback / Create CoP

Table 7. Continued

Content	Technology integration	Cognitive skill	Experiential Learning
Additional Practice	PDS Learner Support, Netiquette, Activities or Assessments, Additional Resources	Build on previous knowledge / Aware of new tech integration	Time to practice / collaborative discourse / critical reflection / success
TPACK	http://www.tpack.org/	Knowledge of Technological Pedagogical Content Knowledge	Introduce relevant experience, facilitate reflective discourse
SMAR	http://www.hippasus.com /rrpweblog/ Puentedura's Weblog	Knowledge of levels of tech integration & application can be used	Collaborate critical reflection, initiate effective action
EL as goal (Blooms taxonomy)	PDS required Instructional Materials Module 1	Think/pair/share // Peer instruction // Create a 2-3 minutes video	Learner-centered teaching / Reflective instructor / Connectivism
		Consider students' backgrounds, diversity & developmental stage	Become open trying new teaching methods, develop self-reflection
Learning Management System (LMS)	BlackBoard (Bb) LMS	Skills to use Bb and find help as needed	Knowledge socially constructed: Discussion board, small groups
Bb Help for instructors	https://en-us.help.blackboard.com/Learn/9.1_2014_04/Instructor		Able to solve own questions / problems
Course Design / Lesson plan	MindMap / BlackBoard Personal Technology Strategic Plan Technology Integration Plan	Develop learning goals ALIGNED to instruction, activities, assessment	Reflect & Act on learner-centered instruction / Engage / Motivate
Feedback / Assessment	BlackBoard	Develop rubrics based on learning goals (aligned with assessment)	Model importance of feedback / critical reflection / discourse // collaboration
Any other topic suggested			Model that input from participants is crucial for engagement // Personalize

Table 7. Continued

Content	Technology integration	Cognitive skill	Experiential Learning
Tech applications for ESL	Teaching English with Technology http://tewt.org/ Educational Technologist http://www.schrockguide.net/index.html Cambridge Dictionaries Online http://dictionary.cambridge.org/us/ ESL Cyber Listening Lab http://www.esl-lab.com/ Free Audio Books http://www.openculture.com/freeaudiobooks English Grammar Online https://www.ego4u.com/en/cram-up/grammar Record your own voice: Speak http://www.englishcentral.com/video/11131/golden-rules-in-presenting		Model use in class // Review in detail as homework // Ask question class Able to research and use different technology according to objectives Select appropriate technology according to goals // Monitor learning Have a toolbox to select from whenever necessary // Research Grow learning CoP, networking, and collaboration asynchronously Experience first-hand flexibility use of tech integration Out of classroom learning and use of own devices // Tech support
Create Website / Blog / Wiki	Weebly, Wix, Wordpress. Easiest: http://www.weebly.com/ Integration all skills, how activities & assessments use technology to achieve goals	Creation of free website according to objectives and needs Creating objectives aligned with instruction, activities & assessments	Time to practice & achieve capstone working collaboratively Reflect on barriers & success // Review critical elements // collaborate
Showcase / Demo / Present	Presentation of Final Project in class and online to be accessible to all PDS participants	Repository of tools, ideas, presentations created	Ensure Community of Practice benefits everybody // collaboration

Table 7. Continued

Content	Technology integration	Cognitive skill	Experiential Learning
Certification / Next steps	Continuous online access to PDS material to continue reviewing material and explore Additional Resources	Mindset change, Continuous life-long learning	Sense accomplishment / Observation-Mentoring 1 on 1 / Ongoing support for continuous improvement

The agenda for each F2F session was posted in BlackBoard before class and an example of the first F2F session can be found in Appendix 12. It was tailored according to participants' progress, questions, and interest to keep PDS relevant. It showed participants how instructors could easily adapt its content and objectives using technology in the classroom.

Data Analysis

This study used a mixed-methods research approach to guide the research protocol. Two distinct approaches were used to analyze data: quantitative and qualitative analysis.

Quantitative Analysis

The data from the questionnaire was entered directly by the participants in Qualtrics and transferred to SPSS version 22 for analysis. The quantitative analysis was done using the Solomon four-group design represented graphically in Figure 5 (EG1-PreT, CG1-Pre, EG1-PosT, CG1-Pos, EG2-PosT, and CG2-Pos) and a 2x2 ANOVA for the four Post-tests (EG1-PosT, CG1-Pos, EG2-PosT, and CG2-Pos). In the following section, each of the analyses are explained in more detail.

Solomon Four-Group Design

The various analyses that can be performed on data resulting from the Solomon four-group design enables the researcher to evaluate the efficiency of the randomization process (sample was randomized once the participants registered for PDS and signed the Consent form approved by Texas A&M IRB), determine whether the group given the treatment showed a significant difference, and the comparison among groups (LavanyaKumari, 2013).

For the analysis of the Solomon four-group design, the four groups and the treatments or tests each group had undertaken (open arrows) as well as the different analysis performed between Experimental Groups 1 and 2 and Control Groups 1 and 2 (shaded arrows) are shown graphically in Figure 5. Each path and comparison t-test are explained below the figure. The detailed results of the 2x2 ANOVA are presented in the Chapter IV, Findings.

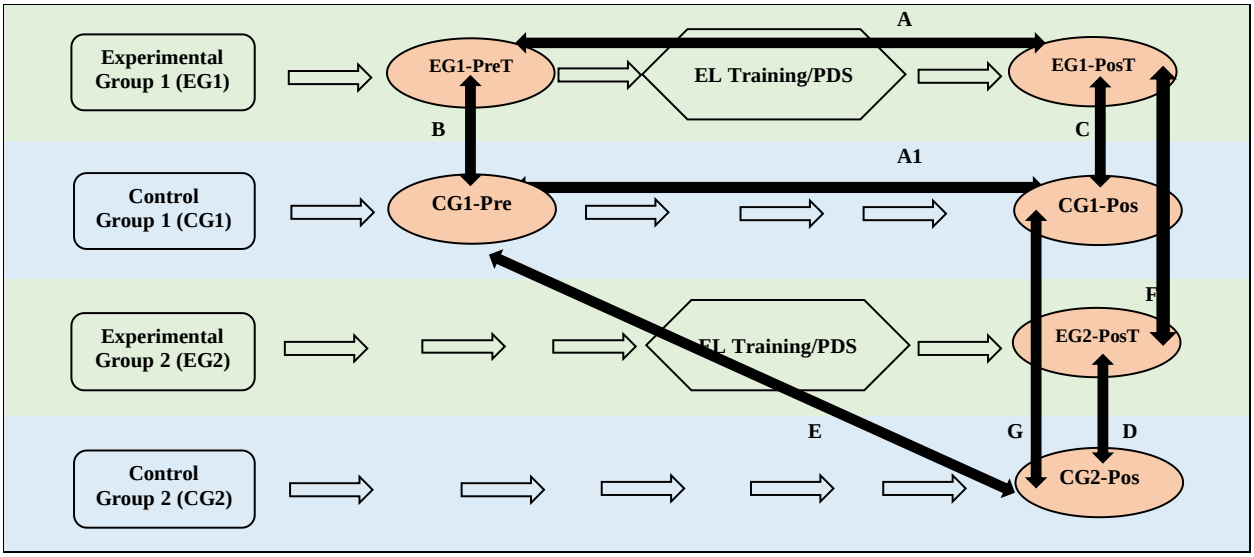

Figure 5. Solomon four-group design analysis. Adapted from Martyn Shuttleworth (Feb 16, 2009). Solomon Four Group Design. https://explorable.com/solomon-four-group-design.

- Paired t-test shaded arrow ‘A’ shows if there is any change between pre-test (EG1-PreT) and post-test (EG1-PosT) after treatment (EL training, PDS).

- Paired t-test shaded arrow ‘A1’ shows if there is any change between pre-test (CG1-Pre) and post-test (CG1-Pos) without treatment.
- Comparing shaded arrow ‘A’ and ‘A1’ determine changes over time, and whether Experimental Group 1 improved after treatment compared to the no treatment group.
- Independent t-test shaded arrow ‘B’ compares the scores in the two pre-test groups (EG1-PreT and CG1-Pre, to ensure that the randomization process was effective.
- Independent t-test shaded arrow ‘C’ compares the post-test results between groups EG1-PosT and CG1-Pos to give us an idea of the overall effectiveness of the training.
- Independent t-test shaded arrow ‘D’ compares the post-test results of groups EG2-PosT and CG2-Pos, allowing to determine if the actual act of pretesting influenced the results. If the difference between the post-test results of groups EG2-PosT and CG2-Pos is different from the groups EG1-PosT and CG1-Pos difference (marked by ‘C’ shaded arrow), then it can be assumed that the pre-test has had some effect upon the results.
- Independent t-test shaded arrow ‘E’ compares group CG1 pre-test (CG1-Pre) and group CG2 post-test (CG2-Pos) to establish if any external factors have caused a temporal distortion which was not included in the present study. For example, it shows if anything else could have caused the results shown.
- Independent t-test shaded arrow ‘F’ compares group EG1 post-test (EG1-PosT) and group EG2 post-test (EG2-PosT) to determine the effect that the pre-test has had upon the EL Training/PDS. If the post-test results for these two groups differ, then the pre-test has had some effect upon the treatment and the experiment is flawed.
- Independent t-test shaded arrow ‘G’ compares group CG1 post-test (CG1-Pos) and group CG2 post-test (CG2-Pos) to show whether the pre-test itself has affected behavior,

independently of the EL training/PDS. If the results are significantly different, then the act of pretesting has influenced the overall results and is in need of refinement.

2x2 ANOVA

The researcher used Braver and Braver (1998) flowchart (p. 152) for the logistics of statistical analysis of the Solomon four-group design. As recommended, a 2x2 ANOVA was performed on the set of four post-test scores of all groups (EG1-PosT, CG1-Pos, EG2-PosT, and CG2-Pos) having as the two main effects: sensitization -pretest vs no pretest- and experimental condition -treatment (PDS) vs no treatment-.

The hypotheses for the 2x2 ANOVA were as follows:

1. Sensitization

a. Ho: Instructors who were administered a pre-test had the same composite average of technology integration score as instructors who were not administered a pre-test.

b. Ha: Instructors who were administered a pre-test had a different composite average of technology integration score than instructors who were not administered a pre-test.

2. Experimental Condition

a. Ho: Instructors who participated in the Professional Development System (PDS) – treatment- had the same composite average of technology integration score as instructors who did not participate on the treatment (PDS).

b. Ha: Instructors who participated in the Professional Development System (PDS) – treatment- had a different composite average of technology integration score than instructors who did not participate on the treatment (PDS).

3. Interaction effects:

a. Ho: There is no interaction effect between Sensitization and Experimental Condition in terms of composite average of technology integration score.

b. Ha: There is an interaction effect between Sensitization and Experimental Condition in terms of composite average of technology integration score.

The detailed results of the 2x2 ANOVA and graphics are presented in the next chapter: Findings, which are grounded in the data from the questionnaires.

Qualitative Analysis

The qualitative data analysis process was conducted based on the transcripts from recorded interviews, journals produced during EL Training (PDS), field notes created during the one-on-one observations and mentoring, and exit evaluations done by the Higher Education language institute, explained in detail on Chapter III. The steps in data analysis were the ones recommended by Hesse-Biber and Leavy (2011): (a) data preparation, (b) data exploration, (c) specification and reduction of data, and (d) report data for interpretation. Following is a brief description of each step done for the data analysis. See Figure 6 for a graphic representation of the qualitative analysis.

Data Preparation

The first step for the qualitative data analysis was to prepare the data. The software used for qualitative data analysis was Atlas.ti 8.0. As recommended by Friese (2014), a pilot trial run with the data from four participants was done first. Adding the documents, selecting quotations, and creating codes for only four individuals helped to realize the importance of having name files that are easily related to the original data. For example, the first letter represented the type of data collection (I for interview, E for evaluation, J# for journal identifying if it was week 2, 3, or 4 of the journal), the next three letters were the first three of the name of the participant,

followed by gender (M or F), age (2 digits), years of experience (2 digits), and if they belong to EG1 (A, meaning their workshop was in the morning) or EG2 (P, face-to-face in the afternoon). J3BenM5020P stands for data extracted from Journal #3 module, participant Ald, male, 50 years of age, 20 years of experience, and attended afternoon F2F. Running a pilot trial also helped to start thinking about possible themes and axial codes. An example of the documents used in PDS trial are shown in Appendix 17.1.

I created the interview transcripts to familiarize myself with the data and I used purposeful selection based on age, years of experience, gender, and group participation. Preliminary analysis of the growing pool of transcripts enabled me to check emergence of new themes. I ended up transcribing 14 interviews (marked by and asterisk * on Table 5) because I reached saturation, meaning that no new information emerged (Merriam, 2009). In total, I entered 96 documents: 14 interviews, 22 evaluations, and 60 journal entries in Atlas.ti 8.0. A little background of the participants who were selected for interview transcripts is presented in the following section. I used the name file used in Atlas.ti 8.0 for identification as pseudonym to keep confidentiality.

IBenM5020P: Food engineer with an MBA from Universidad del Pacifico. He has 20 years of experience and teaches English for Business to professional people who usually are sponsored by their companies because they need English at work. He uses common applications such as email, Waze, WhatsApp in mobile phone, and considers technology as an advantage. Reflecting on the workshop, he believes every teacher should go through PDS experience because it has given him new tools to improve teaching, opened his scope of technology for education, and changed his teaching philosophy. He is the president of the Parents Association in his son's school and offered me a job teaching PDS to his son's school teachers.

IAmyF2808A: Freelance translator with a translation and interpretation degree, working in an entertainment company as certified translator. She has 8 years of experience teaching English in her free time and teaches Communicative Language. She uses phone, laptop, and computer because they make her life easier. Before PDS, she just uploaded some things for classes; now, her students are amazed by the quantity of material they can access in BlackBoard. She is not stressed anymore because she can upload material, and her students are writing more, typing more, and doing things using English. She was amazed at PDS gains because she was able to do things she thought she was not able to do.

IBobM2506A: Accountant but decided to teach English because he liked it better. He has 6 years teaching English mostly to juniors and Communicative Language. He uses smartphone, computer, laptop, and believes technology is useful but cannot be trusted 100%. PDS helped enhance his teaching and go to another level because in order to learn to use technology well you must apply and try it and most of the time he was scared or had no guidance. Now, he is not afraid of failing because he knows everybody fails: you just have to continue, correct it, and keep in mind you have plan B, just in case.

ICarMF4215A: Degree in translation and interpretation in English and French. She has been teaching for 15 years and teaches for international exams and Communicative Language, also as a private tutor, even during weekends. She uses a cell phone even to take notes, and Ipad for reading because it has an embedded dictionary. After PDS training she feels more comfortable using technology and asking questions online, so much that she is planning to take an online course in Spain next year. PDS was an investment for her and her vision is now different, she can send students material in advance to use class time more efficiently.

IDonM6952P: Degree in Journalism, also studied History, Literature, and Education in Peru, Mexico and USA. He has 52 years of experience and teaches methodology for teachers or listening and speaking courses. He uses a smartphone mainly to receive calls from work and a computer in the classroom. He believes technology can make your life easier, can minimize writing on board, allows to use visuals, and create own material. PDS training allowed him to create his own video and webpage, and the best part it was that he could learn at his own rhythm.

IJimM5310A: Business Administrator that changed job path to teacher because he likes it better. He has 10 years of experience and teaches online in another University as well. He likes critical thinking students, making them discover the knowledge instead of giving answers to make classes more interesting. PDS has changed his teaching practice making his classes more fun, and he feels he is better prepared than most of the teachers in Peru because the wide variety of resources he can put into practice in his classes. He recognized he is beginning to enjoy his classes again.

IJoeM4813P: Bachelor in Business Administration, certification in TKT (Teaching Knowledge Test by Cambridge English), apart from teaching he does simultaneous translation and interpretation because he has his own small company that works directly with mining and construction companies. He has been a teacher for 13 years, especially for international exams such as TOEFL. He uses smartphone for checking emails, agenda, Skype, Waze, and video conferencing. He enjoyed PDS because it was hands-on and individualized, and the instructor shared with him some websites and materials specific to his requests. It has allowed him to differentiate himself in this competitive market.

IMiaF2803P: Communication degree. She has been a teacher for 3 years teaching Communicative Language. She uses a laptop and internet all the time, cell phone and

applications. She believes technology can be very useful as long as you know how to use it and can guide your students to use it appropriately. It can also save time in class by allowing students to practice on their own. PDS training has changed her role because now students practice more actively while she is monitoring their work.

IJoyF2503A: Bachelor in History but discovered she liked teaching, so got FCE (First Certificate in English by Cambridge English), TKT certificates and started teaching English. She has 3 years of experience and teaches in another institution as well, children and adults. She uses internet, social networking, WhatsApp, Youtube, and Facebook. She likes to research the use of technology by herself using it or finding information online. She thinks students are more motivated for learning by using technology. PDS changed her perspective, even though she knew technology was important, now she is sure it is necessary, a must. The teacher now complement her practice with technology.

IPamF5008A: Mid-wife and professor of English for Health. She has been teaching for 8 years. She uses a smartphone for emails, and BlackBoard in class. The PDS' final project was a little scary and complicated for her at first but she felt satisfied with the results because she learned interesting tools for improving her teaching techniques. She has created a Forum using BlackBoard and her own website where her students can research and practice exercises online, consult a dictionary, and download eBooks. She is planning to keep adding and modifying her material in her website to keep it interesting for students.

ISueF3009P: Bachelor in Education, studying to earn a master's degree for teaching English as a Foreign Language. She has 8 years of experience teaching Communicative Language. She was afraid of using technology because she had problems with viruses or thought she might damage the computer. After PDS she had no more fear: she knew she could explore

and continue. She learned different ways of presenting things, how to organize her BlackBoard, add variety to her classes, and how to provide more information and extra material so students can practice more outside of class. She liked being able to have all the material available online and communicate online.

IZoeF6046A: Lawyer but did not agree with justice system, discovered her passion is teaching. She has been a teacher for 46 years and taught all levels and ages. After PDS, she not only felt empowered but her teaching has been enriched. Her knowledge and use of technology has grown from a 1 to an 8 on a scale of 10 in a month thanks to PDS. She is not afraid of technology anymore, she is very comfortable and ready to go further and further. Her students are more motivated to learn using technology. She believes PDS has given her knowledge, confidence, and power; really happy and grateful for the experience.

INoeF5120A: Education degree, as exchange student she was motivated to study pedagogy. She has 20 years of experience teaching. She uses internet websites to help explain grammar and videos. PDS allowed her to create her own video to personalize instruction and showed her it is possible to change her old teaching practice into new technology-based ones, learning from peers, colleagues, and even students. It also made her analyze the way she teaches because being in the students' shoes made her realize she needs to be more patient and try to use different ways to grab students' attention and understand their behavior in class.

ITomM4714A: Communications degree and diploma for teaching English as a Foreign Language. He has been a teacher for 14 years. He uses a multimedia projector, a digital book, Blackboard, and a computer for interactive activities. He believes PDS is a complete course with additional materials for individualized learning. PDS has showed him how to use technology in different ways and new tools. If he could not find something, an email to the instructor allowed

him to have a quick answer to continue working. He thinks PDS was a good experience not only for him but for all the teachers who decided to take the course; they now think differently than a month ago, they are more confident using technology in the classroom.

Selection of Material

For the selection of transcripts, I started with the extremes: youngest (IBobM2506, IJoyF2503) to oldest (IZoeF6046, IDonM6952), followed by less (3) years of experience (IMiaF2803, IMil2503) to more (46 and 52, which were also the oldest participants). I continue adding more females, two more than males to represent the trend in the total sample, and participants from both experimental groups: morning and afternoon. I ended at 14 transcripts because I reached saturation, no new information emerged (Merriam, 2009).

The researcher also included all 60 journals (from weeks 2, 3, and 4) downloaded directly from BlackBoard (the platform used to deliver PDS) in the analysis of the data in Atlas.ti 8.0. The journals written by participants during EL Training were uploaded as primary documents with filenames, indicating in which week of the process it was created by the number as the 2nd character in the name of the file which was also tied to the pseudonym of the participant as well as his/her gender, age, and years of experience.

The researcher received 22 final evaluations through direct contact with the director of the Higher Education language institute, which were added as primary documents in Atlas.ti 8.0 as well. The answer rate of 79% is considered high because it was done after PDS had been finished and it was administered directly by the Higher Education language institute.

The 24 sets of field notes from observations and one-on-one mentoring were used as triangulation for qualitative analysis and not entered in Atlas.ti 8.0 but used to support the

evidence of PDS positive impact for technology integration in the classroom. A Summary of Field Notes About Interviewed Participants is presented in detail in Chapter V.

Data Exploration

The second phase or step was conducted using the capabilities of Atlas.ti 8.0. I took an inductive approach to coding; I started highlighting the most important text segments from my primary documents, raw data. Then, I started selecting quotations, and assigning them a name that summarized its content. For the purposes of this research study, quotations are expressions or "structures of experience" (van Manen, 1990, p. 79) and can be in the form of "significant statements, sentences, or quotes that provide an understanding of how participants experienced the phenomenon" (Creswell, 2007, p. 61). I selected 388 quotations, printed a report, and started examining them to find any commonalities and links between quotations. Constant comparative analysis methodology was conducted (Merriam, 2009) and even used triangulation with field notes and observations to ensure consistency.

Specification and Data Reduction

The third step was accomplished using the capabilities of Atlas.ti 8.0. I searched for patterns emerging from the data using an inductive approach. Based on the quotations, I first created 21 axial codes on Professional Development System (PDS) effects of technology integration in the classroom, which could be related to individual, work-related, social network, and changes to PDS, listed in Table 8.

Table 8. First Axial Codes Created in Atlas.ti 8.0

Category	Axial Code
Individual	
1	Active learning
2	Change attitude: Learning is fun
3	Change attitude: Scared/excuses to able/achievement
4	Confidence own skills
5	Hard work & reflection
6	Life-long learning
7	Major learning experience / Take-away
8	New skills
Work-related	
9	Career opportunities
10	Help Students that need additional practice
11	Increase efficiency job-performance
12	Need additional practice
13	Recognition & appreciation skills
14	Students motivated to learn
Social Network	
15	Resources
16	Sense belonging to community
17	Social interaction / Share expertise
18	Support / mentoring / coaching
Changes to PDS	
19	Best part
20	Liked it as it is
21	Suggested improvements

After meeting with an Atlas.ti 8.0 expert, Associate Director for the Center for Teaching Excellence at Texas A&M, I was reminded of the thought process for open coding (Carolyn Sandoval, personal communication, May 4, 2017), and deleted all my quotations and started again, which required a lot of work but shows rigor. I was more focused on answering my research question: How does a professional development system (PDS) affect technology

integration in adult language classrooms? This time I selected the quotations based on the impact PDS had on participants. I ended up with 353 quotations and 25 axial codes exhibited in Table 9. The new categories were Teaching Attitudes, Teaching Practice, and New Skills developed.

Table 9. Second Axial Codes Created in Atlas.ti 8.0

Category	Axial Code
Teaching Attitudes	
1	Able to choose appropriate technology
2	Confidence own skills
3	Continuous learning
4	Discovery new technology / applications
5	Learning is fun / enjoyment
6	Life-long
7	Not afraid of failing
8	Not afraid of technology
9	Up-to-date
Teaching Practice	
10	Able to personalize instruction according to students needs
11	Encourage reflection on content
12	Increase students motivation by using variety of formats
13	Learner-centered teaching
14	More practical / active classes
15	Need additional practice / time
16	Promote collaborative learning
17	Support authentic real-life situation learning
18	Use interactive technology for information exchange
New Skills developed	
19	Better researching skills
20	Better usage of BlackBoard
21	Career development
22	Created own videos
23	Created own website
24	General ICT skills
25	Increase efficiency job/performance

When reviewing the codes and quotation examples with my dissertation committee Chair: Michael Beyerlein, Professor, Educational Administration and Human Resource Development at Texas A&M, I realized that Teaching Attitudes were more a personal instructor change while Teaching Practice was based on performance with students, so I refined my axial codes to the final list, which had 26 codes, enclosed in Table 10.

Table 10. Revised Second and Final Axial Codes created in Atlas.ti 8.0

Category	Axial Code
Teaching Attitudes	
1	Acknowledge importance of reflection & analysis from different perspectives
2	Appreciate access to individualized support / feedback
3	Become continuous / life-long learner
4	Feel able to discover & choose new technology
5	Feel need additional practice / time
6	Feel Thankful / Recognize PDS as an investment
7	Have confidence in own skills
8	Learning can be fun / enjoyable
9	Not afraid of technology, it's okay to fail
10	Recognize benefits of online communication
11	Recognize technology offers broader options
12	Sense of belonging to CoP, PLC, networking
Teaching Practice	
13	Encourage authentic real-life situation learning
14	Feel capable to personalize instruction according to needs
15	Increase student motivation by using variety of formats
16	Learner-centered teaching
17	Made classes more fun
18	More practical classes & active learning
19	Promote collaborative learning / sharing
20	Recognize advantages of assessing resources first
21	Use technology for additional practice/repository info
New Competencies Developed	
22	Better usage of BlackBoard
23	Created own videos
24	Created own website
25	Increase efficiency job / performance
26	Promote career development

Report Data for Interpretation

The final step for analyzing the qualitative data started by using Atlas.ti 8.0 software capabilities to generate a report on quotations by code, to ensure consistency of coding, accuracy on selection, and determine frequency count of codes. I also checked quotations by document to determine where the data was coming from more frequently.

I started using Atlas.ti 8.0 in March 2017, creating a Trial before running all my data, as recommended by Friese (2014). I learned how to input all the documents, create codes and use its different basic analysis tools while experimenting the different approaches for my data exploration and even created several versions of axial codes.

At the end, I become more proficient with it, being able to create groups in my codes according to the emerging themes and color-code them. In Appendix 17.2, a print screen of Atlas.ti 8.0 is presented, showing the 26 codes in the Code Manager, its groups, how many quotations per quotations, the group it belongs to, author, date created, and date modified. The three themes were Teaching Attitudes, Teaching Practices, and New Competencies Developed.

I was also able to group the 96 documents depending of their initial data collection source: interview transcript, journal entry, or exit evaluation. In Appendix 17.3, a print screen of Atlas.ti 8.0 is exhibited, showing the Document Manager that contains the ID of the document generated automatically by Atlas.ti 8.0 when inputted, its name, media type, group it belong to, number of quotations by document, author, date created, and date modified.

An example of the Quotation Manager analysis tool of Atlas.ti 8.0 is displayed in Appendix 17.4. The Quotation Manager is an interactive instrument that can show all the quotation by code and if a quotation is selected, it automatically shows the document to help the

researcher with the context of the quotation. It also permits report creation, which can be produced in pdf or word document format.

A large part of the reporting stage consisted of retrieving contextualized data to begin the process of interpreting meaning. An iterative process was required to make meaning of the data that had been reconfigured with the goal of theorizing what is going on in the data. I even went a step further analyzing word clouds and selected the most used word count by extracting all the quotations that contained that word and making an analysis of its use.

Egan (2002) pointed out that "data saturation is evident when data collection no longer contributes to elaboration of the phenomenon being investigated…It is left to the discretion of the researcher to determine the adequacy…" (p. 286) and at this point, I had reached data saturation. The detailed results of the qualitative data are presented in the next chapter. Findings are grounded in the data from interviews, journal entries, field notes of observations and one-on-one mentoring, and exit evaluations.

The Researcher's Role

Qualitative research is interpretive in nature, which means, "the researcher filters data through a personal lens that is situated in a specific sociopolitical and historical moment" (Merriam, 2009, p. 182). Because personal interpretation brought to qualitative data analysis is inevitable, biases, values and personal interests that the researcher brings need to be explicitly stated. In this regard, Creswell (2003) recommends five main strategies: (a) including statements about past experiences, (b) commenting on connections between the researchers and the participants, (c) indicating steps taken to obtain permission from the Institutional Review Board, (d) discussing steps taken to gain entry to the setting, and (e) commenting about sensitive ethical issues. Following, I explain how these five strategies were interwoven during this study.

As a researcher and doctoral student in Educational Human Resource Development, I aimed to create and investigate a professional development system (PDS) that empowered instructors to use technology integration in adult language classrooms. Regarding Creswell's first and second strategies, prior to this study I had taught in the language institute as an English for Business instructor and in train-the-trainer workshops directed to instructors for the use of specific technology applications or programs such as PowerPoint, Prezi, BlackBoard, and Excel. Having a MA degree in Teaching and having taught in the language institute, I already knew some of the participants but since I came to Texas A&M University to study my PhD I have not been in contact with any of them. I was not teaching English classes during the time of the study; therefore, I could be considered an outsider regarding their teaching contexts. The interviews were done after EL Training, all participants had been my students and felt free to voice their opinion, and I used the same semi-structured interview questions (Appendix 8) to maintain a standardized structure as much as possible.

Concerning Creswell's third strategy, I followed the steps required by Texas A&M IRB to obtain their permission to do this study (Appendix 1 and 2), including approval of email contacts (Appendix 4 and 5), formal consent form from each participant (Appendix 6), pre- and post-test questionnaire (Appendix 7), example of semi-structured interview questions (appendix 8), classroom observation form (Appendix 9), and proposal.

About Creswell's fourth and fifth strategies, my background in technology might raise a concern about how participants answered my questions. Knowing that I am interested in technology, they might respond in socially acceptable ways, which might be using technology for instructional purposes in this case. However, I developed a rapport with participants to ensure that they felt comfortable sharing their experiences and opinions without feeling pressured and

the exit evaluation was done externally by the Higher Education language institute. Additionally, I explicitly stated that there were no right or wrong answers to the questions and that their insights would contribute to the existing research base. Finally, instructors experienced a safe environment to express their thoughts and feelings without judgment believing everybody learn at different pace but each one can learn and research on their own.

Ensuring Quality of Research Findings

To ensure the validity of findings in a qualitative study, Creswell (2003) recommended eight primary strategies: (a) triangulating the data sources, (b) member-checking, (c) providing rich and thick description, (d) clarifying the bias the researcher might bring to the study, (e) presenting negative and discrepant information, (f) spending prolonged time in the field, (g) using peer debriefing, and (h) using an external auditor to review the entire project. Using one or more of these strategies to check the accuracy of the findings would help determine whether the findings are accurate from the standpoint of the researcher, the participant, or the reader (Creswell & Miller, 2000).

Five strategies were employed in this study to ensure the accuracy of findings and interpretations: (a) triangulating the data sources, (b) member-checking, (c) rich and thick description, (d) clarifying researcher's bias, and (e) peer debriefing. First, I used triangulation. The central point of triangulation is to examine a conclusion from multiple vantage points (Patton, 2002; Schwandt, 2001). I used a variety of strategies to triangulate, or corroborate evidence in descriptions and themes, to ensure the accuracy of this study as well of multiple data sources (e.g., field notes, transcripts, participant's journal, etc. (Creswell, 2002; Schwandt, 2001).

Second, I used member checking. Member checking is when the "data, analytic categories, interpretations, and conclusions are tested with members of those stake holding groups from whom the data were originally collected" (Lincoln & Guba, 1985, p. 314). This process provided the study participants an opportunity to review the results to ensure that I correctly interpreted and described their experience (Creswell, 2002).

Third, I used rich and thick description entering the transcript interviews, journals, and exit evaluation in the qualitative data analysis using Atlas.ti 8.0. I analyzed 360 quotations from 96 primary documents resulting in 26 axial codes.

Fourth, I also explained the bias I might have brought into the study by explaining in the previous section the researcher's role including detailed five strategies proposed by Creswell (2003) to explicit state any bias, value, or personal interest.

Finally, I also used peer debriefing. Peer debriefing provides the researcher an opportunity to "step out of the context being studied to review preconceptions, insights, and analyses with professionals outside the context who have enough general understanding of the study to debrief the researcher and provide feedback…" (Erlandson, Harris, Skipper & Allen, 1993, p. 31). I asked an international scholar-practioner that started her PhD journey with me to support me in the process as disinterested peer, a peer who is not involved in the research project to aid in probing the researcher's thinking around all or parts of the research process-, (Lincoln & Guba, 1985). Through these debriefings and meetings, I was able to discuss my biases and challenges while obtaining outside guidance.

Summary

Chapter III reviewed the research design: Solomon four-group using a 2X2 ANOVA for quantitative analysis and observations, one-on-one mentoring, interviews, journal entries and exit

evaluations using Atlas.ti 8.0 for qualitative analysis. The population and study participants were presented including their pseudonyms and demographics. The instrumentation for quantitative data collection: the pre-post questionnaire was described as well as its components: TPACK-EFL and UTAUT. Additionally, each instrument for qualitative data collection was explained in detail.

Furthermore, the data collection procedure and data analysis were explained systematically including a little background of the participants who were selected for interview transcript. Moreover, a detailed rationalization of the axial codes in Atlas.ti 8.0 was given. Finally, the researcher's role was analyzed as well as the steps to ensure quality of research findings. Next, Chapter IV presents the findings and analysis of the data.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Findings

In Chapter IV, quantitative and qualitative findings are presented. The quantitative findings reports the composite average of technology integration scores for the six assessment periods, and the 2x2 ANOVA presents the four post-test composite average of technology integration scores. The qualitative findings narrates the thematic categories developed from the analysis of the journal entries, interviews, and exit evaluations: Teaching Attitudes, Teaching Practice, and New Competencies Developed. In addition, a word cloud analysis is included as validation of previous findings.

Quantitative Findings

The composite average of technology integration scores is the mean of the 58 questions of the pre- post- test questionnaire based on TPACK-EFL and UTAUT described in detailed in Chapter III, Instructor's Questionnaire. The composite average of technology integration score for each group is shown in Table 11.

The first column contains the 14 participants for each of the four groups: experimental (EG1 and EG2) and control (CG1 and CG2). The second and third columns present the composite average of technology integration scores of Experimental Group 1. In the second is the pre-test composite average of technology integration scores and in the third, the post-test composite average of technology integration scores. The fourth and fifth columns show the composite average of technology integration scores of Control Group 1. In the fourth is the pre-test composite average of technology integration scores and in the fifth is the post-test composite

average of technology integration scores. The sixth column presents the post-test composite average of technology integration scores of Experimental Group 2 and the seventh column shows the composite average of technology integration scores of Control Group 2.

Table 11. Composite Average of Technology Integration Score (Questionnaire) Means at Each of the Six Assessments Periods

	Experimental - EG1		Control - CG1		Exper-EG2	Cont-CG2
Item	EG1 Pre	EG1 PosT	CG1 Pre	CG1 Pos	EG2 PosT	CG2 Pos
1	3.88	4.72	4.34	4.50	4.78	4.36
2	3.62	4.62	4.22	4.21	4.64	4.60
3	3.76	4.57	4.43	4.03	4.48	3.90
4	4.34	4.41	4.03	4.31	4.47	3.79
5	4.16	4.57	4.02	4.09	4.60	3.86
6	4.64	4.71	4.07	4.12	4.28	4.02
7	3.97	4.83	4.19	4.22	4.76	3.38
8	3.69	4.66	4.45	3.36	4.45	3.62
9	4.21	4.57	4.09	3.69	4.45	3.93
10	4.36	4.86	3.19	3.62	4.41	4.05
11	4.31	4.66	4.45	4.53	4.47	3.72
12	3.93	4.57	3.55	3.69	4.55	4.24
13	3.63	4.45	3.63	3.93	4.81	3.91
14	3.90		3.95	4.34	4.76	4.47
Mean	**4.03**	**4.63**	**4.04**	**4.05**	**4.56**	**3.99**

The mean of the six assessments periods are shown in Table 11. A greater composite average of technology integration score for the groups that were exposed to the experimental treatment: the Professional Development System (PDS) is exhibited in comparison to the control or no-treatment group. The average of the four groups that had no treatment: Experimental Group 1pre-test, Control Group 1 pre-test, Control Group 1 post-test and Control Group 2 post-test is 4.03 while the average of the two groups that participated in PDS: Experimental Group 1

and Experimental Group 2 is 4.60. As shown in Figure 6, Experimental Groups 1 and 2 reported significantly more composite average of technology integration scores.

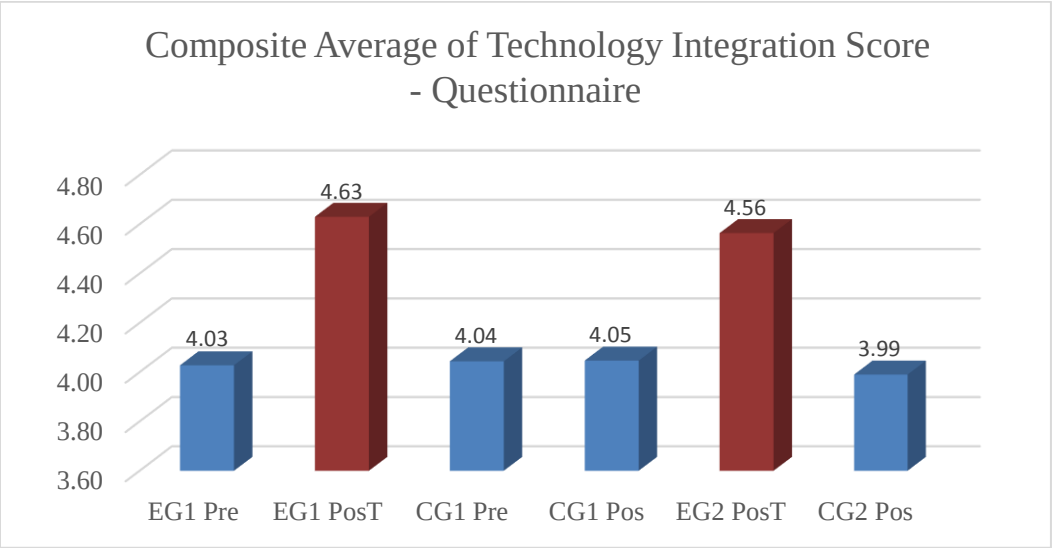

Figure 6. Graphic Representation of Composite Average of Technology Integration Score Means at Each of the Six Assessments Periods.

2x2 ANOVA

The detailed results of the 2x2 ANOVA on the four post-test scores (EG1-PosT, CG1-Pos, EG2-PosT, and CG2-Pos) are presented in Table 14.

The total number of participants per condition are shown in table 12. Sensitization Condition had two levels: 28 participants did not take the pre-test and 27 took the pre-test. Experimental Condition had also two levels and the same number of participants than Sensitization Condition.

Table 12. Between-Subject Factors

Condition		N
Sensitization	No Pre-test	28
	Pre-test	27
Experimental	No Pre-test	28
	Pre-test	27

The descriptive statistics are presented in Table 13. On average instructors that participated in PDS outperformed instructors who do not, independently if they were given a pre-test (means = 4.63 and 4.05 respectively) or not (means = 4.56 and 3.99 respectively). Overall, instructors that participated in PDS had an average of 4.60 (total mean) while instructors who do not had 4.02 (total mean) and the spread of the scores were less for instructors that participates in PDS (SD = 0.15 vs. SD = 0.34).

Table 13. Dependent Variable: Composite Average of Technology Integration Score. Descriptive Statistics

Sensitization	Experimental Condition	Mean	Std. Deviation	N
No Pre-test	No Treatment	3.99	0.34	14
	Treatment	4.56	0.16	14
	Total	4.28	0.39	28
Pre-test	No Treatment	4.05	0.35	14
	Treatment	4.63	0.13	13
	Total	4.33	0.40	27
Total	No Treatment	4.02	0.34	28
	Treatment	4.60	0.15	27
	Total	4.30	0.39	55

The results of the 2x2 ANOVA are shown in Table 14. There was not a significant interaction effect between Experimental Condition and Sensitization in terms of average composite technology integration score; therefore, no simple main effects were required.

Main effect Experimental Condition (PDS treatment) was found to be statistically significant, while Sensitization (taking the pretest or not) was not statistically significant. The participants in the Professional Development System (PDS) group (Experimental Condition, treatment) scored significantly higher than the control group ($F(1,51) = 65.18$, $p = .01$), while the average main effect Sensitization was not significantly different ($F(1,51) = .73$, $p = .40$). The results obtained from the 2x2 ANOVA answered quantitatively the research question of the study: How does a PDS affects technology integration in the classroom? It reported the high significant impact PDS had in its participants.

Table 14. Tests of Between-Subject Effects

Source	Type III Sum of Squares	df	Mean Square	F	Sig	Observed Power *a
Sensitization	0.05	1	0.05	0.73	0.40	0.04
ExpCondition	4.60	1	4.60	65.18	0.01	1.00
Sensitization * ExpCondition	0.00	1	0.00	0.00	0.95	0.01
Error	3.60	51	0.07			
Corrected Total	8.23	54				

*a. Computed using alpha = 0.01

The null hypothesis (Ho) for Sensitization was accepted: Instructors who were administered a pre-test had the same composite average of technology integration score as instructors who were not administered a pre-test. The null hypothesis for Experimental Condition

was rejected: Instructors who participated in the Professional Development System (PDS) – treatment–had a different composite average of technology integration score than instructors who did not participate on the treatment (PDS).

The main effect Experimental Condition: pretest did not have a significant effect in average composite technology integration score between instructors that participated in Professional Development System (PDS) vs. instructors who did not, and the interaction was not significant are shown graphically in Figure 7.

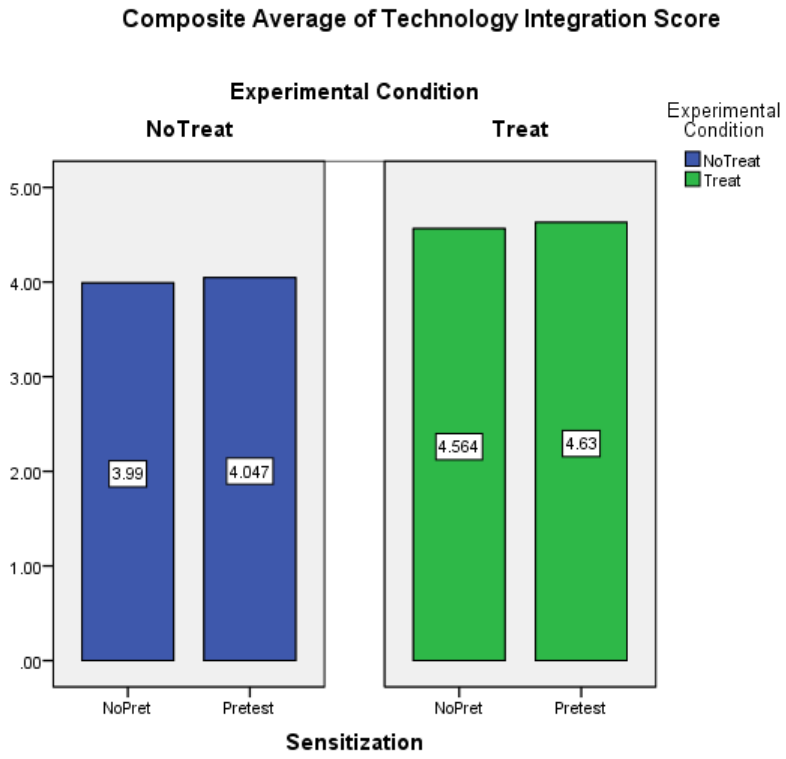

Figure 7. Main Effect Experimental Condition. (Note: Experimental Condition: 'NoTreat' refers to instructors that did not participate in PDS while 'Treat' denotes instructors that participated in PDS.)

The main effect Sensitization is shown in Figure 8. There was a significant difference in average composite technology integration scores between participants that participated in Professional Development System (PDS, treatment) vs participants who did not, regardless if they participated or not in pre-test.

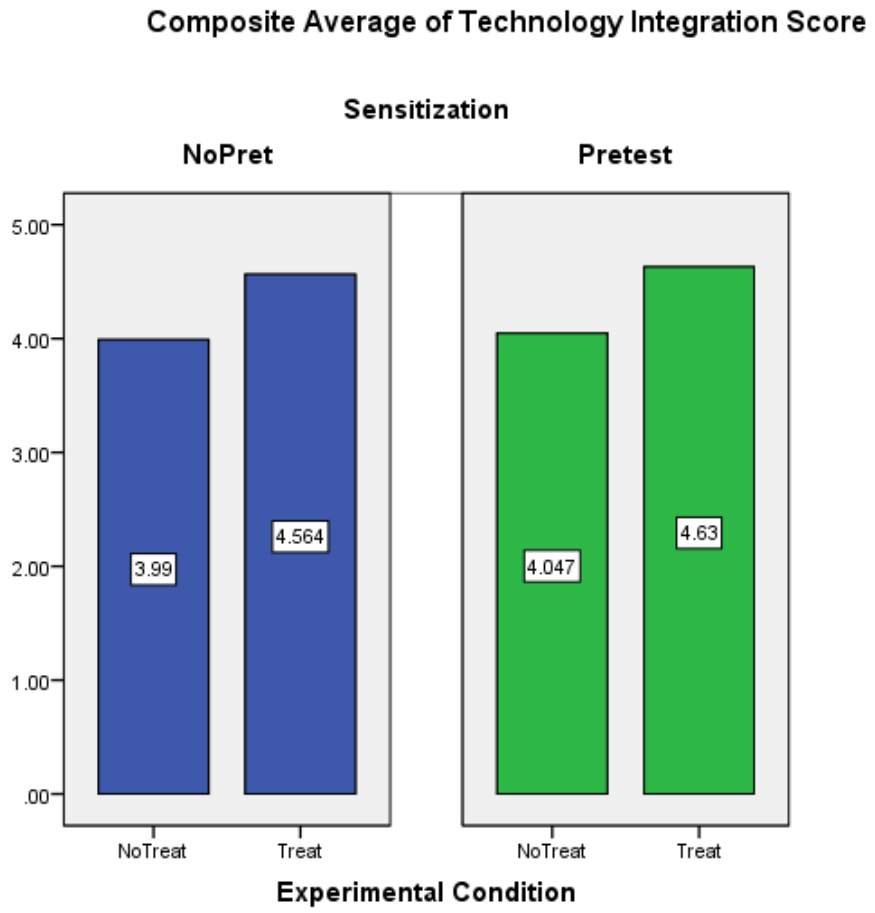

Figure 8. Main effect Sensitization. (Note: Sensitization 'NoPret' refers to instructors that did not take the pre-test questionnaire while 'Pretest' denotes instructors that partook in the pre-test questionnaire.)

Calculation of Simple main effects (SMEs) were not needed because there was no significant interaction.

Qualitative Findings

The purpose of this study was to examine the effects of a professional development system (PDS) on instructors' technology integration in adult language classrooms. These effects are based on the thematic categories emerging from the analysis of qualitative data gathered; including interviews, journals, field notes from one-on-one mentoring and observations, and exit evaluations.

The findings section is divided into three main sections: Teaching Attitudes, Teaching Practice, and New Competencies Developed. The impact PDS had on Teaching Attitudes is more related to personal perspectives while Teaching Practices focuses on relationship with their students. The New Competencies Developed emphasizes the new skills acquired and the effects on instructor's job and career.

The three main categories are summarized in Table 15 with the number of quotations associated to each of them. The most mentioned was Teaching Attitudes with 185, followed by New Competencies Developed with 88, and Teaching Practice with 87.

Table 15. Summary of Quotations

	Totals
Teaching Attitudes	185
Teaching Practice	87
New Competencies Developed	88
Total Quotations	360

Teaching Attitudes

The distribution of the quotations related to teaching attitudes affected by PDS are presented in Table 16 sorted by most commonly mentioned. Twelve subcategories emerged as personal impact that changed teaching attitudes. In the following section, each of them are presented starting with a summary of the quotations and a sample of the quotes selected as an illustration of the change portrayed. On average six examples were selected per subcategory.

The first letter of the name before the quote represents the type of document it refers to (I=Interview, J=Journal, and E=Evaluations) while the last four numbers indicate age of participants and years of experience. The last letter shows their group participation (Experimental Group 1: AM or Experimental Group 2: PM). For example, EIanM4425A denotes Evaluation, 44 years old, 25 years of experience and the complete name of the file follows the same description used in Atlas.ti files.

Table 16. Summary of Teaching Attitudes Quotations

	Totals
Appreciate access to individualized support / feedback	31
Become continuous / life-long learner	21
Have confidence in own skills	21
Feel Thankful / Recognize PDS as an investment	19
Feel able to discover and choose new technology	18
Recognize technology offers broader options	16
Feel need additional practice / time	13
Recognize benefits of online communication	12
Not afraid of technology, it is okay to fail	11
Learning can be fun / enjoyable	9
Acknowledge importance of reflection & analysis from different perspectives	7
Sense of belonging to CoP, PLC, networking	7
Total Teaching Attitudes Quotations	185

Appreciate access to individualized support and feedback. The most prevalent teaching attitude cited. Participants felt motivated, engaged, and in a great environment to learn; more importantly, they recognized the feedback helped them improve their teaching. Instructors valued being able to ask questions at any time in the workshop as well as the encouragement to try. Participants in PDS esteemed the support and motivation offered throughout the course. Participants even described how the individual attention by the instructor allowed them to fill gaps making PDS effective, and how different needs and enquiries were attended to when offering individual help. Instructors that participated in PDS were grateful for the support offered at all times.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected seven out of 31 based on their overall contribution to illustrate participants' perspectives and experiences.

- EIanM4425A mentioned, "The instructor was very willing to help, she created a nice environment for participants to feel motivated, it did not matter the tech level the participant had. All of us were engaged with the lesson we had."
- ENoeF5120A said, "Getting feedback was really important as well as guiding me in the process of transforming some of my old teaching practices into new technology-based ones."
- ISueF3009P stated, "I like coming to class because we need somebody to push and help us, especially with new things because if we are at home, alone, we can explore but if someone is not available to help us, then at the end we will have doubts. That's why the professional development system was very effective because we were able to ask questions to the instructor at any time."

- ENoeF5120A commented, “I really enjoyed this course mostly because of the instructor´s positive attitude towards each student in the class. She encouraged us all the time, we felt great getting all her support as she motivated us in a way that we didn´t feel bad when making mistakes and felt free to ask any question.”
- EDonM6952P detailed, “What I found particularly advantageous was the individual attention given by the instructor to each of the participants. In courses that deal with technology it is rare that the students learn at the same speed. It is typical that you miss an instruction or step and get behind and then it is almost impossible to catch up. In this case, the instructor was promptly by your side helping you to fill in the gap. This made it a lot easier and more effective than other courses I have taken before.”
- EJoeM4813P specified, “The instructor was able to attend the different needs and enquiries from the participants. Evidence of that is that when I had a question or comment on a certain topic, the instructor shared with me some websites and materials, which I was able to dig into. The instructor was able to monitor each participant and helped whenever was needed.”
- ENoeF5120A explained, “The support was there all the time, the instructor answered quickly to any questions or requests we asked for.”

Become continuous and life-long learner. The second most widespread teaching attitude mentioned. Instructors that participated in PDS acknowledged it as the starting point to look and explore more, continue improving and researching. They felt hungry to learn more and become a better teacher. Participants realized PDS offered abundant reference material to practice and continue learning and they were willing to become life-long learners.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of 21 based on their overall contribution to illustrate participants' perspectives and experiences.

- IJoeM4813P commented, "I think this is the starting point and now I have to look and explore more and see what other changes I can do in my classes, and also in my professional development."
- J3BobM2506A said, "We have to be always learning and trying to improve."
- J4MayF5930P expressed, "I feel I have improved a lot! It have empowered my motivation and now I am willing to continue doing research deeply."
- J3DonM6952P mentioned, "I'm hungry to learn more so I can teach them more and better. I'm sure they will be better teachers like that. And I'll also be a better teacher trainer."
- EDonM6952P explained, "Another point is that the teacher gave us abundant reference material so that we could study and practice on our own. That means that even after finishing the course we can continue learning."
- J4NoeF5120A summarized teachers' attitudes by stating "Now, I believe what our great teacher has been telling us throughout the course: I´m a life-long learner and I´ll keep learning. Thanks!!!"

Have confidence in own skills. The third most prevalent teaching attitude expressed. PDS participants articulated their confidence, the "I can" feeling, how in the past they used to just upload videos but now they can help students use technology. Instructors that participated in PDS not only declared they could do more things with technology but do things they have

thought were too far from their reach or not able to do. They mentioned that technology can help and is not hard to use, they developed confidence.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of 21 based on their overall contribution to illustrate participants' perspectives and experiences.

- IEmaF4215A stated, "Geez I feel so confident now. I can open the computer and I can use this and I can do that and I know that the results are going to be great, so I feel confident."
- IAmyF2808A mentioned, "now I can say that I can help my students to use technology. In the past, I just uploaded some things but it was not the real help that I wanted to provide to my students. Now, I know that this change is real, I can touch it, I can see it."
- ITomM4714A explained, "I know now that I can do many other things than the ones I used to do."
- J2NoeF5120A commented, "I feel like I can do many things with technology which I´ve thought was too far from me to reach."
- EAmyF2808A detailed its value, "It was worth it because I was able to do things I thought I was not able to do."
- J3EmaF4215A said, "When I think back about what I have been learning in this course is that technology is here to help me design and make my classes more enjoyable and memorable. This experience has taught me that technology is not that hard to understand and I have become even more confident when using it."

Feel thankful and recognize PDS as investment. Instructors that took part in PDS explicitly said they felt grateful for having the opportunity to participate. Participants also

recognized how PDS turned into an investment for them, a development, and an improvement. They even commented on how people who missed it, regret it, and how all participants have grown personally and professionally.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected nine out of 19 based on their overall contribution to illustrate participants' perspectives and experiences.

- J4NoeF5120A explained, "I feel so happy I was invited to do this course and really grateful to all people involved in it."
- EZoeF6046A revealed, "It has given me knowledge, confidence and power. I am forever grateful!"
- EEmaF4215A stated, "My time spent in this course has become an investment."
- IBobM2506A detailed, "I'm very happy, thank you, worth coming here twice a week."
- IZoeF6046A verbalized, "I was happy! I learned a lot and I think that's enough for me. And I told you, I learnt from 1 to 8 to a 10, or whatever, it is a huge development for me."
- IBenM5020P stated, "helped me to improve and being on the new frontier of education and knowledge."
- IEmaF4215A mentioned, "people who missed it, regret not to come. Even though I was offered a class, I preferred to attend PDS."
- ENoeF5120A expressed, "I firmly believe that taking this course was of great value to get updated and keep learning by growing as a person and professionally."
- ITomM4714A explained, "It has been a very good experience for me. I consider that the course will help a lot, not only me but all the teachers who decided to take this course."

Feel able to discover and choose new technology. Instructors that participated in PDS were motivated to spend hours on the web researching to be able to choose what their students needed. Participants comprehended the need to continue discovering on their own and the effort that entailed but were willing to. They also recognized the importance of thinking how students could apply it.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of 18 based on their overall contribution to illustrate participants' perspectives and experiences.

- J3IanM4425A said, "Last week I started to feel empowered to use technology, I think motivation in order to create new material, basically digitally, made me spent hours looking for different tools on the web."
- IBenM5020P mentioned, "just being aware of all the different things that we can use and then we can actually choose whatever we need according to the situation."
- ELuzF2910P stated the "need to keep discovering on my own what other activities I can do with technology."
- J2JimM5310A explained, "In order to have more resources, teachers need to do research about the last technology and put it into practice. At the beginning it would be hard, but then it will become a powerful tool."
- J3ZoeF6046A commented, "I am not only adding new technology but deeply thinking of how they - my students - could apply it in order to make it work."

Recognize technology offers broader options. Instructors that participated in PDS declared how useful it was to learn the great range of possibilities technology integration present and the advantages they could have from mastering its use. Most participants were not even

aware of the possibilities before; therefore, they could not use it but thanks to PDS they can apply them now.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of 16 based on their overall contribution to illustrate participants' perspectives and experiences.

- IBenM5020P mentioned, "Now, I have to work on using it, but it is easier to work on something that you already know, when you have options or know that exist, before I didn't even know that these things even exist."
- IEmaF4215A explained, "Technology is here to help you and I think I can take really good advantage of this, I really didn't know I could, that much."
- J2EvaF3812A said, "Since the very first moment you started explaining us about PDS, I started broadening my horizon."
- J2IkeM4220P commented, "I have been surprised at the range of possibilities unfolded before me. In particular, the use of iPads described in the paper 'Where do you switch it on?' caught my attention, and that is what I always wanted to put into practice in my classroom."
- J4BenM5020P expressed, "I see a great amount of new possibilities opening there for me as a teacher and for my students to learn better, faster and with higher quality. I see a huge change in the world coming with all of these new resources appearing for anyone to use."
- IBenM5020P summarized teachers' attitudes by declaring "This kind of classes transform you because the problem is that teachers don't know how many tools they have out there

so they are not able to develop a new course, establish a new teaching routine or technique, but once they learn about it they are able to apply it."

Feel need additional practice or time. Some PDS participants considered they required more time to keep discovering technologies that could be integrated in their classes, especially to read articles. Several instructors that participated in PDS desired to continue meeting and practicing to become more confident and internalize all the information received.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of 13 based on their overall contribution to illustrate participants' perspectives and experiences.

- IAmyF2808A stated, "I know I have to work more in this but I really liked it."
- IPamF5008A mentioned, "I think we need more time to read the articles because they're really interesting and I think we have to have more time."
- INoeF5120A revealed, "in my case I would like to have more time to practice more because it is a matter of practice and get more confident."
- EIanM4425A expressed, "I wanted it to last longer."
- J4BenM5020P detailed, "I need more time to keep on practicing and 'digesting' all of the information I have and I am still receiving."

Recognize benefits of online communication. Some instructors that participated in PDS had never experienced first-hand how online support can allow to continue researching 24x7 or thought of the possibility of receiving a quick virtual answer. Participants learned hands-on how online communication could be encouraged to help students engage.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of 12 based on their overall contribution to illustrate participants' perspectives and experiences.

- IEmaF4215A expressed, "I have never studied a course like this before. I was face-to-face with the teacher during the whole program at the University, and I never thought it was going to be so much advantage for myself, for the way I see, for the way I am for example. This helped me a lot because this gave me the support, I could ask my teacher at night by email, the teacher would answer me back and then I could continue on my research, and you know, kept on learning more."
- ITomM4714A stated, "I could find everything I needed and when I didn't find something I just emailed the instructor and I received a quick answer."
- EBenM5020P mentioned, "The online component was very useful and encouraged communication."
- J2SueF3009P revealed, "Another thing I consider useful is the fact that students can ask their questions through a blog or forum."
- J3AmyF2808A explained, "Students need to practice outside the class and not only that but also they have to be in touch with me [the instructor] in order to know the tasks and get the information they require to get more practice."

Not afraid of technology, it is okay to fail. Some participants were scared at the beginning but felt great when realized they could learn how to use technology because the environment was friendly. They also acknowledge the possibility of failing but trust in themselves, continue, correct it, and have plan B ready just in case. Instructors that participated

in PDS shared previous failure, how they had overcome it, how they discovered to keep trying, and how they become empowered.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected seven out of 11 based on their overall contribution to illustrate participants' perspectives and experiences.

- IAmyF2808A explained, "I really liked it and at the beginning I was scared but then I got it, and I liked it."
- ITomM4714A mentioned, "old teachers were afraid of at the beginning. It was going to be very difficult but now we can see it is simple and friendly, all the environment is friendly."
- IBobM2506A disclosed "not being afraid of trying new things and fail because I can say I failed in my final presentation because I couldn't present all I want but that's technology, sometimes it fails so you have to trust more in yourself than in technology" and "PDS has helped me to get out of that feeling and to know that everybody is going to fail, you just have to continue and correct it, keeping in mind that you have your own plan and your plan B just in case."
- ISueF3009P revealed, "At the beginning I was not familiar with technology and I thought that it was going to be difficult to start something new. I was afraid of using technology, because it has happened to me that when I use something I think that I'm going to have problems or damage the computer, or something else, viruses, everything, so in the past I didn't use to continue. I thought I was going to have new viruses on my computer, so I would stop and that prevented me from doing a lot of things. Now, I do not have any fear at all, I just explore and continue."

- J2BobM2506A said, “I have discovered that it is just all about trying and not being afraid of failing. So I'm encouraged to start learning and trying about new tools in my teaching.”
- J4ZoeF6046A summarized instructors’ attitudes by expressing “I don´t feel afraid of it, I do not shy from it nor avoid it....Now, I feel EMPOWERED!”

Learning can be fun and enjoyable. Instructors that participated in PDS admitted feeling happier and enjoying their classes again, motivated and excited to keep learning, they felt it was a pleasure to participate in PDS. Participants were willing to enjoy intensely the endless learning process.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of nine based on their overall contribution to illustrate participants’ perspectives and experiences.

- IJimM5310A said, “I have fun and I feel happier” and “now I am beginning to enjoy my classes again.”
- IZoeF6046A stated, “Learning is an endless process which is wonderful because it is motivating as well, you feel attracted, you feel excited, not only your students but you too!”
- EIanM4425A mentioned, “It was a pleasure to participate in this program.”
- J2EvaF3812A expressed “I know that this is the very beginning of the new road and I am here willing to explore and enjoy it!”
- J4ZoeF6046A disclosed, “What enjoy the most was working on my project/s. I was always afraid of technology; however, today I embrace it. I have learned to enjoy it...deeply.”

Acknowledge importance of reflection and analysis from different perspectives. Instructors that participated in PDS realized the learning advantages of using technology and possible consequences. They also sensed empathy for students because of their experience as student teachers; they relate to how students sometimes feel. They contemplated being more patient and trying different approaches with their students.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of seven based on their overall contribution to illustrate participants' perspectives and experiences.

- IBobM2506A mentioned, "I always did things with technology but I had never thought what were my advantages by using technology, why should I use technology and what were the advantages over not using technology in class, and what could be the possible future consequences in class."
- INoeF5120A emphasized, "I have to analyze more the way I teach and also think as student, be on the students' shoes because now that we have been working with these tools I was a student, no? I have been a student, and in that way I can understand how students feel when sometimes you give information and they don't get it at first. So I have to try to, maybe be more patient and try to use different ways in order to get students attention and also to understand."
- EEmaF4215A expressed, "After the face-to-face classes, I had time to reflect and process the information at home and improve what I had previously done."
- ENoeF5120A disclosed, "Each lesson was a great opportunity to reflect, discuss about important issues and the material we were given to read."

- J2NoeF5120A mentioned, “just reflecting on how to use it and substitute some old fashioned techniques, it´s just a great step I´m making.”
- ENoeF5120A summarized instructors’ attitudes by stressing “The online component was very useful, very interesting material to read, learn, and lead to reflection.”

Sense of belonging to Community of Practice (CoP), Professional Learning Community (PLC), networking. Instructors that participated in PDS ascertained the impossibility of finding all new applications when working alone, and recognized the importance of interaction and collaboration because everybody is involved in the same process, sharing at all levels. Participants were required to subscribe to electronic resources such as electronic newsletters or twitters and were compelled to interact and participate in the CoP and PLC by experiencing first-hand the feeling when everybody’s opinions are welcome.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of seven based on their overall contribution to illustrate participants’ perspectives and experiences.

- IBenM5020P mentioned, “Shows you that you have to keep on exploring and talking to people because you alone will never find all the applications that exists and applications are being created every day so you have to talk and interact with other coworkers or colleagues to share.”
- IJoeM4813P said, “everybody is facing the same problem, but there are people out there that are doing things and that we are not alone, we are in the same process.”
- IBenM5020P explained, “Actually we're going into a society where sharing is an everyday way of life, perhaps it was not a fact in the world 10 or 15 years ago, people were very careful not to give too much information to other people, but now-a-days

everybody shares; they create and they share, they find and they share, collaboration is increasing among people, among students, coworkers, colleagues, and I think that we need to understand that."

- IZoeF6046A revealed, "I really enjoy all the links that you gave us. I have already subscribe to *Teachers Too, Education Week*, and I have been reading and it is very interesting."
- EJoeM4813P disclosed, "The environment she created was pertinent to interact and participate. The classes were facilitated appropriately and participation was always there and everybody's opinions were welcomed."

Teaching Practices

The distribution of the quotations relating to teaching practices impacted by PDS concentrated on their rapport with students are presented in Table 17, sorted by most commonly mentioned. Nine subcategories emerged as changed teaching practices in relationship with their students. In the following section, each of them are reported starting with a summary of the quotations and a sample of the quotes selected as an illustration of the change depicted. On average five examples were selected per subcategory.

The first letter of the name before the quote represents the type of document it refers to (I=Interview, J=Journal, and E=Evaluations) while the last four numbers indicate age of participants and years of experience. The last letter shows their group participation (Experimental Group 1: AM or Experimental Group 2: PM). For example, J2NoeF5120A denotes Journal Module # 2, 51 years old, 20 years of experience and the complete name of the file follows the same description used in Atlas.ti files.

Table 17. Summary of Teaching Practice Quotations

	Totals
Increase student motivation by using variety of formats	22
Promote collaborative learning / sharing	14
More practical classes & active learning	9
Encourage authentic real-life situation learning	8
Feel capable to personalize instruction according to needs	8
Made classes more fun	8
Use technology for additional practice/repository info	7
Learner-centered teaching	6
Recognize advantages of assessing resources first	5
Total Teaching Practice Quotations	87

Increase student motivation by using variety of formats. The most mentioned teaching practice affected by PDS. Instructors that participated in PDS learned how to create videos, their own website, and use BlackBoard more efficiently. They were also guided on how to conduct research on the internet, which permitted them to add variety to their classes, add examples, and increase participation from all learning-styles students. Participants appreciated the new tools to make classes more interesting and effective. They even shared some examples when recording and watching a video in class, and how students are more engaged when they are presenting.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of 22 based on their overall contribution to illustrate participants' perspectives and experiences.

- ISueF3009P explained, "I have been able to add variety to my classes. I can not only use PowerPoint but also create videos, before I was not comfortable using videos in my class

but now I can even create them and show my students how they can also access them in my web page."

- IZoeF6046A disclosed, "now I have an example, I go to internet and people talk about making an essay, writing memos, and writing reports. They are looking and reading so it's not ugh, it is a different approach!"
- J2AmyF2808A added, "It is really important not just for me but also for my students. Everyone is going to have the chance to participate even those students who couldn't be able to be in class or many who are shy and prefer to participate in other ways."
- J2DonM6952P stated, "provide me with tools to make my classes a lot more interesting, varied, colorful, and effective."
- J2JoyF2503A detailed, "In another opportunity my students created a video based on their favorite movie. They wrote a script even dressed as the characters they were playing. During the written production, I checked their grammar and vocabulary, making sure they were appropriate and according to their level. Once the script was approved they proceed to practice the dialogues and record the video. It was lots of fun to watch the videos in class."
- J4SueF3009P emphasized, "I feel that my students are more engaged and enjoy the different ways I present something."

Promote collaborative learning and sharing. The second most prevalent teaching practice impacted by PDS. Instructors that participated in PDS started implementing ways for students to share their work with the class. For example, using their recorded video or newly created website enabled students to share their learning and improvement. Participants also created discussion boards on BlackBoard or forums, blogs, or journals to enable students to keep

discussing class topics. They even created their website to enhance communication with students.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of 14 based on their overall contribution to illustrate participants' perspectives and experiences.

- IBenM5020P mentioned, "I have implemented a student video recording and part of what I am changing is the way they are going to show that to each other because so far they kept their videos for themselves."
- J2MegF3010P explained, "Sometimes I ask students to create videos as a part of the project showing how they have been working so they can share it with the class."
- IBenM5020P expressed, "using the web page of the class all the students can share and watch each other videos, and everybody can share what they have learned and how much they have improved."
- J3AnaF3104A stated, "Creating forums, blogs and journals are really helpful to keep students discussing topics that were brought up in class."
- J2MegF3010P disclosed, "I am planning on opening a discussion board on BlackBoard for my courses and encourage students to use it. It will be very useful since even though they study together they do not talk to each other outside the classroom.
- J3AnaF3104A conveyed, "Creating a website through Weebly is a good idea to enhance communication between our students, a creative way to develop our classes adding useful links, videos and so on."

More practical classes and active learning. The third most stated teaching practice affected by PDS. Most of the instructors that participated in PDS built their own websites to use

as a tool in class to make their classes more practical, adding varied content depending on students' needs. Some participants changed their role, now that they are monitoring students when actively practicing.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of nine based on their overall contribution to illustrate participants' perspectives and experiences.

- IBenM5020P mentioned "I am building my own web page in order to have the students use it as a supplemental source of information, interact with them a little bit, and as a way for them to use it as a tool in the class."
- IJimM5310A expressed "now my classes are not so theoretical, they are more practical."
- IPamF5008A disclosed, "the links that I have uploaded are varied, they have dictionary, a link that they can download eBooks, and more things."
- J2MaeF4510P voiced, "I have created special vocabulary tools for them [students] to learn specific equipment related to bar, especially because of the time of the class most of them come from work and there is a need to keep them active and participating."
- IMiaF2803 communicated "I have changed my role because now students practice more actively and I'm monitoring their work."

Encourage authentic real-life situation learning. PDS participants acknowledged the relevance of using material that is pertinent to students and that is tied to what is being covered or interesting to students. They also recognized students like technology and that it is part of their world. Instructors that participated in PDS valued the opportunity technology bestowed in students by practicing daily real-life language while motivating them to relate it to their own

experiences and allowing new interactions with the language to explain and avoid common mistakes.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of eight based on their overall contribution to illustrate participants' perspectives and experiences.

- IBenM5020P shared "The information that I'm going to put in the website is going to be related to what we are doing in class and a bit more so in their free time they can use it as a tool in order to watch more videos, or in order to look for some grammar structures that perhaps we have not covered in class."
- IJimM5310A declared, "it's a way to teach my students new things and I can approach them because I can be in their world because they love technology. Okay, I think that they feel more comfortable with it!"
- ISueF3009P expressed "I want to apply all the things you have shared in my class, in real-life situations."
- INoeF5120A verbalized, "They were motivated and engaged, at least by looking at the pictures and reading they got ideas because after that I asked them to write their own experiences."
- J2EmaF4215A revealed, "The fact of using BlackBoard and being able to make a video is so practical. I believe that the benefits are endless because I can even take pictures of previous corrected writings and explain to my students how to avoid common mistakes (and I am just beginning)."

Feel capable of personalizing instruction according to students' needs. Instructors that participated in PDS realized first-hand technology can permit students to look for

information on their own while teachers provide additional help to students who need it without neglecting anyone. Participants could create their own website to fit the needs of their students or generate a personalized video for their instruction.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of eight based on their overall contribution to illustrate participants' perspectives and experiences.

- IBenM5020P disclosed, "if they do not have other tools, you have to help the ones that are a little bit slower, and the other ones are going to be a little bored. Although you can also use some of the typical techniques where the fast learner help the slow ones, you can do that in class, but it could also be helpful for them to look for their own information."
- IJoeM4813P mentioned, "Some students are going to do it quicker than others while others are going to need more time, so we have to plan for that in the instructions that we are giving them."
- IPamF5008A expressed "To prepare and finish my website with important information for my students. It is really simple but I think interesting for them."
- INoeF5120A felt empowered to create a small-personalized video "I have been trying to use more technology, not only the pages that I find in internet but also creating small pieces, no? A video or information for my students, very little but personalized."
- J4AmyF2808A revealed, "I am sure that this knowledge is actually helping me to solve problems; for example, I used to spend too much time trying to find the right video to introduce a topic, now, I know I can create my own video and that's what I like about it. It is amazing because I can do what I want and personalize material that I have recycled."

Made classes more fun. Some instructors that participated in PDS stated their desire to make their classes more fun, being able to avoid boring parts from the required textbook by using technology and replacing them with more interesting material. Technology integration allotted participants to create more interactive classes to motive their students to participate, and produced their own personalized fun websites that could be updated every day.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of eight based on their overall contribution to illustrate participants' perspectives and experiences.

- IJimM5310A expressed "from now on my classes are going to be more fun and my students will enjoy them!" and "I can omit lots of parts because I used technology, it's more fun. I think some topics from the book are really boring so I can make them more interesting."
- IZoeF6046A revealed "the main reason is because I have seen my students motivated, they enjoyed it, they are taking part happily, is not, oh, 3-hour class, ah, how long is this? Right? No. They are happy and that motivates me."
- IJimM5310A disclosed "my dream was to create a web page but not one like BlackBoard, okay? No, no, I wanted something from scratch. Therefore, I created something friendly. I do not want to teach theoretical classes no, I want my students to practice; for example, to learn a new word every day, new activities, and have fun, that is the idea" and "learning without fun is not good and students should enjoy classes, so I decided to create my own webpage."

Use technology for additional practice and as repository of information. PDS participants disclosed that technology made their work easier because it fostered more class time

thanks to online posting, and the technological component could also be used to reinforce learning and had different ways of presenting. Instructors that participated in PDS learned first-hand the benefits of students reviewing material before class to be able to guide them during class and the opportunities online material give students and teachers; especially if somebody is absent.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of seven based on their overall contribution to illustrate participants' perspectives and experiences.

- IAmyF2808A stated, "it makes my work easier and I think that it helps me and I am less stressed than I used to be. Sometimes I don't have the time to cover, all the pages and now I am doing it, so I am able to finish all the pages I have to cover and my students also do not miss any part of the lesson that is important."
- IEmaF4215A mentioned, "I have changed the way I present, I am using the technological component more frequently as a companion."
- ISueF3009P declared, "I can share my link and my students can access it. Or, I can also have a different way of presenting things, vocabulary, grammar, videos, and audios."
- IEmaF4215A stated, "Oh, my vision is different now, I feel so much lighter (laughs). Because now I can say, you can do this, and I can send something to do to my students, and I know that next session is going to be completely different because they will grasp something, and I can guide them. It is better if they do not have anything and everything is waiting for me, so the load is not that heavy now. That is why I feel lighter."

- J2BenM5020P articulated, “I have had many students absent due to business trips, and with the use of some of the tools learned I am able to make their lives easier; and mine too.”

Learner-centered teaching. Instructors that participated in PDS acknowledged that students need to feel in control of their learning process to avoid feeling demotivated or bad at learning. PDS participants loved the opportunity to have technological tools to engage students in their use of English actively, having activities that use communication skills, and making them responsible for their learning while giving appropriate feedback. The ability to post links for students to practice allowed them to actively engage and perform using the language as long as needed.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of six based on their overall contribution to illustrate participants’ perspectives and experiences.

- IEmaF4215A revealed “the importance of the student by himself being able to control and to feel that he or she is in control of the process instead of the other way around, and they get demotivated really easily because they think: ‘I am bad at this’.”
- J2BobM2506A verbalized, “It was fantastic. The idea of having little tools to engage students and to help them to be in touch with English as they like doing it.”
- J3ZoeF6046A recognized “we have become aware that our teaching methods have to drastically change. Teaching cannot be focused on the instructor. This belongs to the past. Teaching and learning is focused on the student who need their learning to be active” and “of course all my lessons are now focused on my students’ activities, communications

skills, making them responsible for their learning, etc., and giving them challenging feedback, etc."

- IMiaF2803 stated, "Posting a link allow students to practice not only in class but also at home, and this link can take you to another link which give students practically unlimited resources."

Recognize advantages of assessing resources first. Instructors that participated in PDS expressed the importance of doing an analysis first to determine best course of action for each case, technology is not the answer every time. It is a process that demands verification of resources available, determination of ability and level of students, etc., in order to find the best tools to succeed, not only in the classroom but also when assigning homework.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of five based on their overall contribution to illustrate participants' perspectives and experiences.

- IBobM2506A mentioned "having the idea that not always using technology is the best thing was also one of the things that open my mind because I was always here thinking technology is what I have to teach or what I have to use but sometimes it is not very useful."
- IJoeM4813P stated "now I understand this is a process, so we have to analyze first before making a decision of what style, technique, or even what technology we are going to use with students" and "first you have to analyze the resources you have, see the level of the students and their use of technology and resources they have, and of the institution as well because if you do not have the technological resources, oops, you have to do plan B."

- J2DanM3208P declared, “I noticed that technology can easily be integrated into our daily classes. The only necessary thing is to think of our students' needs and what the best tool is for them to get the best out of it. These tools will definitely be our best ally to succeed. I would need to dedicate much more time to planning in order to create a resource that is really effective not only for me but also for my students.”
- IJoeM4813P disclosed “It made me think that when I plan a class I not only have to consider the level of English of the student but also his/her technological knowledge and help prepare the students to use the resources that I will require them to use in class or as homework.”

Developed New Competencies

The distribution of the quotations related to new competencies developed by instructors after attending PDS are exhibited in Table 18, sorted by most commonly mentioned. Five subcategories emerged as new skills developed and the effects on instructor’s job and career. In the following section, each of them are presented starting with a summary of the quotations and a sample of the quotes selected as an illustration of the change represented. On average five examples were selected per subcategory.

The first letter of the name before the quote represents the type of document it refers to (I=Interview, J=Journal, and E=Evaluations) while the last four numbers indicate age of participants and years of experience. The last letter shows their group participation (Experimental Group 1: AM or Experimental Group 2: PM). For example ISueF3009P denotes Interview, 30 years old, 9 years of experience and the complete name of the file follows the same description used in Atlas.ti files.

Table 18. Summary of New Competencies Developed Quotations

	Totals
Increase efficiency job / performance	34
Promote career development	21
Better usage of BlackBoard	15
Created own videos	9
Created own website	9
Total New Competencies Developed Quotations	88

Increase efficiency on the job and performance. The most stated new competencies developed in PDS. Instructors expressed that participation in PDS provided them new tools to improve their teaching and some believed every teacher should participate because it changes not only their teaching experience but their teaching philosophy, as well. Participants admitted that now they not only knew how to organize their Blackboard but also they were able to use educational tools to make their teaching more interesting, fun, and successful in meeting students' needs. Instructors that participated in PDS acknowledged its positive impact in their teaching practice giving as examples the design of their own website, creation of blogs and forums to keep in contact with students, and the production of videos and movies with the opportunity of becoming updated regularly.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected seven out of 34 based on their overall contribution to illustrate participants' perspectives and experiences.

- IBenM5020P mentioned, "I think it was great! I think it has given me new tools to improve teaching, the way I work, the way I see things, and the way I teach my students"

and “I think every teacher should go through this experience because I think it really changes the whole teaching experience and the whole teaching philosophy.”

- ISueF3009P expressed “I am doing really well in using my Blackboard because in the past my Blackboard used to be a real mess, I did not have order in sharing the files, I just share the files randomly but now I know how to organize them and students do not get confused.”
- ENoeF5120A revealed, “Before taking this course, I had been using some basic tech knowledge and never had the right person and time to learn to use educational tools which are very useful to make our teaching practices much more interesting, fun and successful on meeting students’ needs.”
- ETomM4714A verbalized, “I recognize the positive impact of the course. It fostered creative thinking, promoted new ideas, encouraged problem solving, and supported experimentation.”
- J3SueF3009P stated, “In this training program I have learnt useful things I can apply in my classes. For instance, I had the opportunity to design my own web page, which I consider to be a helpful tool for my students. Another important thing I want to highlight is that I was able to create blogs or forums so that I can keep in touch with my students.”
- J4JimM5310A declared, “I have got such good experience that now I can improve my classes using technology. Now I can create and update my webpage and make movies. I hope I keep being up-to-date with the latest technology.”

Promote career development. The second most articulated set of new competencies developed by PDS. Some instructors that participated in PDS believed they have mastered different technologies that made them better than most teachers in Peru; especially in the

competitive market, PDS was a mean to differentiate themselves. Participants felt enhanced, better teachers, more confident, and able to take on more challenges, as one participant mentioned, thanks to her successful experience in PDS, she deemed herself ready to take part in an online component course in Spain next year. PDS participants recognized technology integration is a process that changes their teaching practice while growing their knowledge and experience not only professionally but personally too.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected seven out of 21 based on their overall contribution to illustrate participants' perspectives and experiences.

- IJimM5310A pronounced "I have seen that I have mastered a lot of things and now I feel that I am way better than most of the teachers in this country."
- IJoeM4813P explained, "Because right now the way the market is going you have to look for something that differentiate yourself in comparison to the rest."
- IZoeF6046A verbalized, "To me, it has been an enhancement; I feel that I am a better teacher."
- EEmaF4215A declared, "Now that I feel confident of how to use a platform, I am taking advantage of using the platform in my job and I am planning to take a course in Spain with an online component."
- J2JimM5310A disclosed, "I think the quality of my classes and the quality of my students understanding had improved because they are used to technology and they love it. As I read in the article, I think it´s a long process to change the way we teach but in the end, my knowledge and my experience will grow."

- J2JoeM4813P revealed, “Personally, these tech integration could help do my job more professionally but also I could be doing online and remote teaching. I can have a bigger audience. This puts me ahead of the rest in this competitive world.”
- J4NoeF5120A expressed “I´m going to use all tech knowledge I´ve been taught, it´ll make a good difference in my teaching practice and of course very useful for my personal use, too.”

Better usage of BlackBoard. The third most widespread new competency developed from PDS experience. Instructors that participated in PDS understood how BlackBoard could broaden students’ perspectives and recognized that even students were surprised by the quantity of material they could have access to. PDS participants acknowledged the different capabilities and options BlackBoard offered not only for students but for themselves to save their time as when being able to import/export courses instead of downloading and uploading everything every time. Instructors started using BlackBoard more often and with confidence, organizing it, sending emails, participating in forums, uploading videos, creating announcements, discussion boards, and even some online quizzes.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected seven out of 15 based on their overall contribution to illustrate participants’ perspectives and experiences.

- IJimM5310A revealed “Blackboard broaden students’ minds. For example, something that I didn't know was that you can have contact sessions with the students and now I know that you can do it.”
- IAmyF2808A exclaimed, “Students were amazed by the quantity of material they got in Blackboard.”

- J2EvaF3812A articulated “I am pretty surprised!!! I cannot believe that now I am a BB fan!! I can create and work with BB faster and more easily.”
- ISueF3009P disclosed, “I have learned how to import and export my course because I teach the same course again and again and before I have to upload everything every time and waste time.”
- IZoeF6046A stated “I did not really knew anything about BlackBoard, just simple things; now I am not a wiz either yet, but I can move, edit, and do many other things, and I am happy.”
- J2EvaF3812A expressed “I started using BB more often and with CONFIDENCE! It is incredible to know how many things we can do with it: send emails, take part in forums as well as blogs. I uploaded my first video and I am reading some articles about the latest technology and methodology available in developed countries.”
- J3MegF3010P declared “What I loved most about last week was using Blackboard. I always knew that BB could be used for so many things. However, I only used to upload some material and links. Now I am able to use all the features it gives us.”

Created own videos. Instructors that participated in PDS produced their own videos and realized its different creative uses and their potential to make personalized presentations or as a tool for facilitating the learning process. Participants not only learned how to create a video with sounds and transitions but also to upload it to their website, BlackBoard, or email it to students. They considered it a useful tool to introduce a topic, attractive for students.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected six out of nine based on their overall contribution to illustrate participants’ perspectives and experiences.

- IZoeF6046A stated, “The video, I think that was fantastic! I made it very short, right? But the sky is the limit, right? I was so immersed that I wanted more and more.”
- INoeF5120A declared “they were all kind of new to me, and I didn't know that I could make a video with sounds and making it very personal”
- J2EvaF3812A disclosed, “At this very moment I am preparing my second video with our best pictures, funny special effects and a lovely soundtrack.”
- J2LeoM5304P expressed “I have experienced with Kizoa on how to develop a short video, and have developed some ideas to be incorporated in my class using Kizoa as a tool for facilitating the learning process.”
- J2TomM4714A revealed, “I have learnt some new things about technology so far. How to create a video, download or send it by email.”
- J3LuzF2910P verbalized, “I have learnt how to make a video in KIZOA, I consider this tool could be very useful to introduce a topic before a grammar explanation in class. It could be very attractive for students.”

Created own website. Most instructors that participated in PDS created their own website and once they were familiar with the process, it was not considered difficult or challenging anymore. It permitted PDS participants to give their students the chance to review information anytime, anywhere, or link their BlackBoard to their own website. Instructors that participated in PDS were able to help their students improve their abilities and review information while practicing the language or even networking among them.

The following bullet point list is an example of the quotations from the qualitative data that support the subcategory. I selected five out of nine based on their overall contribution to illustrate participants’ perspectives and experiences.

- IAmyF2808A declared, “The best part, it was this challenge of creating our own website, it was totally new for me.”
- ITomM4714A articulated, “I can create a website, I did not know I could be able to create a website; now, I can do it and it is very simple. It is just a matter of going to a website and try different things.”
- J3MaeF4510P stated, “created my webpage, so my students can review the information anytime they need to. The idea is for the final exam they need to prepare a cocktail, and we have been watching different videos on how to do it, this way they can practice at home and be ready for the final exam.”
- ITomM4714A declared, “Now I can create my own website and link the website to my BlackBoard course.”
- J4BenM5020P revealed, “Created a web page that would help my students of English for Business improve their abilities. I also want them to use the web page as a source of information and practice, and even networking in order to improve their skills both in English and in their professional life.”

Word Cloud Analysis

McNaught and Lam (2010) reported that word clouds can be useful for preliminary analysis and for validation of previous findings after conducting two studies in the Chinese University of Hong Kong. They evaluated the potential of word clouds as a research tool concluding it is a fast and visually rich way to enable researchers to have basic understanding of the data at hand but not strong enough to be a stand-alone research tool.

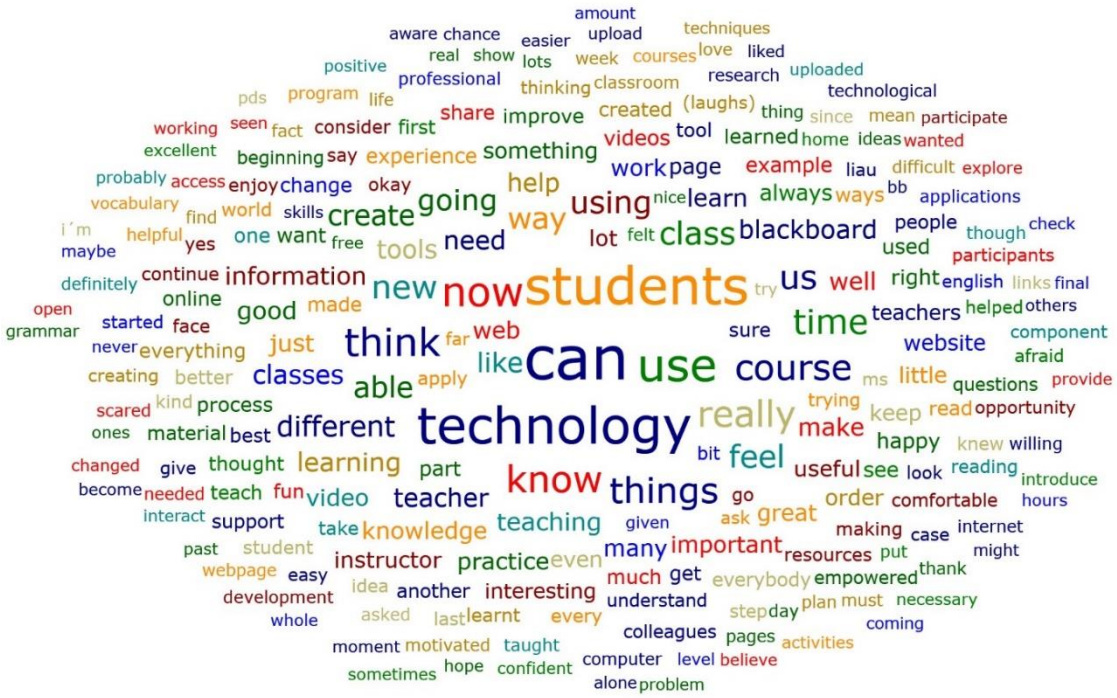

Figure 9. Word Cloud with all the Words Included in Quotations.

This study used word cloud analysis as validation of previous findings and to graphically represent the word frequency of the term that was most commonly used. The word cloud of all 360 quotations selected in the analysis of the qualitative data collected from journal entries, interviews transcribed, and exit evaluations was produced using Atlas.ti 8.0. As shown on Figure 9 the most frequent used word by instructors who participated in PDS was *can*.

An Atlas.ti specialist, Associate Director for the Center for Teaching Excellence at Texas A&M, (Carolyn Sandoval, personal communication, October 2, 2017) recommended I do a further analysis because the word *can* might have many different meanings. I decided to extract all the quotations with the word *can* on it and scrutinized it separately. Using the Search Project analysis tool in Atlas.ti 8.0, I selected to search for the term ‘can’ in all the quotations only,

which gave me a report that extracted all the quotations that had the word ‘can’ in it including the type, author, date created, field, location, and length. I created a table based on the same thematic categories emerged from the analysis of qualitative data gathered which is displayed in Table 19.

Table 19. Summary of Frequency word CAN on quotations

	Totals
Teaching Attitudes	52
Teaching Practice	40
New Competencies developed	20
Not related	2
Total count of word CAN	114

It is necessary here to clarify exactly what is meant by using the word *can* for teaching attitudes: I have the ability and willingness to do something personally or professionally. A couple of examples from the quotations using the word *can* as teaching attitudes would be “I think that the objective was to introduce us to it and give us wings so we can fly on our own” or “I feel I can do many things with technology which I’ve thought was too far from me to reach”.

Using the word *can* for teaching practice meant I have the knowledge and commitment to do something to improve my teaching practice with my students. Examples from the quotations of the use of the word *can* as teaching practice would be “using the web of the class all the students can share and watch each other videos” or “everybody can share what they have learned”.

Using the word *can* for new competencies developed meant I have new skills and readiness to implement what I have learned in PDS. A couple of examples from the quotations of the use of the word *can* as new competencies developed would be "I know how to use Weebly, I can create my own web page" or "I can use Kizoa to make videos".

Having the word *can* as the most frequent word in the analysis of quotations meant the ability, knowledge, commitment, or readiness to do something to improve teaching practice after PDS. Overall, these results indicate the impact of PDS on technology integration in the classrooms for instructors that participated: Empowerment to use technology integration in adult language classroom.

Summary

Chapter IV examined the quantitative and qualitative findings of the study. In the quantitative section, first the definition of the composite average of technology integration score was given; then, a table with each of the participants' scores was presented for the six assessments periods: Control and experimental groups. Finally, the 2x2 ANOVA results established that instructors that participated in PDS scores outperformed instructors who do not.

In the qualitative section, examples of quotations for each subcategory were depicted for each of the three thematic categories emerged from the analysis: Teaching Attitudes, Teaching Practice, and New Competencies Developed. Moreover, a word cloud analysis was presented as validation of previous findings: Empowered instructors to use technology integration in adult language classroom engrained in an ecology for sustainable learning. Following, a summary of the study, discussion of the findings, and conclusions are presented in Chapter V.

CHAPTER V

SUMMARY, DISCUSSION, AND CONCLUSIONS

In Chapter IV, the collection and findings of the data analysis have been reported. Chapter V consists of a summary of the study, discussion of the findings, implications for practice, recommendations for further research, and conclusions.

Summary of the Study

Instructors that participated in the Professional Development System (PDS) were exposed to a multifaceted learning environment that created an ecology for sustainable learning which allowed them to use technology integration in their classrooms. They changed their teaching attitudes, especially appreciating individualized support/feedback, becoming continuous/life-long learners, and having confidence in their technological skills. Participants also changed their teaching practice based on their PDS experience, principally increasing student motivation by using a variety of formats offered by technological tools, promoting collaborative learning in and outside the classroom, and designing more practiced oriented and active learning classes. Instructors in PDS also recognized the new competencies developed that increased their job performance, promoted their career development, and increased their range of usage in technological tools. The three main thematic categories emerged from the qualitative analysis of the interviews, journals, and exit evaluations are summarized in Figure 10.

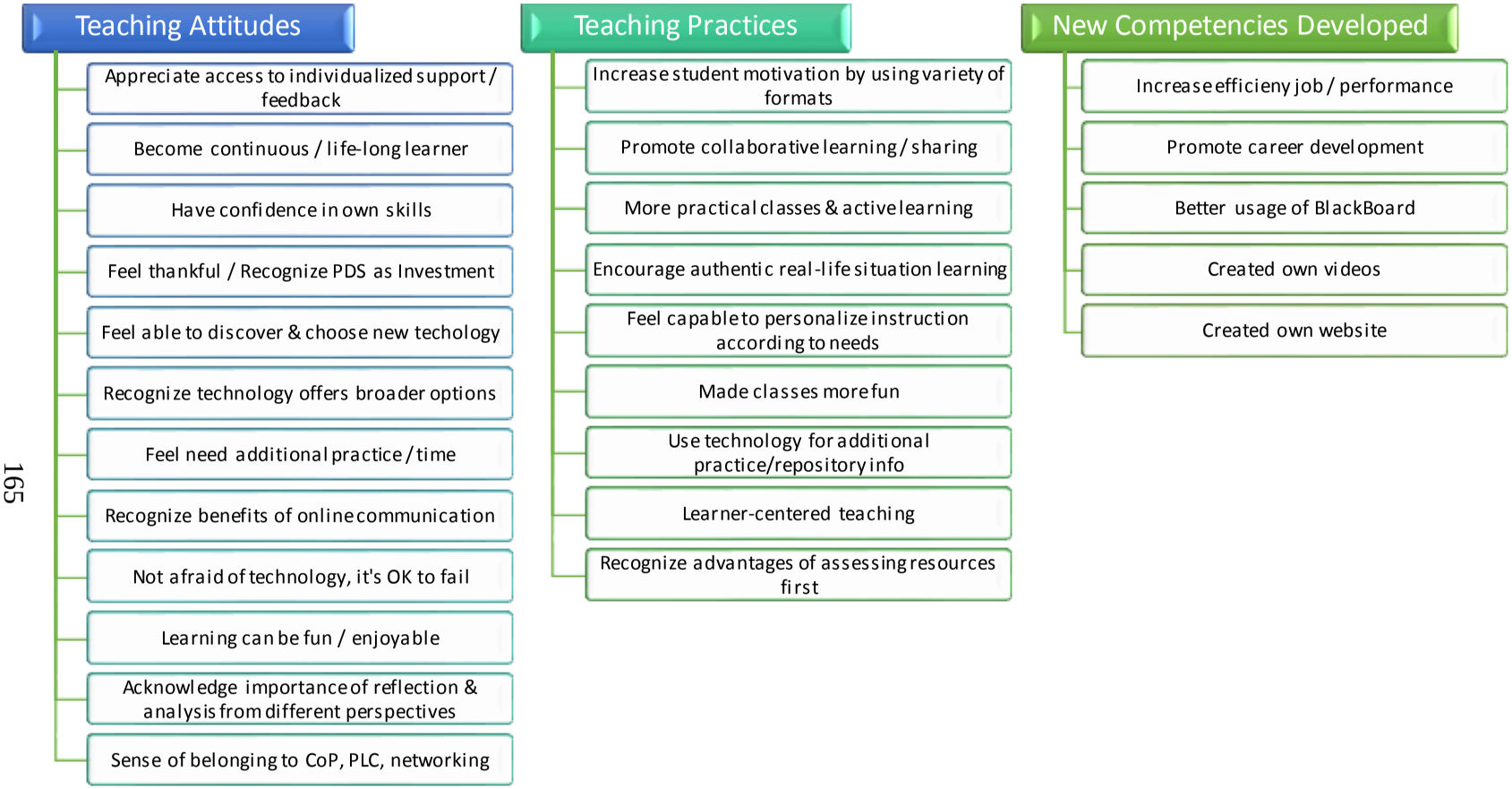

Figure 10. Professional Development System (PDS) impact on instructor's technology integration in the classroom

The purpose of this study was to determine the effects of a professional development system (PDS) based on the theoretical framework composed by experiential learning theory (Kolb, 1984), innovation diffusion theory (Rogers, 1995), and Burke and Hutchin's (2008) conceptual training transfer model on instructors' technology integration in their practice. See a graphic representation of the model on Chapter II, Professional Development System (PDS) section, Figure 1.

The PDS offered more opportunities to make the learning process sustainable because it was comprised of three components instead of just one workshop or isolated component: (a) Experiential Learning (EL) Training delivered face-to-face (F2F) and online, (b) Application and Feedback to encourage transfer, and (c) Ongoing Support for Continuous Improvement. Each component of the PDS model was discussed in detail, considering their elements and main constituents to accomplish a successful PDS, in Chapter II.

The results of this study indicate that PDS can be used as a model of technology integration that encourages continuous integration of technology as part of an experiential learning (EL) process to promote continuous improvement based on ongoing and collaborative support. The ongoing support for continuous improvement starts with EL Training and it is encouraged to continue indefinitely as part of the community of practice (CoP) and professional learning communities (PLC) creating an ecology for sustainable learning. A year later, when the analysis of the data was being done, I checked the PDS posted in BlackBoard finding out, to my surprise, that instructors were still revisiting the material I made available for them in the four modules during their multifaceted experiential learning treatment. The training transfer model ensured application and feedback of the knowledge acquired through mentoring, coaching, and evaluation.

Discussion of the Findings

Instructors that participated in PDS were significantly more successful integrating a range of digital technologies in their classrooms, with some instructors changing their teaching practices significantly than instructors in the control groups. Both, the qualitative and quantitative data presented in Chapter IV substantiate this finding.

Quantitative

A significant difference existed between instructors that participated in PDS training: Experimental Groups 1 and 2, independently of their pre-test participation. On average, instructors that participated in PDS increased 0.58 their mean composite technology integration scores, see Table 20, independent t-test C. The mean composite technology integration scores for instructors that did not participate in the PDS was almost the same for Control Groups 1 and 2. There was not a significant difference in the mean composite technology integration scores for Control Group 1 ($M=4.05$, $SD=0.35$) and Control Group 2 ($M=3.99$, $SD=0.34$) conditions; $t(26)=0.44$, $p=0.67$.

The 2x2 ANOVA of the four post-test Solomon four-group design determined that the main effect Sensitization, which measured the pre-testing influence, had no effect; nor the interaction between Sensitization and Experimental Condition; only the main effect Experimental Condition reached statistical significance. The details of the 2x2 ANOVA tables were presented in Chapter IV, Quantitative Analysis.

As per an expert statistician suggestion, Senior Professor of statistical analysis and research design, Educational Administration and Human Resource Development Texas A&M, (Homer Tolson, personal communication, October 24, 2017), further exploration of the quantitative results were performed using two paired t-tests and six independent t-tests. The

results of the paired t-tests (A and A1) and independent t-tests (B, C, D, E, F, and G) are indicated in Table 20. The graphic representation of the t-tests are shown in Figure 11. Each paired and independent t-test are represented by arrows. Diagonal filled arrows (A, C, and D) symbolize statistical significance. An alpha level of 0.01 was used for all t-tests.

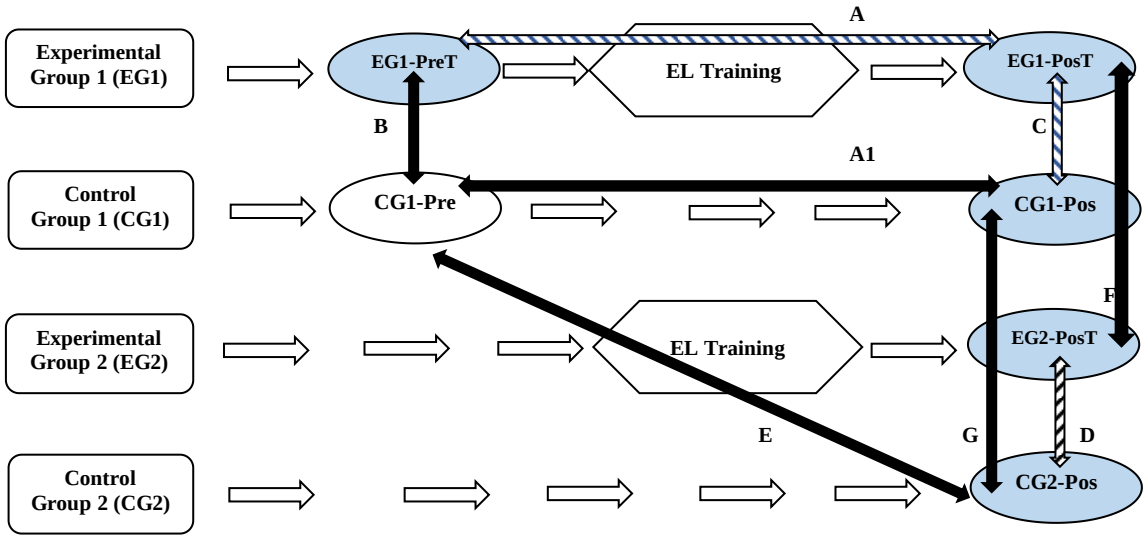

Figure 11. Visual Summary of Statistical results of Solomon Four-Group Design. Diagonal Filled Arrows Represent Statistical Significance.

- The results of the paired t-test diagonal filled arrow 'A' indicated there was a significant improvement at 1% between pre-test (EG1-PreT) and post-test scores (EG1-PosT) after treatment (EL Training, PDS).
- The results of the paired t-test shaded arrow 'A1' showed there was no significant change between pre-test (CG1-Pre) and post-test scores (CG1-Pos) without treatment.

- The results of the independent t-test shaded arrow ‘B’ compared the scores in the two pre-test groups (EG1-PreT and CG1-Pre), indicating the randomization process was effective because there was no significance.
- The results of the independent t-test diagonal filled arrow ‘C’ compared the post-test results between groups EG1-PosT and CG1-Pos showing there was a significant effectiveness of the training at 1%.
- The results of the independent t-test diagonal filled arrow ‘D’ compared the post-test results of groups EG2-PosT and CG2-Pos denoting there was a significant effectiveness of the training at 1%. It also allowed assessing if the actual act of pretesting influenced the results. Since the difference between the post-test results of groups EG2-PosT and CG2-Pos (0.57) was not significantly different from the groups EG1-PosT and CG1-Pos difference (0.58), it was assumed that the pre-test had no effect upon the results.
- The results of the independent t-test shaded arrow ‘E’ compared group CG1 pre-test (CG1-Pre) and group CG2 post-test (CG2-Pos) indicating if any external factors had caused a temporal distortion which was not included in the present study. The results showed no significance.
- The results of the independent t-test shaded arrow ‘F’ compared group EG1 post-test (EG1-PosT) and group EG2 post-test (EG2-PosT) indicating the effect that the pre-test had upon the EL Training/PDS. The results showed no significance: the post-test results for these two groups were not significantly different, and the pre-test had no effect upon treatment.
- The results of the independent t-test shaded arrow ‘G’ compared group CG1 post-test (CG1-Pos) and group CG2 post-test (CG2-Pos) indicating whether the pre-test itself had affected behavior, independently of the EL Training/PDS. The table showed no significance: the

results were not significantly different, and the act of pretesting had not influenced the overall results.

Table 20. Solomon Four-Group Design T-tests

Paired t-test		**Mean**	**SD**	**df**	**Mean Diff**	**t-value**	**p-value**	**Remark**
A	EG1-PreT	4.04	0.32					
	EG1-PosT	4.63	0.13	12	0.59	6.63	0.01	Sig. @ 1%
A1	CG1-Pre	4.04	0.37					
	CG1-Pos	4.05	0.35	13	0.00	0.03	0.98	NS
Independent t-test		**Mean**	**SD**		**Mean Diff**	**t-value**	**p-value**	**Remark**
B	EG1-PreT	4.03	0.31	26				
	CG1-Pre	4.04	0.37		0.16	0.13	0.90	NS
C	EG1-PosT	4.63	0.13	25				
	CG1-Pos	4.05	0.35		0.58	5.66	0.01	Sig. @ 1%
D	EG2-PosT	4.56	0.16	26				
	CG2-Pos	3.99	0.34		0.57	5.76	0.01	Sig. @ 1%
E	CG1-Pre	4.04	0.37	26				
	CG2-Pos	3.99	0.34		0.05	0.40	0.69	NS
F	EG1-PosT	4.63	0.13	25				
	EG2-PosT	4.56	0.16		0.07	1.15	0.26	NS
G	CG1-Pos	4.05	0.35	26				
	CG2-Pos	3.99	0.34		0.06	0.44	0.67	NS

The quantitative results of this study indicate that instructors that participated in treatment: PDS showed a significant increase in technology integration in their classrooms. Next, the qualitative findings are discussed.

Qualitative

Participants in PDS summarized its impact with comments such as the following: “PDS has given me knowledge, confidence, and power”, “PDS fostered creative thinking, encourage problem-solving, and supported experimentation”, “She transmits what she believes: Everybody

can learn", "Support was given every time and almost immediately", "Motivated, eager to learn, and improve daily-basis teaching", "Observation and coaching helped us reach our goals", "Feedback was really important in guiding the process of replacing old practices with new technology-based ones", "It was worth attending every session". Instructors were impacted by PDS and changed not only their attitudes but practice as well.

These results suggest that PDS had a great impact on instructors' use of technology integration in their classrooms. This finding was corroborated when observing the use of technology in their classes. Instructors that participated in PDS were able to use technology integration as a synergetic process that improved their teaching and learning by selecting and using strategic technology according to their learner's requirements, as well as the instructor's objectives. Additionally, the use of technology integration enabled instructors to create an intentional partnership that encouraged engagement, performance, and sustainable results.

PDS had several experienced instructors, which sometimes were technologically challenged and resistant to modifying their accustomed pedagogy. Even though 64% of participants were more than 40 years old and 67% had more than 10 years of experience, PDS was able to make an impact on their teaching practice. Deficiency of skills or fear usually keep instructors from trying to change what had worked consistently and reliably. According to Ertmer and Ottenbreit-Leftwich (2010), educators reach a major milestone when their mindsets have changed to include the idea that effective teaching does not occur without technology integration. PDS changed instructors' mindsets when they were able to integrate technology with confidence.

PDS Model

As it has been stated before, PDS' design was based on the experiential learning (EL) theory (Kolb, 1984), the innovation diffusion theory (Rogers, 1995), and the Burke and Hutchin's (2008) model of transfer in order to promote and support instructors' willingness to learn and change. EL theory (Kolb, 1984), was primarily utilized as a framework for selecting the main characteristics and components of the PDS emphasizing the critical role experience plays in learning and change in order to empower instructors to use technology integration in their practice. Through the design and use of the PDS, the learning environment created meaningful experiences in the four EL model processes during its three main components:

- *Concrete Experience,* each four modules of EL Training had activities where participants had to engage in the experience and complete specific tasks. For example, while watching a video, participants not only passively received information but were actively engaged answering posted questions.
- *Reflective Observation*, participants were asked to reflect in their experiences from different perspectives. For example, at the beginning of each module, participants wrote a journal entry based on specific questions that allowed them to review and reflect on the experience they were going through in the PDS from several approaches.
- *Abstract Conceptualization*, activities in PDS were designed to allow participants to make conclusions and learn from the lectures, readings, and activities such as their SWOT analysis and personal technology strategic plan.
- *Active Experimentation*, participants in PDS had to make choices and solve problems. For example, in their final project participants had to present a technology integration application

in their classroom at his/her level of expertise and planning. The four EL processes used in PDS are shown graphically in Figure 12.

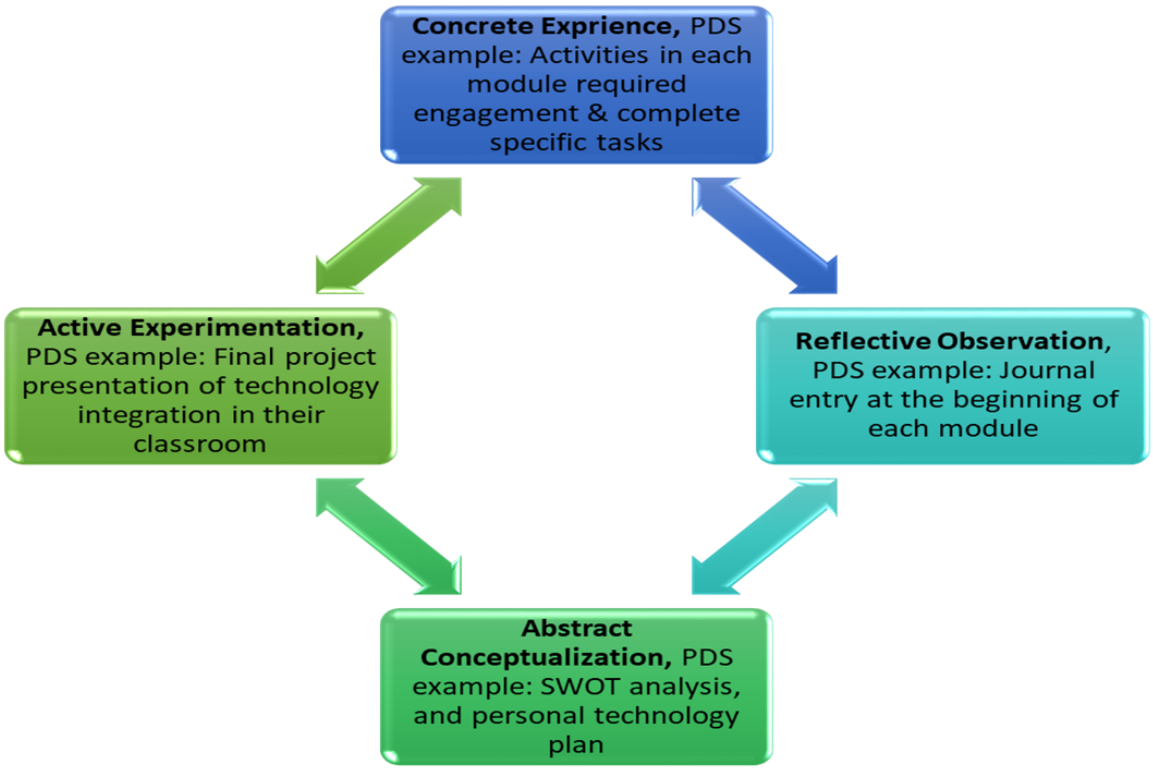

Figure 12. Experiential Learning Theory (Kolb, 1984). Adapted for Use with PDS.

The innovation diffusion theory (Rogers, 1995), influenced the use of the normal distribution of the population to adopt, adapt, or reject technology integration in PDS. During the EL Training stage, the identification and use of opinion leaders, change agents, or *early adopters* to share their success stories and demonstrate the benefits promoted speedy use of technology integration. *Innovators* and *early adopters* were encouraged to support technology integration by demonstrating their benefits or easy use. *Early adopters* were recruited as peer educators in the classroom while *early majority* assisted by providing support. *Late majority* had the opportunity

to hear that plenty of other conservative instructors like themselves believed that using technology integration was indispensable and *laggards* were given high levels of personal control over when, where, and how they would integrate technology while familiarizing with its use, benefits, and how other Laggards had successfully adopted technology integration. During the ongoing support for continuous improvement, the use of peer networks facilitated dissemination and technology integration. The use of the five types of adopters in PDS is graphically shown in Figure 13.

Figure 13. Innovation Diffusion Theory (Rogers, 1995) Adapted for Use with PDS.

The Burke and Hutchins' (2008) model of transfer influenced the development of PDS's conceptual framework by adding the emphasis on performance as well as avoiding a time bounded temporal dimension. The PDS and support for transfer was designed as an iterative and

pervasive process. Additionally, best practices strategies for transfer including supervising activities, coaching, opportunities to perform, interactive training activities, transfer measurement, and job-relevant training were used in PDS in order to encourage application, transferability, and long-term sustainability of the learning from the professional development sessions.

The original elements considered in the Burke and Hutchins' (2008) Model of Training Transfer are shown in black in Figure 14 while the components, reflections, and considerations from PDS are displayed in blue. Learner characteristics for PDS participants included their consent to come to all F2F classes as well as active online involvement. Trainer characteristics for PDS included a caring instructor, expert in the subject, willing to create a safe but active learning environment that was student-centered. Design and delivery for PDS was a process with three constituents: EL Training, Ongoing Support for Continuous Improvement, and Application and Feedback. Work environment for PDS was supportive and Evaluation constant, not only summative but formative as well.

PDS encouraged the no-time bounded temporal dimension through the ongoing support for continuous improvement, not only F2F but online as well, reinforcing the creation and interaction of peer networks and valuing previous knowledge experience. The empowered instructors and ecology for sustainable learning was achieved through the iterative process of creating opportunities to perform and reflect on job-relevant training during PDS three constituents involving peers, trainer, trainees, supervisors, and the whole organization.

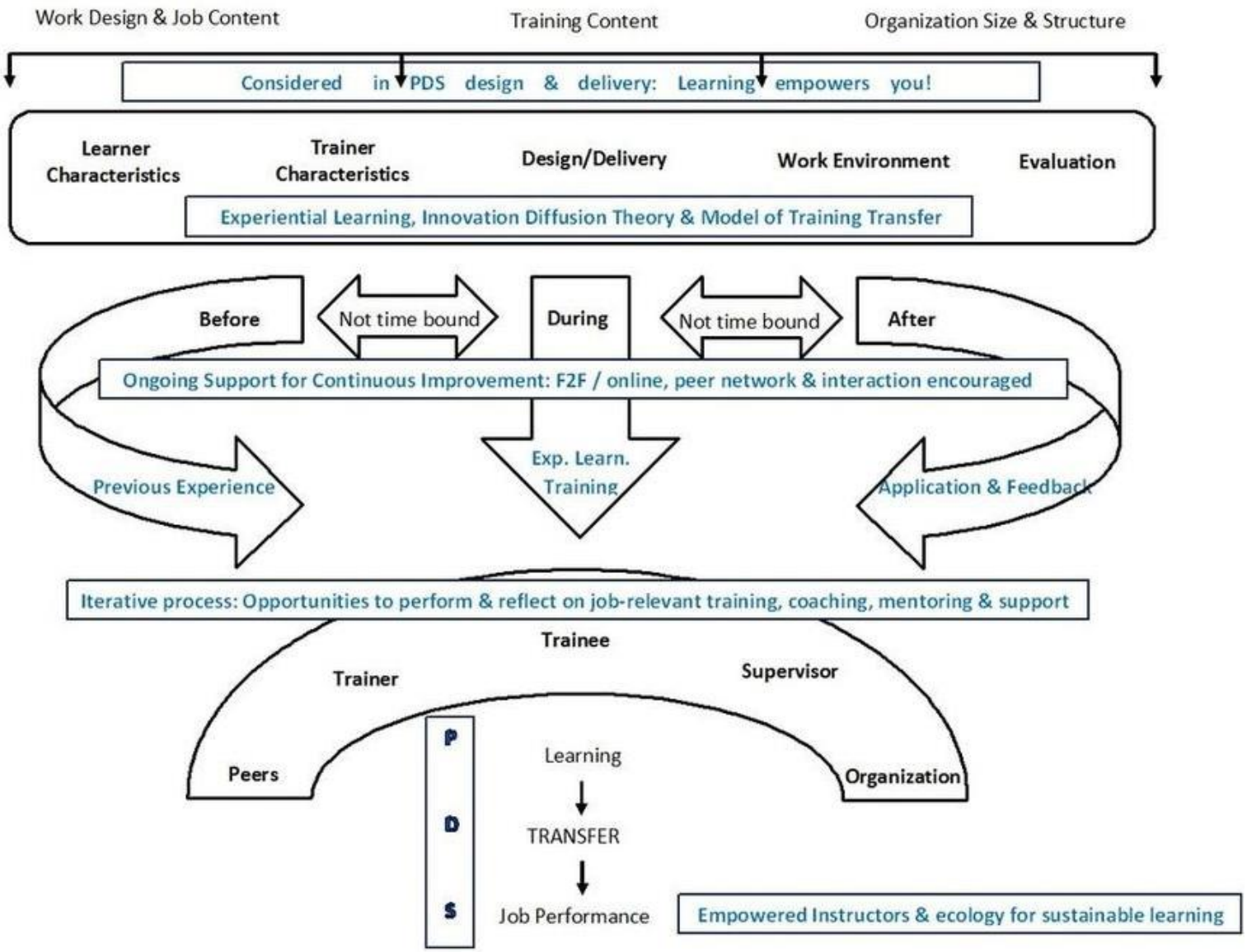

Figure 14. Training Transfer Model (Burke and Hutchins, 2008) Adapted for use in PDS.

Summary of Field Notes About Interviewed Participants

The field notes from the presentation of the final project and observations are summarized in the following section. I have only included the participants who had their interview transcribed to be consistent with the introduction of each participant in more detail. Even though I did not collect qualitative data before PDS to avoid sensitization of the sample, qualitative results about impact and change aligns with the quantitative results presented in detail in Chapter IV, instructors that participated in PDS incremented substantially their technology integration in their classroom.

BenM5020P presented his own website as his final project 'English for Business: additional practice links and networking opportunities'. He was observed using his new redesigned BlackBoard using internet, projector, and a PowerPoint during his class. He allowed students to use cell phones for searching for information in mini projects, well planned: small groups of three and short time, students had to present their research to the rest of the class, which included accountability. He communicated with his students electronically using email, announcements, and discussion boards in BlackBoard.

AmyF2808A created a website as her final project 'An interesting site to find links and extra material to learn and have fun'; she also showed the video she created in PDS to introduce a grammar topic with additional links to practice and pictures. During her observation, she used the evaluation, assignments, and discussion board in BlackBoard. She also added an opportunity for students to contact their instructors by adding a 'Questions for teacher' forum on discussion board. She had additional activities as plan B if something went wrong with technology and encouraged BYOD (bring your own device) cell phone to find words using an online dictionary

in class. She communicated with her students electronically using emails and announcements in BlackBoard.

BobM2506A tried to make his final project using BlackBoard Collaborate in the computer lab we used for class meetings but was not successful because not all the drivers in the computer were working properly. He explained to the class what he had planned and showed us his presentation using the projector. I allowed him to have another try using BlackBoard Collaborate with two more students but the bandwidth in Peru was a problem for video conferencing. During his class observation he used a digital Smart Board to make students participate and compete doing grammar exercises within teams. Students also practiced online exercises, using the electronic book and a digital Smart Board pen to practice, and were assigned some pages of the electronic book as homework. He created tests to practice grammar and listening with multiple-choice questions in BlackBoard. He could not communicate with students electronically because of the Higher Education language institute policy: Students who are minors cannot be contacted electronically or use social networks.

EmaF4215A produced a video for her final project presenting things to consider when deciding to take a master program abroad such as taking international exams: TOEFL, GRE or GMAT, which require verbal and quantitative reasoning. She presented the idea of blended learning as a tool to obtain good results, and the importance of practice, offering links to websites and applications. During her observation, she used her redesigned BlackBoard that had links for practice, interactive exercises, and her final project video. She had extra activities and her book just in case she had problems with technology. She communicated with her students electronically using emails and announcements in BlackBoard.

DonM6952P created his own website as his final project ‘A place where English teachers can get good ideas for their classes about pronunciation, intonation, rhythm, pitch, syllable stress, word stress, sentence stress, and reductions’. He included videos to demonstrate each topic and links to practice. During his observation, he showed a video he had created and uploaded in BlackBoard, some video clips, podcasts, and audio recordings. He communicated with his students electronically using emails and announcements in BlackBoard as reminders of upcoming homework.

JimM5310A designed as his final project his own website ‘Fun activities for students, it’s just about time to improve your English’. He created his own avatar and recorded his voice to add a special touch to it for his students. He included some links, tips, games, comic strips, and interactive videos with questions embedded in them. During his observation, he showed a video uploaded in his BlackBoard that had questions created with EDpuzzle embedded on it, some interactive exercises, a crossword puzzle, and a practice test. He encouraged his students to use his website outside classroom to continue practicing. He was happy to share his new discoveries such as avatar creation and interactive videos with EDpuzzle with his colleagues. He was not allowed to communicate with young students electronically because of school policy.

JoeM4813P used BlackBoard to create his final project: His own ECPE (Examination for the Certificate of Proficiency in English) by Cambridge Michigan test practice exercise. He included listening, grammar and vocabulary, and reading sections; adding a video with an explanation of the test sections and additional materials to practice with strategies for top scores. He even included a survey to ask students for their feedback. In his observation, he demonstrated each of the sections and the exercises he had created for students to practice. He communicated with his students electronically using emails and announcements in BlackBoard.

MiaF2803P designed as her final project her own website for students to practice vocabulary, grammar, watch some videos, and additional practice links while allowing them to ask questions directly to the instructor and peers using a blog. During her observation, she used her redesigned BlackBoard which included links, PowerPoints, and videos. She also allowed her students to use their cell phones to research information about a specific grammar topic and present it to the class. She communicated with her students electronically using emails, WhatsApp, and announcements in BlackBoard.

JoyF2503A prepared as final project her own website 'Teaching is a pleasure' adding an avatar and recording her own voice to welcome her students. She also introduced some additional resources such as how to create memes and comic strips, which she had used before in other classes and her colleagues appreciated. She also published an introductory video of herself and included a contact form for her students to be able to reach her. During her observation, she presented a PowerPoint she had created and uploaded in BlackBoard with interactive exercises and encouraged students to participate. She used the activities in the electronic book and videos with songs to motivate students' participation on the board. She also used interactive games with the electronic Smart Board. She was not allowed to communicate with students electronically because of school policy.

PamF5008A created as her final project her own website. 'Useful material to reinforce and research about the topics learned in the classroom' where she posted website links with interactive exercises, videos to practice the language, some songs, and the video she created to introduce herself. During her observation, she used her BlackBoard that included a PowerPoint, some listening exercises, the electronic book, and a video session that included activities pre,

post, and during the video. She communicated with her students electronically using emails, and announcements in BlackBoard.

SueF3009P presented as her final project the reorganization of her BlackBoard where she personalized her banner, organized the contents into folders by topics, sent announcements to students to remind them of important assignments, used Performance Dashboard to keep a close evaluation of students' use of BlackBoard, and shared useful webpage links to reinforce class topics. She also created a basic website 'Learning English is fun' with some links. During her observation, she showed her reorganized BlackBoard and some YouTube videos, interactive exercises, and a PowerPoint from her BlackBoard. She communicated with her students electronically using emails, and announcements in BlackBoard.

ZoeF6046A created a website as her final project 'Grammar for geniuses, easy and fun' which included the video she created explaining the uses of a specific grammar topic. She also included some links to interactive exercises and conversational videos. During her observation, she presented her new BlackBoard that included a new banner 'Students love technology', the link to her new website, and the organization of her content in folders by topic such as vocabulary and grammar. She showed her students the Performance Dashboard and explained how it records date and time of their last access as well as how it counts the number of keystrokes used in each activity. She also showed a vocabulary website to agree and disagree in English with activities to practice outside the classroom. She communicated with her students electronically using announcements in BlackBoard.

NoeF5120A produced a website as her final project 'Teaching Practices' which included the video she created to introduce herself with music, some links to practice English, and videos. In her observation, she used e-books links she had uploaded in BlackBoard, a PowerPoint, and

YouTube videos. She allowed students to use their cell phones to look up words and pronunciation. If technology did not work as planned, she had activities with pictures she had already created as backup. She was not allowed to communicate with students electronically due to school policy.

TomM4714A created a website as his final project but he was not able to share it with his colleagues because it contained confidential information, he is not only a teacher but also a Higher Education language institute coordinator and he created his website to help him organize information for new instructors that included policies and other classified information. In his observation, he presented a new syllabus uploaded in BlackBoard and extra material to practice such as an online dictionary, listening to different accents and intonation, videos in YouTube, and website links for pronunciation. He made his students practice using interactive games and exercises from electronic book using Smart Board and electronic pen. He communicated with his students electronically using emails in BlackBoard.

A recurrent theme in the field notes from the presentation of the final project and observations was a sense of accomplishment and pride amongst instructors that participated in PDS. All of them presented either their own website, a new application they wanted to use or an improvement in their own course in BlackBoard, their learning management system. They were passionate about it because they recognized their value and immediate application of the new competencies developed in their practice. Overall, they learned they were able to use technology to their advantage and research by themselves any new knowledge because they had a network to ask questions if necessary, they felt empowered and became life-long learners. The next section is concerned with the qualitative data of the exit evaluations.

Quantitative Summary of Exit Evaluations

The qualitative data results of the exit evaluations of instructors that participated in PDS were reported in the Data Analysis and Findings in Chapter IV but the quantitative results were revealing. An average score of 4.94 out of 5.00 was obtained from the mean of all seven questions, which exposed the high level of satisfaction of PDS participants. The Likert scale went from strongly disagree (1) to strongly agree (5) and the results indicated a 93.5% strongly agree and 6.5% agree. The detailed information of the quantitative summary results is presented in Table 21.

Table 21. Exit Evaluation at the end of PDS done by University directly. Legend: SD=Strongly disagree. D=Disagree. U=Undecided. A=Agree. SA=Strongly Agree

	Items	SD	D	U	A	SA	Avg
1	The instructor was well prepared, knowledgeable, demonstrated interest in participants' progress, and created a course climate conducive to respecting diverse viewpoints. Comments:	0	0	0	0	22	**5.00**
2	Experiential face-to-face learning was hands-on, well-structured, and had clear objectives in each module. Comments:	0	0	0	1	21	**4.95**
3	The online component was useful, encouraged online communication / continuous support, and allowed individualized instruction. Comments:	0	0	0	4	18	**4.82**
4	The observation / individual coaching-mentoring session / interview allowed me to apply my learning, ask doubts, and express my perspectives about the Professional Development System (PDS). Comments:	0	0	0	5	17	**4.77**
5	Overall, the instructor was a good teacher. Comments:	0	0	0	0	22	**5.00**
6	On the whole, this course was worth of your time. Comments:	0	0	0	0	22	**5.00**
7	Please add your overall thoughts on the course and instructor. Comments: knowledgeable and friendly	0	0	0	0	22	**5.00**
	Totals	**0**	**0**	**0**	**10**	**144**	**4.94**

Summary of Quotations by Type of Document

A more detailed analysis of the results of the quotations by type of documents is presented in Table 22. The overall totals indicate that most of the quotations (53%) were taken from interviews, 29% from journals and 18% from exit evaluation.

Table 22. Summary of Quotations by Type of Document

Items	Interview	Evaluation	Journals	Totals
Teaching Attitudes	85	52	48	185
Teaching Practice	52	5	30	87
New Competencies Developed	53	7	28	88
Total Quotations by Documents	**190**	**64**	**106**	**360**

The distribution of quotations by document is consistent with the expected contribution. Interviews captured more in-depth the impact PDS had on instructors while the journal entries were an active and reflective participation during EL Training. Exit evaluation was an additional document taken at the end of PDS and created by the Higher Education language institute to evaluate the impact of the program on their instructors.

Most of the quotations (51%) represented changes in teaching attitudes because in order to make any change in teaching practice (24%), instructors needed to be aware of the need of change in their attitudes first. Instructors that participated in PDS were also able to acknowledge their new competencies developed (25%). A detailed quotation count per document is shown in Appendix 18.

I believe the reason there was no sensitization (pre-testing influence) in PDS is that instructors that were not randomly selected to be part of the experimental condition did not

experience the process or the support, being exposed to some comments from PDS participants does not allow to gain confidence. The analysis of the results and findings of the study indicate that in order to be able to change technology integration attitudes and practice in the classroom instructors need to experience first-hand the complete PDS process, just talking or reading is not enough.

Comparison Between Participant's Starting Level and Final Project

A comparison between participant's starting point (according to description from interviews presented in Chapter III, Qualitative Analysis) and the observation of the final project (from field notes and observation protocol reported at the beginning of Chapter V, Summary of Field Notes About Interviewed Participants) are summarized in the following section, using SAMR model (Puentedura, 2006) as guideline. To be consistent with previous narratives, only participants who had their interview transcribed were included.

Out of 14 participants, two changed one level, nine improved two levels, and three progressed three levels. Detailed changes of participants' level according to SAMR model are displayed in Table 23. SAMR model (Puentedura, 2006) was expounded in Chapter II. It describes four levels of technology integration: Substitution–'S', Augmentation–'A', Modification–'M', and Redefinition–'R' that progresses in hierarchy from an entry point to an increased proficiency. 'S' is the most basic where technology is a tool substitute with no functional change. 'A' uses technology as a tool substitute with some functional improvement. 'M' level uses technology to allow significant task redesign. 'R' is the most advanced level where technology allows for the creation of new tasks, previously implausible.

Before PDS, BenM5020P was using technology as a substitute tool with no functional change, an 'S' in the SAMR model. During PDS, he redesigned his BlackBoard, created his own

website with not only links but also opportunities to network among participants, and practiced communicating electronically using email, announcements, and discussion boards in BlackBoard. During his observation, he allowed students to use their cell phones for searching information that had to be presented and shared with the other students. The use of technology after PDS allowed him to create tasks previously inconceivable and published worldwide online, an 'R' in the SAMR model.

Before PDS, AmyF2808A was using technology at a basic level, such as uploading some material for classes, an 'S' in the SAMR model. During PDS, she created her own website and a video to introduce grammar, added discussion boards and assignments in her BlackBoard, and practiced communicating electronically using email and announcements in BlackBoard. After PDS, she encouraged BYOD to class for her students and published online in her website, an 'R' in the SAMR model.

Before PDS, BobM2506A was using technology as a substitute tool with some improvement, using his smartphone, computer, and laptop, an 'A' in the SAMR model. During PDS, he learned about BlackBoard Collaborate and tried to use it as his final project but was not completely successful because of software problems. However, he became not afraid of failing and kept trying. During PDS, he was able to create tests to practice grammar and listening using BlackBoard. After PDS, during his class observation, he used a digital Smart Board to make students participate and compete doing grammar exercises on teams, a significant lesson redesign, an 'M' in the SAMR model.

Before PDS, EmaF4215A was using technology as a substitute with no functional change such as using and Ipad for reading, an 'S' in the SAMR model. During PDS, she redesigned her BlackBoard including links for practice, interactive exercises, and the video she created as her

final project. After PDS, she was communicating with her students electronically through email and announcements in BlackBoard, an ‘M’ in the SAMR model.

Before PDS, DonM6952P was using a smartphone mainly to receive phone calls; he was not really using much technology, only when forced in the classroom due to a policy that establish that each instructor must set up their BlackBoard with at least a syllabus. He could not even be considered an ‘S’ in the SAMR model; however, during PDS he was able to create his own basic website which included videos and links, and practice sending announcements and emails using BlackBoard. After PDS, he was using technology as a tool substitute with some improvement by using videos and links in his website, an ‘A’ in the SAMR model.

Before PDS, JimM5310A was teaching online for another university using technology as a substitute tool with some improvement, using his laptop and some applications, an ‘A’ in the SAMR model. During PDS, he created his own website that included his own avatar with his own voice recorded, links, and interactive videos with questions embedded in them. He was identified and recruited as peer educator to share his new discoveries with his colleagues as suggested by innovation diffusion theory (Rogers, 1995) used in PDS. After PDS, the use of his website allowed significant lesson redesign and to publish worldwide online, an ‘R’ in the SAMR model.

Before PDS, JoeM4813P was using technology as a substitute tool with some improvement, using his smartphone for checking emails and as agenda, and laptop for video conferencing, an ‘A’ in the SAMR model. During PDS, he learned about the possibility of creating tests in BlackBoard and he decided to create his own version to practice for the Examination for the Certificate of Proficiency in English (ECPE) test including listening, grammar and vocabulary, and reading sections. After PDS, he was communicating with his

students electronically through email and announcements in BlackBoard, an ‘M’ in the SAMR model.

Before PDS, MiaF2803P was using technology as a substitute tool with some improvement, using her smartphone and applications, and laptop and internet all the time, an ‘A’ in the SAMR model. During PDS, she redesigned her BlackBoard to include links, PowerPoints, and videos. She also created her own website with interactive exercises, links, and a blog to ask questions to the instructor and peers. After PDS, she allowed her students to use their cell phone to research information and present it to the class. She was communicating with her students electronically through email and announcements in BlackBoard, and published worldwide online, an ‘R’ in the SAMR model.

Before PDS, JoyF2503A was using technology as a substitute tool with some improvement, using her smartphone for social networking, and laptop and internet to research information online, an ‘A’ in the SAMR model. During PDS, she created her own website including an avatar with her own voice recorded, an introductory video of herself, and interactive games. She was identified and recruited as peer educator to share her new discoveries such as creating memes and comic strips with her colleagues as suggested by innovation diffusion theory (Rogers, 1995) used in PDS. After PDS, the use of her website allowed significant lesson redesign and to publish worldwide online, an ‘R’ in the SAMR model.

Before PDS, PamF5008A was using technology at a basic level, such as for checking emails and BlackBoard messages, an ‘S’ in the SAMR model. During PDS, she created her own website where she posted links with interactive exercises, song, and videos, including the one she created to introduce herself. She also redesigned her BlackBoard including video sessions with activities pre, post, and during the video. After PDS, she was communicating with her

students electronically through email and announcements in BlackBoard, and the use of her website allowed significant lesson redesign and to publish worldwide online, an ‘R’ in the SAMR model.

Before PDS, SueF3009P was afraid of using technology because she had problems with viruses. She couldn’t even be considered an ‘S’ in the SAMR model; however, during PDS she was able to create her own basic website which included some links, redesigned her BlackBoard, and practiced sending announcements and emails using BlackBoard. After PDS, she was using technology as a tool substitute with some improvement by using links in her website, an ‘A’ in the SAMR model.

Before PDS, ZoeF6046A was using technology at a basic level, such as for uploading some material for classes, an ‘S’ in the SAMR model. During PDS, she created her own website and a video to introduce grammar, included some links to interactive exercises and conversational videos in BlackBoard, redesigned her BlackBoard, and practiced communicating electronically using announcements in BlackBoard. After PDS, she was communicating with her students electronically through announcements in BlackBoard, an ‘M’ in the SAMR model.

Before PDS, NoeF5120A was using technology at a basic level, such as using some websites to explain grammar or show videos, an ‘S’ in the SAMR model. During PDS, she created her own website that included the video she created to introduce herself, links to practice, and videos. She also redesigned her BlackBoard. After PDS, she allowed her students use their cell phones to look up words and pronunciation, which allowed a significant lesson redesign, an ‘M’ in the SAMR model.

Before PDS, TomM4714A was using technology basically, such as uploading some files in Blackboard, an ‘S’ in the SAMR model. During PDS, he created his own website, redesigned

his BlackBoard adding extra material to practice and links for pronunciation, and practiced communicating electronically using emails in BlackBoard. After PDS, he was communicating with his students electronically through emails in BlackBoard, an 'M' in the SAMR model.

A summary of the changes in level according to SAMR model for each participant that was interviewed is presented in Table 23. As reminder, an example of SAMR model: 'S' uses electronic book in class, 'A' uses BlackBoard to upload homework, 'M' creates a basic website just to post links or videos, and 'R' publishes worldwide in own website to share and encourage feedback from students. PDS usefulness and value is established by the fact that every participant advanced at least one level: two participants, nine instructors improved two levels, and three participants increased three levels, from 'S' to 'R'. I created a 'Less than' column because a couple of participants could not be considered at 'S' level. The last column displays if the participant belongs to the morning group, which filled-up pre and post questionnaires.

Table 23. Visual summary of participants' changes in level according to SAMR model

Pseudonym	**SAMR levels**					**Level change**			
	Less than	**S**	**A**	**M**	**R**	**1**	**2**	**3**	**AM**
BenM5020P		S			R			3	
AmyF2808A		S			R			3	*
BobM2506A			A	M		1			*
EmaF4215A		S		M			2		*
DonM6952P	*S		A				2		
JimM5310A			A		R		2		*
JoeM4813P			A	M		1			
MiaF2803P			A		R		2		
JoyF2503A			A		R		2		*
PamF5008A		S			R			3	*
SueF3009P	*S		A				2		
ZoeF6046A		S		M			2		*
NoeF5120A		S		M			2		*
TomM4714A		S		M			2		*
Participants' level change						**2**	**9**	**3**	

The two participants that improved only one level, moved from ‘A’ to ‘M’ mainly because they were already in the second level when they started PDS and decided to research deeper in the features they discovered and were unaware of their learning management system (LMS): BlackBoard. PDS allowed participants to make their choices according to their own interests and needs. One of this two instructors decided to expand his video conference knowledge by using BlackBoard Collaborate, which he was not cognizant of it before. The other instructor resolved to explore the testing creating capabilities of BlackBoard because he did not even know of its existence before PDS.

Only one participant had a pre-post questionnaire because he was in the AM group. The results of his pre-post percent variance are shown in Table 24. The pre-post percent variance was calculated by dividing the difference between post and pre composite average of technology integration scores by pre composite average of technology integration scores. This formula is used in management and accounting to calculate percentage variance between this year and last year numbers such as sales, or between budgeted amount with an actual amount. I used it to calculate the percentage variance between post and pre training composite average of technology integration scores. BobM2506A self-reported questionnaire indicated as the most self-reported change his technological pedagogical content and his technological pedagogical content knowledge.

Table 24. Pre-post Questionnaire Results of Participant that Changed One Level

Item	BobM2506A		
	Pre	Post	% Var.
Technological Knowledge (TK)	3.78	4.00	6%
Content Knowledge (CK)	5.00	5.00	0%
Pedagogical knowledge (PK)	4.67	4.50	-4%
Pedagogical content knowledge (PCK)	4.60	4.60	0%
Technological content knowledge (TCK)	4.33	4.67	8%
Technological pedagogical knowledge (TPK)	3.71	4.43	19%
Technological pedagogical content knowledge (TPACK)	3.25	3.75	15%
Performance Expectancy (PE)	5.00	5.00	0%
Effort Expectancy (EE)	4.75	4.00	-16%
Social Influence (SI)	5.00	5.00	0%
Facilitating Conditions (FC)	4.00	3.75	-6%
Behavioral Intention (BI)	5.00	4.67	-7%
Total Pre - Post questionnaire AM	4.37	4.43	1%

The nine participants that improved two levels varied from less than ‘S’ to ‘A’, ‘S’ to ‘M’ or ‘A’ to ‘R’. Six out of the nine belonged to the AM group; therefore, a more refined analysis was possible based on their self-reported pre-post questionnaires. The results of pre-post percent variance of the six AM participants are shown in Table 25. Their self-reported questionnaire indicated as the most relevant change their technological pedagogical content and their technological pedagogical content knowledge among others.

Table 25. Pre-post Questionnaire Results of Participant that Changed Two Levels

Item	Pre	Post	% Var	Pre	Post	% Var	Pre	Post	% Var	Pre	Post	% Var	Pre	Post	% Var	Pre	Post	% Var
	EmaF4215A			JimM5310A			JoyF2503A			ZoeF6046A			NoeF5120A			TomM4714A		
Technological Knowledge (TK)	4.44	4.78	7%	3.67	4.89	33%	3.89	4.44	14%	3.67	5.00	36%	3.11	4.22	36%	4.44	4.67	5%
Content Knowledge (CK)	5.00	5.00	0%	4.00	4.40	10%	4.00	5.00	25%	5.00	5.00	0%	4.20	5.00	19%	4.80	4.80	0%
Pedagogical knowledge (PK)	4.50	4.83	7%	4.00	5.00	25%	4.00	5.00	25%	5.00	5.00	0%	4.67	5.00	7%	4.33	4.83	12%
Pedagogical content knowledge (PCK)	4.20	4.80	14%	4.20	5.00	19%	4.00	4.60	15%	5.00	5.00	0%	4.60	5.00	9%	4.80	4.80	0%
Technological content knowledge (TCK)	3.33	4.33	30%	2.33	4.33	86%	4.00	5.00	25%	4.33	5.00	15%	4.00	4.33	8%	4.33	5.00	15%
Technological pedagogical knowledge (TPK)	4.29	4.57	7%	3.71	5.00	35%	4.00	5.00	25%	4.14	5.00	21%	3.71	4.14	12%	4.71	5.00	6%
Technological pedagogical content knowledge (TPACK)	3.50	4.00	14%	2.75	5.00	82%	3.75	5.00	33%	3.75	5.00	33%	3.00	4.00	33%	3.25	4.50	38%
Performance Expectancy (PE)	4.25	5.00	18%	4.75	4.75	0%	4.00	5.00	25%	5.00	5.00	0%	4.00	5.00	25%	4.75	5.00	5%
Effort Expectancy (EE)	4.25	4.00	-6%	3.50	3.75	7%	4.00	4.25	6%	3.75	4.00	7%	2.75	3.50	27%	3.50	4.00	14%
Social Influence (SI)	4.00	4.50	13%	4.00	4.50	13%	3.50	5.00	43%	5.00	5.00	0%	3.50	4.75	36%	4.25	4.00	-6%
Facilitating Conditions (FC)	2.50	3.50	40%	2.50	3.50	40%	3.25	3.50	8%	3.50	4.00	14%	2.25	3.50	56%	3.25	4.00	23%
Behavioral Intention (BI)	4.67	5.00	7%	4.33	5.00	15%	4.00	5.00	25%	4.67	5.00	7%	3.67	5.00	36%	4.67	5.00	7%
Total Pre - Post questionnaire AM	4.14	4.56	10%	3.68	4.64	26%	3.88	4.73	22%	4.38	4.86	11%	3.64	4.45	22%	4.30	4.65	8%

The three participants that increased the most, three levels, from ‘S’ to ‘R’ were the ones that created their own website to publish worldwide online, communicated electronically with their students, and encouraged interaction in their activities by creating tasks previously inconceivable. To have a more refined analysis, I reviewed their pre-post questionnaires, only possible with AM participants because PM participants only completed post questionnaires. The results of the pre-post percentage variance of two AM participants are shown on Table 26. Their self-reported questionnaire indicated as the most prominent change their technological pedagogical content and their technological pedagogical content knowledge.

Table 26. Pre-post Questionnaire Results of Participant that Changed Three Levels

Item	Pre	Post	% Var.	Pre	Post	% Var.
	AmyF2808A			PamF5008A		
Technological Knowledge (TK)	3.67	4.00	9%	4.00	4.89	22%
Content Knowledge (CK)	3.60	5.00	39%	4.00	5.00	25%
Pedagogical knowledge (PK)	3.67	4.67	27%	4.00	4.83	21%
Pedagogical content knowledge (PCK)	4.00	5.00	25%	4.00	5.00	25%
Technological content knowledge (TCK)	2.67	4.67	75%	4.00	5.00	25%
Technological pedagogical knowledge (TPK)	3.57	5.00	40%	4.00	5.00	25%
Technological pedagogical content knowledge (TPACK)	2.75	4.25	55%	3.50	5.00	43%
Performance Expectancy (PE)	4.00	5.00	25%	4.00	5.00	25%
Effort Expectancy (EE)	3.50	4.00	14%	4.00	4.00	0%
Social Influence (SI)	3.75	5.00	33%	4.00	5.00	25%
Facilitating Conditions (FC)	3.75	4.25	13%	4.00	4.00	0%
Behavioral Intention (BI)	4.33	5.00	15%	4.00	5.00	25%
Total Pre - Post questionnaire AM	3.62	4.64	28%	3.96	4.82	22%

It is not a coincidence that all participants reported a variance in their technological pedagogical content knowledge before and after PDS. Prior studies that have noted the importance of the complex roles of, and interplay among the three main components of learning environments that affect technology integration were explained in more detail in Chapter III: content, pedagogy, and technology (Mishra & Koehler, 2006). Participants that changed three levels according to SAMR model had the greatest variance (55% and 43%) while the one that changed only one level has only 15%. Participants that changed two levels according to SAMR model varied from 82% to 14%, which emphasizes the influence of the multifaceted learning environment.

Evidence of PDS Learning Ecology Effectiveness

PDS fostered active learning, provided scaffolding for participants to become facilitators of learning, and suggested creative ways for instructors to manage different types of teaching responsibilities. F2F meetings required participants to contribute consistently and timely to enrich each other's experience. During the online and F2F classes, participants learned to construct knowledge collaboratively and socially through the online community using forums, blogs, and sharing assignments. Having timely, honest, constructive, and explicit feedback in all the required activities and assessments demonstrated to participants how EL Training could encourage learner's participation and interaction. The feedback received in PDS became a lesson instructors learned first-hand and could transfer immediately to their own classrooms. The evidence from this study suggests that (a) PDS is a model that instructors can use to design their classes, (b) PDS is a tool for empowering instructors to integrate technology use in their classrooms and to improve the learning environment, and (c) PDS supports continuous

improvement, life-long learning and collaboration with networks from in and outside participants.

PDS followed the suggested characteristics of professional development that are effective and promote sustainability according to the literature review in Chapter II:

1. *Quality time*: PDS consisted of a four-week program that met twice a week for two hours (16 hours in total) and also required at least eight hours of online participation to allow additional practice and reflection, while giving participants the opportunity to acknowledge first-hand the benefits of virtual environments. Some instructors in PDS spent hours at home researching several tools to present to their colleagues as a final project, such as developing their own websites or videos, or modifying their BlackBoard courses. Some instructors felt that additional practice would have helped them become even more confident but all recognized that integration of technology in their classroom had several advantages. For example, increasing students motivation by using variety of formats, promotion of collaborative learning and sharing, creation of more practical classes and active learning, use of authentic real-life situation learning, design of more interesting and fun classes, offering additional practice to be used as repository of information, and the promotion of learner-centered teaching.
2. *Targeting content*: PDS was 100% tailored to the experimental group: English teachers and covered material for developing the language with the use of technology. The four modules were designed to interact with participants according to their level of expertise as well as their interest and learning styles. Module 1 explained PDS objectives and experiential learning (EL), covered Technological Pedagogical Content Knowledge (TPACK) and how SAMR (Substitution, Augmentation, Modification, Redefinition) model could be used as a

hands-on approach to classroom practice, changing their view of technology integration in the classroom. Module 2 focused on the learning management system (LMS) used at the Higher Education language institute: BlackBoard and its uses when planning or revising a course. Module 3 offered specific tools for technology applications for language learners and English as a second language (ESL) while also presenting specific language lesson examples for building a learning community (reading, speaking), creating word puzzles (vocabulary), using reference sites (grammar), using blog summary (writing), creating unscripted and scripted dialogues (speaking), or recording an interview (listening). Module 4 concentrated on building community (CoP, PLC), presenting their final projects, and networking in and outside PDS. Each module had their own activities aligned with the objectives and material covered and some additional resources to entice the more advanced participants or present more specific knowledge areas. The complete structure of PDS can be found in Appendix 12.

3. *Active learning*: Instructors that participated in PDS were required to present a final project with allowed them to showcase their learning and apply it to their classes. PDS was designed and delivered as 100% hands-on, all F2F classes were done in a computer lab where each participant had their own computer to practice what was being presented, discussed, or reviewed in class. They also had additional resources through the online component, which allowed continued discovering outside the classroom highlighting what they could do with their own students and courses using technology integration. PDS modelled pedagogical practices to integrate authentic performance-based opportunities for technology integration such as creating own website or video by learning the basics in class and having online resources, tutorials, and guidance outside the classroom, using cell phone in class to take

pictures and upload them in videos, BlackBoard or own website, and online discussion forums and journals.

4. *Collaboration and support*: PDS was designed with collaboration and support in mind, instructors were encouraged to participate in online communication creating a community of practice (CoP), sharing their learning, projects, and knowledge. Instructors that participated in PDS succeeded in collaborating among colleagues not only F2F but also in the online environment. Some participants changed their practices substantially such as creating spaces for students to share their knowledge or projects instead of presenting it only to the instructor, having students collaborate in a project instead of each them presenting their own, and most importantly being aware of the required support from the instructor in order to succeed as a student. The appreciation of access to individualized support and feedback which allowed participants to become continuous learners; having confidence in their own skills because learning could be personalized according to student's needs; and recognizing technology offered broader options were key findings. The continuous collaboration F2F and online created an environment of discovery and experimentation complemented by a networked model among colleagues, students, and wider educational communities was supported and encouraged by PDS.
5. *Ongoing support and variety of learning opportunities in formal and informal settings*: PDS was supported by the administration to continue the learning environment even after the EL Training was finished. PDS also required participants to subscribe to PLC to continue enhancing their learning. Instructors that participated in PDS enjoyed continuous support both F2F and online, which they valued since they were able to reflect on their own classes and how they can support their students' learning process as well. PDS also demonstrated

how modeling technology integration in the classroom influenced positively its use and how the variety of formats motivated different learners. Additionally, the quality and diversity of content appealed to different participants' interests. In order to model teacher feedback and participation in discussion boards, I summarized all the websites suggested by all the participants and uploaded in a blog created as 'Important Notes' where participants in PDS could share informally any new discovery they found promoting, in this way, the exchange of knowledge and expertise among colleagues.

PDS was designed by taking into consideration the literature on adult learners and technology as well. Cohen (2005) reminds us that older learners have the advantage of lots of prior knowledge, which makes learning new things different but not impossible. Instructors that participated in PDS mentioned as the most relevant impact in their teaching attitudes the appreciation of having access to individualized support, which is the reason, why PDS was so successful. They felt they could use their previous knowledge but enhanced with technology without feeling abandoned or by themselves at any time; they felt supported and the feedback was valued. Taken together, these results suggest that participants became continuous life-long learners and confident in their own skills for using technology in the classroom.

Main Impacts of PDS

The present study was designed to determine the effects of a professional development system (PDS) on instructors' technology integration in the classroom. The main impacts on instructors that participated in PDS included increased efficiency in job performance, promoted career development, and development of the "I can" attitude for technology integration in classroom. As Loertscher (2010) pointed out, technology can reduce teachers' workload and improve efficacy in job performance, having a significant effect on quality of instruction. A

teachers' sense of ownership and investment in their own development can strongly influence the success of technology integration, two characteristics embedded in the PDS.

PDS promoted personal use of technology, demonstrated usefulness of technology integration in the adult language classroom, encouraged life-long learning and collaboration in and outside the classroom to support the development of a learning organization. PDS created a sustainable learning environment. Throughout the PDS for technology integration, instructors were able to construct meaningful, authentic knowledge creating a synergy based upon a collaborative relationship not only between instructor and participants but also among colleagues, in order to empower instructors to use technology integration in adult language classroom.

In summary, these results show that instructors that participated in PDS were empowered by their new teaching attitudes, teaching practices, and new competencies developed. They became life-long learners with an "I can" attitude, they understood technology changes every day, and they acquired the foundations to become independent researchers according to their own interests and needs: Empowered instructors to use technology integration in adult language classroom embedded in an ecology for sustainable learning. Instructors that participated in PDS changed their teaching attitudes and practice, which is consistent with Burke and Hutchins (2008) focus on performance as the ultimate criterion variable in training transfer.

Implications for Theory and Practice

The findings of this study have far-reaching implications for people interested in how to create, deliver, or implement a professional development program that can be transferred into performance in the classroom. The experimental group was selected to be English instructors,

but it can be applied to any kind of teachers, professors, or even trainers in organizations outside the formal education field.

Implications for Theory

PDS can be considered a contribution to theory, as a new model that empowers instructors with new teaching attitudes, teaching practices, and new competencies developed. They become life-long learners with an "I can" attitude. PDS is a flexible model that can be used not only to teach about technology integration but can easily be adapted for any subject or content as well. One of PDS most important impacts is the fact that performance, rather than just learning is its major outcome, as recommended by Swanson (1997).

Experiential Learning Theory

PDS confirmed the validity of experiential learning theory in terms of active, engaging, and reflective learning using the four-mode process proposed by Kolb (1984) but also recognized the need to take into consideration learner's context (Fenwick, 2001) and emotions (Beard & Wilson, 2002). For this reason, PDS was guided by two theories: experiential learning and innovation diffusion; and a model of transfer (Burke & Hutchins, 2008).

Innovation Diffusion Theory

PDS used the knowledge and characteristics of the five categories of adopters of change (Rogers, 1995) to facilitate dissemination and technology integration but one of the study selected as example: Penjor and Zander (2016) advocate the distinctiveness of college-level participants. On one hand, some colleges might have large bases of early adopters. On the other hand, others might have more late majority or laggards. PDS adds to innovation diffusion theory by focusing on identifying the user base and diversifying the strategies to engage and involve all participants in each adoption stage.

Model of Transfer

Burke and Hutchins' model of transfer (2008) influenced the development of PDS's conceptual framework by adding the emphasis on performance as well as avoiding a time bounded temporal dimension, especially because adult learners have previous experiences that should be valued. The model emphasized the context missing from experiential learning, including learner and trainer characteristics, as well as the design, delivery, work environment, and evaluation. The empowered instructors and ecology for sustainable learning was achieved through the iterative process of creating opportunities to perform and reflect on job-relevant training during PDS three constituents (EL Training, Application and Feedback, and Ongoing Support for Continuous Improvement) involving peers, trainer, trainees, supervisors, and the whole organization. Additionally, best practices strategies for transfer including supervising activities, coaching, opportunities to perform, interactive training activities, transfer measurement, and job-relevant training were used in PDS in order to encourage application, transferability, and long-term sustainability of the learning from the professional development sessions; adding to the model effectiveness.

Implications for Practice

For course designers, this study offers insight into what characteristics the PDS must have in order to be effective and promote sustainable learning such as quality time, targeting content, active learning, collaboration and support, and ongoing support and variety of learning opportunities in formal and informal settings. In particular, this study focused on the synergy of the process which includes the experiential learning (F2F and online), ongoing support for continuous improvement, and application and feedback in order to create empowered instructors

to use technology integration in their classes or training. Additionally, learner and trainer characteristics must be considered, as well as the work environment, delivery, and evaluation.

For instructors or trainers trying to implement a professional development system, this study can help as a model of implementation and a guide on how scaffolding, exhibiting, and modelling can actually influence the learning, transfer, and performance. This PDS can be used as an example to determine, influence, and control delivery trying to emulate the access to individualized support and feedback, promoting continuous life-long learning, and acquiring confidence in one's own skills in order to increase student's motivation, promote collaborative learning, and more practical classes and active learning.

Recommendations for Further Research

The goal of this study was to determine the effects of a professional development system (PDS) on instructors' technology integration in their practice. Data was collected and analyzed and findings were presented and discussed. The findings, although significant, have some limitations. One limitation is sample context: social and cultural. PDS could be tested with other subjects but maintaining its targeting content specific characteristic. It could even include testing in organizations and trainers instead of Higher Education, professors, and teachers to determine the generalizability of the model. Furthermore, it could also include testing in other cultures such as different countries.

Future research into this subject should also include organizational culture and supervisor support. This study obtained support from both, organization and supervisor, but the results and findings did not specifically mention any added value. Additionally, PDS could be tested with larger sample sizes to determine its effectiveness even for larger groups. Furthermore, instead of using the SAMR model as a guideline for levels of technology integration pre-post percentage

variance between starting and ending point, a more detailed model such as Moersch's (1995) that includes seven levels starting with non-use to refinement could be useful. In this study, some participants were not using technology integration even at the first level: substitution (the starting level in the SAMR model).

Conclusions

The findings of this study expanded the work of previous researchers in the area of professional development models. This investigation revealed that PDS created an ecology for sustainable learning that allowed participants to be empowered to integrate technology in their classrooms. Instructors in PDS changed their teaching attitudes and practices, increased their job performance and furthered their career development.

As presented in more detail in the comparison between participants' starting point and final project observation, every participant in PDS changed their technology integration in the classroom according to SAMR model. The analysis of the most frequently word used in the quotations: *can*–meaning the ability, knowledge, commitment, or readiness to do something to improve teaching practice after PDS–also supported this change. Additionally, the quantitative findings expressed in chapter IV, showed that instructors that participated in PDS scored significantly higher than the control group in their composite average of technology integration score. Furthermore, direct quotations from interviews, journals, and exit evaluations were offered in Chapter IV, Qualitative Findings, to illustrate each category and subcategory without preconceptions. Finally, the section Evidence of PDS Learning Ecology Effectiveness in chapter V summarized the effects of the Professional Development System on instructor's technology in their practice.

Significant change in an instructor's use of technology in the classroom requires learning skills, habits and attitudes – a multifaceted change that depends on a multifaceted learning environment. I referred to that learning environment as the professional development system (PDS) and described it as a learning ecosystem: changes in teaching attitudes, practices, and new competencies developed. It involved training but also individualization, supportive coaching, community support, etc. through the three components of PDS: EL Training, Ongoing Support for Continuous Improvement, and Application and Feedback. The complexity of the multifaceted learning experience required two theories and one model to address the limitations and critiques of each of them: experiential learning theory (Kolb, 1984), innovation diffusion theory (Rogers, 1995), and Burke and Hutchin's (2008) conceptual model of transfer. Each theory and model represented a subset of the facets of the learning environment. A multimethod approach to data collection within the rigorous experimental design of Solomon Four-Groups design provided convincing evidence that substantial change in instructor behavior in the classroom becomes possible when a learning ecosystem is created and sustained.

A collaborative, interactive, learning environment, as opposed to a passive learning environment helps students learn more actively and effectively (Murphy, Mahoney, Chen, Mendoza-Diaz & Yang, 2005). A well-designed and carefully planned PDS fostered active learning, provided scaffolding for participants to become facilitators of learning, and bestowed instructors with the 'I can attitude' to use technology integration in their classroom. F2F meetings required participants to contribute consistently and timely to enrich each other's experience. During the online and F2F classes, participants learned to construct knowledge collaboratively and socially through the online community using forums, blogs, and sharing assignments. Having timely, honest, and explicit feedback in all the required activities and

assessments demonstrated to participants how EL Training could encourage learner's participation and interaction.

The method used in this experimental design study was mixed methods: triangulation in order to obtain different but complementary data on the same experience to best understand the effects of PDS: allow validation and expansion of qualitative results with qualitative data. For analysis of qualitative data, Solomon 4-group design was used & SPSS version 22. The quantitative findings reported composite average technology integration scores for 6 assessments periods, 2x2 ANOVA of the 4 post-test composite average technology integration scores, and the results showed how only Experimental Groups (the ones that participated in PDS) had statistically significance and outperformed instructors in Control groups (CG) independently if they had a pre-test or not.

The qualitative outcomes were presented based on interviews, observations, journal entries and exit evaluations using Atlas.ti version 8.0 for analysis. The qualitative data was analyzed using an inductive approach and developed three thematic categories, 26 sub-categories and 360 quotations, which provided evidence of PDS impact.

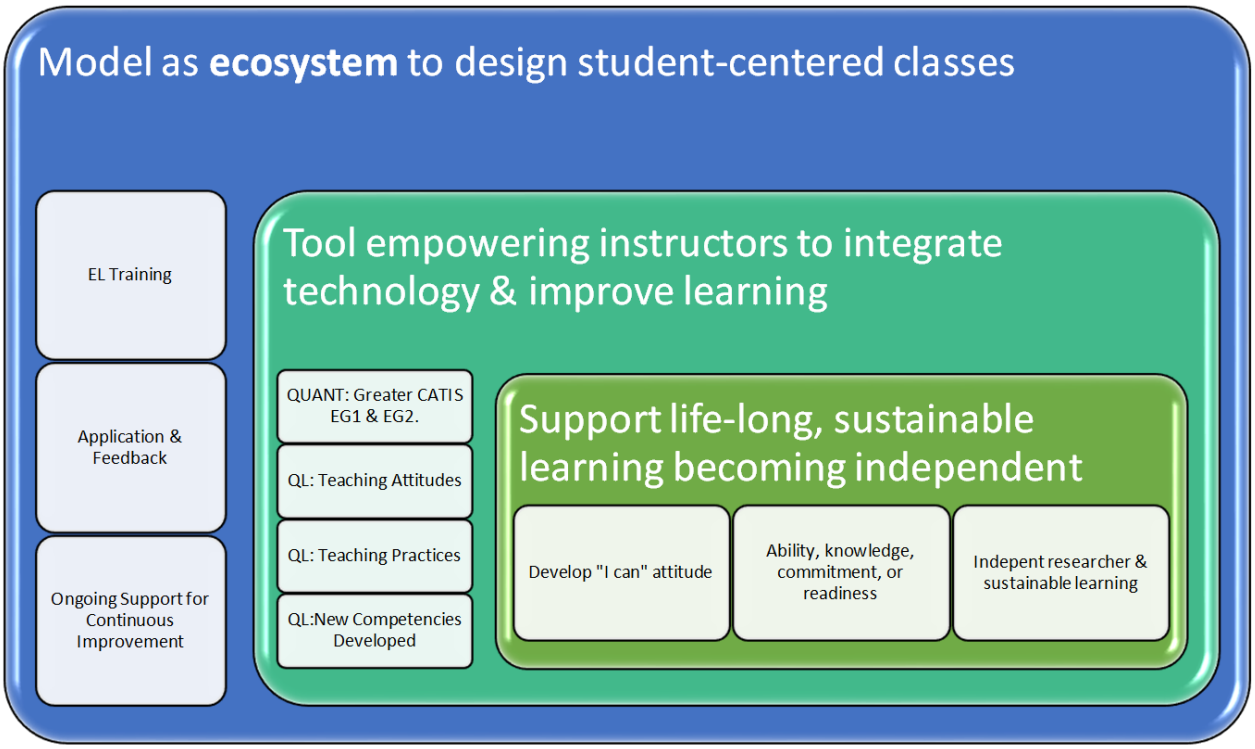

Figure 15. PDS Impact on Instructors' Technology Integration in Adult Language Classrooms

The evidence from this study suggests that:

1. PDS is a model created as a learning ecosystem to design student-centered classes. It fosters active learning, provides scaffolding and constructs knowledge collaboratively and socially through its 3 main components: EL Training for skill development F2F & online; Application & Feedback to ensure knowledge acquisition, encourage transfer & offer mentoring & coaching 1-1; and Ongoing Support for Continuous Improvement online & F2F by promoting collaboration, use of networks, Communities of Practice and Professional Learning Communities.

2. PDS is a tool for empowering instructors to integrate technology, improve learning environment and collaboration: a multifaceted change that depends on a multifaceted learning environment. A significant change in instructor's use of technology in the classroom requires changes in teaching attitudes (personal perspectives and attitudes), teaching practices (based on performance and relationship with students) and new competencies developed (new skills acquired and increased efficiency in job performance and promoted career development).
3. Supports Continuous improvement, life-long learning by change in mindset 'I can attitude' and create sustainable learning understanding that technology changes every day. Instructors became independent researchers according to their own interests and needs. Can means the ability, knowledge, commitment, or readiness to do something to improve teaching practice after PDS.

Finally, PDS as a system, it has boundaries that symbolize the synergy that can be created by having all its components function with the same goal: change teaching practice after training.

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APPENDIX 1. TAMU IRB APPROVAL

DIVISION OF RESEARCH

TEXAS A&M UNIVERSITY

DATE: June 30, 2016

MEMORANDUM

TO: Michael Beyerlein
TAMU - College Of Education & Human Dev - Educational Adm & Human Resource Develop

FROM: Dr. James Fluckey
Chair, TAMU IRB

SUBJECT: Expedited Approval

Study Number: IRB2016-0422D

Title: An Experimental Study of a Professional Development System: Empowering Instructors to Use Technology Integration in Adult Language Classrooms

Date of Determination:

Approval Date: 06/30/2016

Continuing Review Due: 05/15/2017

Expiration Date: 06/15/2017

Documents Reviewed and Approved: Only IRB-stamped approved versions of study materials (e.g., consent forms, recruitment materials, and questionnaires) can be distributed to human participants. Please log into iRIS to download the stamped, approved version of all study materials. If you are unable to locate the stamped version in iRIS, please contact the iRIS Support Team at 979.845.4969 or the IRB liaison assigned to your area.

Submission Components			
Study Document			
Title	Version Number	Version Date	Outcome
Initial contact director updated Jun30	Version 1.1	06/21/2016	Approved
Carla Liau, Texas A&M University Institutional Review Board	Version 1.0	06/21/2016	Approved
Pre-post questionnaire	Version 1.0	06/21/2016	Approved
Interview Script	Version 1.0	06/21/2016	Approved
Observation Protocol	Version 1.0	06/21/2016	Approved
Proposal Carla Liau Hing Jun1 ok	Version 1.0	06/13/2016	Approved
info sheet Jun13	Version 1.0	06/13/2016	Approved
INVITATION EMAIL May13	Version 1.0	06/13/2016	Approved
Participant Consent Form	Version 1.6	06/13/2016	Approved

Document of Consent: Written consent in accordance with 45 CF 46.116/ 21 CFR 50.27

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750 Agronomy Road, Suite 2701
1186 TAMU
College Station, TX 77843-1186
Tel. 979.458.1467 Fax. 979.862.3176
http://rcb.tamu.edu

Comments:

- This IRB study application has been reviewed and approved by the IRB. Research may begin on the approval date stated above.
- Research is to be conducted according to the study application approved by the IRB prior to implementation.
- Any future correspondence should include the IRB study number and the study title.

Investigators assume the following responsibilities:

1. **Continuing Review:** The study must be renewed by the expiration date in order to continue with the research. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study expiration, and/or loss of funding.
2. **Completion Report:** Upon completion of the research study (including data collection and analysis), a Completion Report must be submitted to the IRB.
3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol and/or study documents must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, the IRB stamped approved version must be used. Please log into iRIS to download the stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the iRIS Support Team at 979.845.4969 or the IRB liaison assigned to your area. Human participants are to receive a copy of the consent document, if appropriate.
7. **Post Approval Monitoring:** Expedited and full board studies may be subject to post approval monitoring. During the life of the study, please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential review. Investigators are responsible for maintaining complete and accurate study records and making them available for post approval monitoring. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment**: All approved recruitment materials will be stamped electronically by the HRPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Study Number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.
9. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
10. **Food:** Any use of food in the conduct of human research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
11. **Payments:** Any use of payments to human research participants must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.
12. **Records Retention**: Federal Regulations require records be retained for at least 3 years. Records of a study that collects protected health information are required to be retained for at least 6 years. Some sponsors require extended records retention. Texas A&M University rule 15.99.03.M1.03 Responsible Stewardship of Research Data requires that research records be retained on Texas A&M property.

This electronic document provides notification of the review results by the Institutional Review Board.

APPENDIX 2. TAMU IRB EXTENSION APPROVAL

DIVISION OF RESEARCH

TEXAS A&M UNIVERSITY

APPROVAL
CONTINUING REVIEW OF RESEARCH
Using Expedited Procedures

February 07, 2018

Type of Review:	IRB Continuing Review Form
Title:	An Experimental Study of a Professional Development System: Empowering Instructors to Use Technology Integration in Adult Language Classrooms
Investigator:	Michael Beyerlein
IRB ID:	IRB2016-0422D
Reference Number:	070932
Funding:	None
Documents Approved:	IRB Continuing Review Form Version 2.1
Special Determinations:	None
Risk Level of Study:	Expedited

Dear Michael Beyerlein:

The IRB approved the continuing review of this research on 02/07/2018.

It is recommended that you submit your next continuing review by 01/06/2019 to avoid a lapse in approval. Your study approval will end on 02/06/2019.

Your study must maintain an **approved status** as long as you are interacting or intervening with living individuals or their identifiable private information or identifiable specimens.

Obtaining identifiable private information or identifiable specimens includes, but is not limited to:

1. using, studying, or analyzing for research purposes identifiable private information or identifiable specimens that have been provided to investigators from any source; and
2. using, studying, or analyzing for research purposes identifiable private information or identifiable specimens that were already in the possession of the investigator.

In general, OHRP considers private information or specimens to be individually identifiable as defined at 45 CFR 46.102(f) when they can be linked to specific individuals by the investigator(s) either directly or indirectly through coding systems.

If you have any questions, please contact the IRB Administrative Office at 1-979-458-4067, toll free at 1-855-795-8636.

Sincerely,
IRB Administration

DIVISION OF RESEARCH

TEXAS A&M UNIVERSITY

APPROVAL OF RESEARCH
Using Expedited Procedures

April 05, 2017

Type of Review:	IRB Continuing Review Form
Title:	An Experimental Study of a Professional Development System: Empowering Instructors to Use Technology Integration in Adult Language Classrooms
Investigator:	Michael Beyerlein
IRB ID:	IRB2016-0422D
Reference Number:	052162
Funding:	None
Documents Approved:	None
Risk Level of Study:	Not Greater than Minimal Risk under 45 CFR 46 / 21 CFR 56
Review Category:	Category 6: Collection of data from voice, video, digital, or image recordings made for research purposes Category 7: Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Dear Michael Beyerlein:

The IRB approved this research from 06/30/2016 to 04/01/2018 inclusive.

It is recommended that you submit your next continuing review by 03/01/2018 to avoid a lapse in approval. Your study approval will end on 04/01/2018.

Your study must maintain an **approved status** as long as you are interacting or intervening with living individuals or their identifiable private information or identifiable specimens.

Obtaining identifiable private information or identifiable specimens includes, but is not limited to:

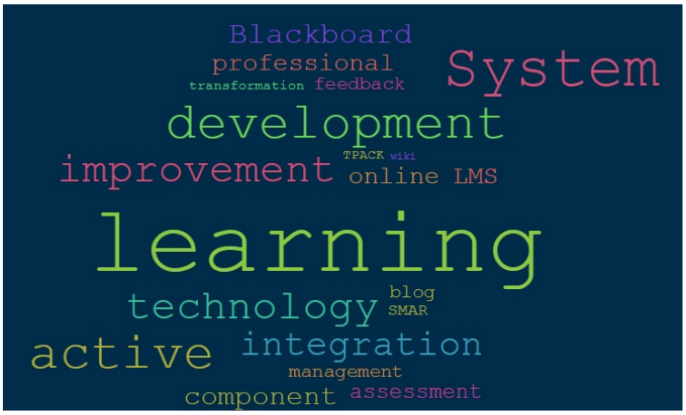
1. using, studying, or analyzing for research purposes identifiable private information or identifiable specimens that have been provided to investigators from any source; and
2. using, studying, or analyzing for research purposes identifiable private information or identifiable specimens that were already in the possession of the investigator.

In general, OHRP considers private information or specimens to be individually identifiable as defined at 45 CFR 46.102(f) when they can be linked to specific individuals by the investigator(s) either directly or indirectly through coding systems.

If you have any questions, please contact the IRB Administrative Office at 1-979-458-4067, toll free at 1-855-795-8636.

Sincerely,
IRB Administration

APPENDIX 3. FLYER TO PROMOTE PDS



WOULD YOU LIKE TO ADVANCE YOUR CAREER AND BE MORE EFFECTIVE IN THE CLASSROOM BY INCREASING YOUR TECHNOLOGY KNOWLEDGE?

Participate in a Professional Development System: ***Empowering Instructors to Use Technology Integration in Adult Language Classrooms***

If interested, contact Carla Liau-Hing at cliauhing@tamu.edu

FREE TRAINING IN TECHOLOGY APPLICATIONS FOR LANGUAGE LEARNING FACE-TO-FACE (16 HOURS) AND ONLINE (MINIMUM 8 HOURS) INCLUDING BLACKBOARD, TPACK, SMAR, WEBSITE, BLOG, FEEDBACK, COMMUNITY OF PRACTICE, PROFESSIONAL LEARNING COMMUNITIES, ETC.

SEE ATTACHED PARTICIPANT CONSENT FORM

IRB NUMBER: IRB2016-0422D
IRB APPROVAL DATE: 06/30/2016
IRB EXPIRATION DATE: 06/15/2017

APPENDIX 4. EMAIL FROM DIRECTOR TO INTRODUCE PDS TO INSTRUCTORS

Dear instructors,

We have been invited to participate in an experimental study of a professional development system: Empowering instructors to use technology integration in adult language classrooms. Participation is voluntary and you will be contacted directly by the researcher by email: Ms. Carla Liau-Hing.

If you decide to participate, some of the benefits you will receive are:

- Learn how to evaluate technology applications for language learning and choose the appropriate according to objectives and student's needs.

- Use a blended design to experience first-hand the convenience and flexibility of the use of technology and learning opportunities inside and outside the classroom.

- Hands-on-practice, collaboration, networking, and ongoing support for continuous improvement.

- Career advancement and a Certificate from CIDUP of participation if you attend all face-to-face classes (16 hours) and participate in the online component (minimum 8 hours).

Ms. Liau-Hing is conducting this study as part of her doctoral dissertation in Human Resource Development in the Department of Educational Administration and Human Resource Development, College of Education at Texas A&M. Please feel free to ask any questions directly to her at cliauhing@tamu.edu.

Sincerely,

Director

IRB NUMBER: IRB2016-0422D
IRB APPROVAL DATE: 06/30/2016
IRB EXPIRATION DATE: 06/15/2017

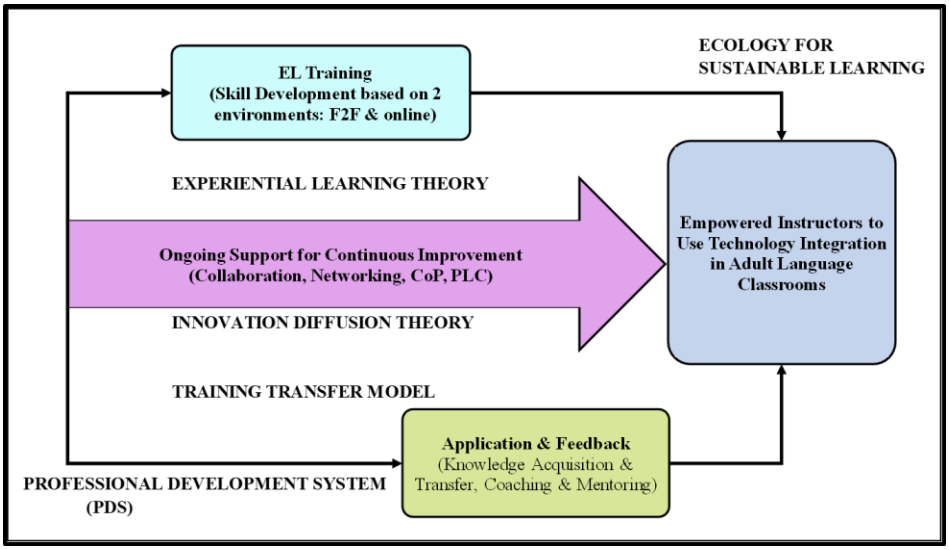
NOTE: Name of Director had been deleted to preserve confidentiality of Higher Education language institute

APPENDIX 5. PARTICIPANT INVITATION E-MAIL

INVITATION EMAIL

Howdy! My name is Carla Liau-Hing and I would like to invite you to participate in a professional development system: Would you like to advance your career and be more effective in the classroom by increasing your technology knowledge?

Based on literature review and experience, we have developed a model: **Professional development System (PDS)** to empower instructors to use technology applications for language learning and become more effective and efficient instructors.



PDS is comprised of three components: experiential learning (EL) training delivered face-to-face and online; application and feedback to encourage transfer; and online ongoing support for continuous improvement. Are you interested in a blended learning opportunity to improve your technology integration?

If you are, please read the enclosed 'Participant Consent Form', sign it, and email back to me at: cliauhing@tamu.edu

APPENDIX 6. PARTICIPANT CONSENT FORM

Participant Consent Form

You are invited to participate in an experimental research project investigating how does a professional development system (PDS) affect technology integration in adult language classrooms. This study will be conducted by Carla Liau-Hing for the purpose of fulfilling the requirements for her doctoral program at Texas A&M University.

This study is supervised by Dr. Michael Beyerlein at Texas A&M University. Results of this study will contribute to advancing the knowledge and practice of professional development by proposing a model to create a PDS to empower instructors to use technology integration in adult language classrooms in order to improve the quality and sustainability of the learning process thus students in the classrooms have a better learning environment. The purpose of the PDS is to create a system that supports continuous integration of technology in the classroom.

The results of the research may be used for a dissertation paper, educational presentation or journal article. All information you provide will be strictly confidential in accordance with the protocol of the Texas A&M University Institutional Review Board. The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Information about you will be kept confidential to the extent permitted or required by law. People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly.

Your participation is voluntary, and you are free to withdraw at any time. You are free to refuse to answer any questions. There are no risks or discomforts expected as a result of your participation and you do not have to answer anything you do not want to.

Participation involves attending 16 hours of face-to-face (F2F) training, spending at least 8 hours in the online platform, completing survey questions for approximately 15 minutes pre and 15 minutes post, classroom observation for approximately 60 minutes, semi-structured interview for approximately 30 minutes, and one-on-one mentoring for approximately 30 minutes. Pre-post survey will be completed online, observations and one-on-one mentoring will be done by Carla Liau-Hing by taking field notes. The semi-structured interview would be audio recorded. Signing this form means you agree to participate in this study. If you do, please return this Consent Form to Carla Liau-Hing via email.

_____ I give my permission for audio recordings to be made of me during my participation in this research study.

I am happy to answer any questions about any part of the PDS. Please write to me at cliauhing@tamu.edu. Feel free to also email my academic advisor Dr. Michael Beyerlein at beyerlein@tamu.edu. Aside from your time, there is no costs for taking part in this study. You will not be paid for being part of this study.

IRB NUMBER: IRB2016-0422D
IRB APPROVAL DATE: 06/30/2016
IRB EXPIRATION DATE: 06/15/2017

If you have any questions about your rights as a research participant, to provide input regarding the research, or if you have any questions, complaints, or concerns about the research, you may contact the Texas A&M University Human Subjects Protection Program office by phone at (979) 458-4067, toll free at (855) 795-8636, or by email at irb@tamu.edu.

We would truly appreciate your time and consideration in participating in this study.
Sincerely yours,

Carla Liau-Hing

PRINTED NAME:_____ Signature: _____

IRB NUMBER: IRB2016-0422D
IRB APPROVAL DATE: 06/30/2016
IRB EXPIRATION DATE: 06/15/2017

APPENDIX 7. PRE- AND POST- TEST QUESTIONNAIRE

Instructions: Thank you for taking the time to complete this questionnaire. Please answer each question to the best of your knowledge. Your thoughtfulness and candid responses will be greatly appreciated.
Technology is a broad concept that can mean a lot of different things. For the purpose of this questionnaire, technology is referring to digital technology / technologies. That is, the digital tools we use such as computers, laptops, iPods, handhelds, interactive whiteboards, software programs, etc. Please answer all the questions and if you are uncertain or neutral about your response you may always select "Neither Agree or Disagree".
Legend: (SD1)=Strongly Disagree, 1 point (D2)=Disagree, 2 points (N3)=Neither Agree or Disagree (A4)=Agree, 4 points (SA5)=Strongly Agree, 5 points

	TPACK (Technology Pedagogy and Content Knowledge)					
	Technological knowledge (TK)					
1	I can use basic technological terms (e.g. operating system, wireless connection, virtual memory, etc.) appropriately.	SD1	D2	N3	A4	SA5
2	I can adjust computer settings such as installing software and establishing an Internet connection.	SD1	D2	N3	A4	SA5
3	I can use computer peripherals such as a printer, a headphone, and a scanner.	SD1	D2	N3	A4	SA5
4	I can troubleshoot common computer problems (e.g. printer problems, Internet connection problems, etc.) independently.	SD1	D2	N3	A4	SA5
5	I can use digital classroom equipment such as projectors and smart boards.	SD1	D2	N3	A4	SA5
6	I can use Office programs (i.e. Word, PowerPoint, etc.) with a high level of proficiency.	SD1	D2	N3	A4	SA5
7	I can create multimedia (e.g. video, web pages, etc.) using text, pictures, sound, video, and animation.	SD1	D2	N3	A4	SA5
8	I can use collaboration tools (wiki, Edmodo, 3D virtual environments, etc.) in accordance with my objectives.	SD1	D2	N3	A4	SA5
9	I can learn software that helps me complete a variety of tasks more efficiently.	SD1	D2	N3	A4	SA5
	Content knowledge (CK)					
10	I can express my ideas and feelings by speaking in English.	SD1	D2	N3	A4	SA5
11	I can express my ideas and feelings by writing in English.	SD1	D2	N3	A4	SA5
12	I can read texts written in English with the correct pronunciation.	SD1	D2	N3	A4	SA5
13	I can understand texts written in English.	SD1	D2	N3	A4	SA5
14	I can understand the speech of a native English speaker easily.	SD1	D2	N3	A4	SA5
	Pedagogical knowledge (PK)					

15	I can use teaching methods and techniques that are appropriate for a learning environment.	SD1	D2	N3	A4	SA5
16	I can design a learning experience that is appropriate for the level of students.	SD1	D2	N3	A4	SA5
17	I can support students' learning in accordance with their physical, mental, emotional, social, and cultural differences.	SD1	D2	N3	A4	SA5
18	I can collaborate with school stakeholders (students, parents, teachers, etc.) to support students' learning.	SD1	D2	N3	A4	SA5
19	I can reflect the experiences that I gain from professional development programs to my teaching process.	SD1	D2	N3	A4	SA5
20	I can support students' out-of-class work to facilitate their self-regulated learning.	SD1	D2	N3	A4	SA5
	Pedagogical content knowledge (PCK)					
21	I can manage a classroom learning environment.	SD1	D2	N3	A4	SA5
22	I can evaluate students' learning processes.	SD1	D2	N3	A4	SA5
23	I can use appropriate teaching methods and techniques to support students in developing their language skills.	SD1	D2	N3	A4	SA5
24	I can prepare curricular activities that develop students' language skills.	SD1	D2	N3	A4	SA5
25	I can adapt a lesson plan in accordance with students' language skill levels.	SD1	D2	N3	A4	SA5
	Technological content knowledge (TCK)					
26	I can take advantage of multimedia (e.g. video, slideshow, etc.) to express my ideas about various topics in English.	SD1	D2	N3	A4	SA5
27	I can benefit from using technology (e.g. web conferencing and discussion forums) to contribute at a distance to multilingual communities.	SD1	D2	N3	A4	SA5
28	I can use collaboration tools to work collaboratively with foreign persons (e.g. Second Life, wiki, etc.).	SD1	D2	N3	A4	SA5
	Technological pedagogical knowledge (TPK)					
29	I can meet students' individualized needs by using information technologies.	SD1	D2	N3	A4	SA5
30	I can lead students to use information technologies legally, ethically, safely, and with respect to copyrights.	SD1	D2	N3	A4	SA5
31	I can support students as they use technology such as virtual discussion platforms to develop their higher order thinking abilities.	SD1	D2	N3	A4	SA5
32	I can manage the classroom learning environment while using technology in the class.	SD1	D2	N3	A4	SA5
33	I can decide when technology would benefit my teaching of specific English curricular standards.	SD1	D2	N3	A4	SA5
34	I can design learning materials by using technology that supports students' language learning.	SD1	D2	N3	A4	SA5

35	I can use multimedia such as videos and websites to support students' language learning.	SD1	D2	N3	A4	SA5
	Technological pedagogical content knowledge (TPACK)					
36	I can use collaboration tools (e.g. wiki, 3D virtual environments, etc.) to support students' language learning.	SD1	D2	N3	A4	SA5
37	I can support students as they use technology to support their development of language skills in an independent manner.	SD1	D2	N3	A4	SA5
38	I can use Web 2.0 tools (animation tools, digital story tools, etc.) to develop students' language skills.	SD1	D2	N3	A4	SA5
39	I can support my professional development by using technological tools and resources to continuously improve the language teaching process.	SD1	D2	N3	A4	SA5

	United Theory of Acceptance and Use of Technology (UTAUT)					
	Performance expectancy (PE)					
40	I would find using technology integration for teaching and learning useful in adult language classroom.	SD1	D2	N3	A4	SA5
41	Using technology integration for teaching and learning in adult language classroom would enable me to accomplish tasks more quickly.	SD1	D2	N3	A4	SA5
42	Using technology integration for teaching and learning in adult language classroom would increase my productivity.	SD1	D2	N3	A4	SA5
43	If I use technology integration for teaching and learning in adult language classroom, I will increase my employment opportunities.	SD1	D2	N3	A4	SA5
	Effort expectancy (EE)					
44	It would be easy for me to become skillful at using technology integration for teaching and learning in adult language classroom	SD1	D2	N3	A4	SA5
45	I would find it easy to use technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5
46	Learning to use technology integration for teaching and learning in adult language classroom would be easy for me.	SD1	D2	N3	A4	SA5
47	Technology integration for teaching and learning in adult language classroom is difficult to understand.	SD1	D2	N3	A4	SA5
	Social influence (SI)					
48	Educators who influence my behavior would expect me to use technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5

49	People who are important to me will think that I should use technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5
50	The university has helped me to learn how to use technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5
51	The university has supported the use of technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5
	Facilitating conditions (FC)					
52	I have the resources necessary to use technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5
53	I have the knowledge and skills to use technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5
54	Technology integration for teaching and learning in adult language classroom is not compatible with other technologies I use.	SD1	D2	N3	A4	SA5
55	When I need help to use technology integration for teaching and learning in adult language classroom, someone is there to help me.	SD1	D2	N3	A4	SA5
	Behavioral intention (BI)					
56	Whenever possible, I intend to use technology integration for teaching and learning in adult language classroom.	SD1	D2	N3	A4	SA5
57	I predict I would use technology integration for teaching and learning in adult language classroom within the next month.	SD1	D2	N3	A4	SA5
58	I plan to use technology integration for teaching and learning in adult language classroom frequently and constantly.	SD1	D2	N3	A4	SA5

Demographics
Sex: Male Female
Prior education: High school diploma Associate Degree Bachelor Degree Master Degree Doctorate Other: _____
How many years how you been teaching? 0-1 2-3 4-5 6-10 11-20 more than 21
Course teaching: English for Business Fast Track English Regular English cycle Specialized Courses
We greatly appreciate your cooperation.

APPENDIX 8. EXAMPLE SEMI-STRUCTURED INTERVIEW QUESTIONS, QUALITATIVE DATA COLLECTION

1. Introduce yourself (age, background, education)
2. How long have you been teaching?
3. What courses do you teach? How many hours are you teaching?
4. How many hours do you spend preparing for your classes?
5. What do you think is the best method for teaching language?
6. What kind of technology do you use in your daily life? For what purpose?
7. How would you rate yourself as technology user?
8. What is your perception of technology in general?
9. What do you think the role of technology is in language teaching and learning?
10. What motivates you to use technology integration in language classroom? Why?
11. What is the major take-away you have taken from PDS?
12. If you can change any part of PDS, what it would be and why? What was the best part of PDS? Would you add anything? Change any part? Order? Time in F2F or online?
13. Due to PDS have you made any changes in your technology integration in adult language classroom? (technology)
14. Due to PDS have you made any changes in your teaching practices? (pedagogy)
15. Due to PDS have you made any changes in your content knowledge in your classes? (content)
16. Any suggestion or comment that you would like to add?
17. In Spanish: “Si te sientes más cómoda (o) usando español, que te gustaría cambiar en el PDS? O algún otro comentario que no se haya cubierto y te gustaría agregar?”

APPENDIX 9. OBSERVATION PROTOCOL, QUALITATIVE DATA COLLECTION

Observation Protocol

Teacher: _____ Date: _____ Observer: _____

Course: _____ Start Time: _____

No. Students: _____ End time: _____

Observation Form 1-1 mentoring / Feedback / Support

Qualitative equivalence score:

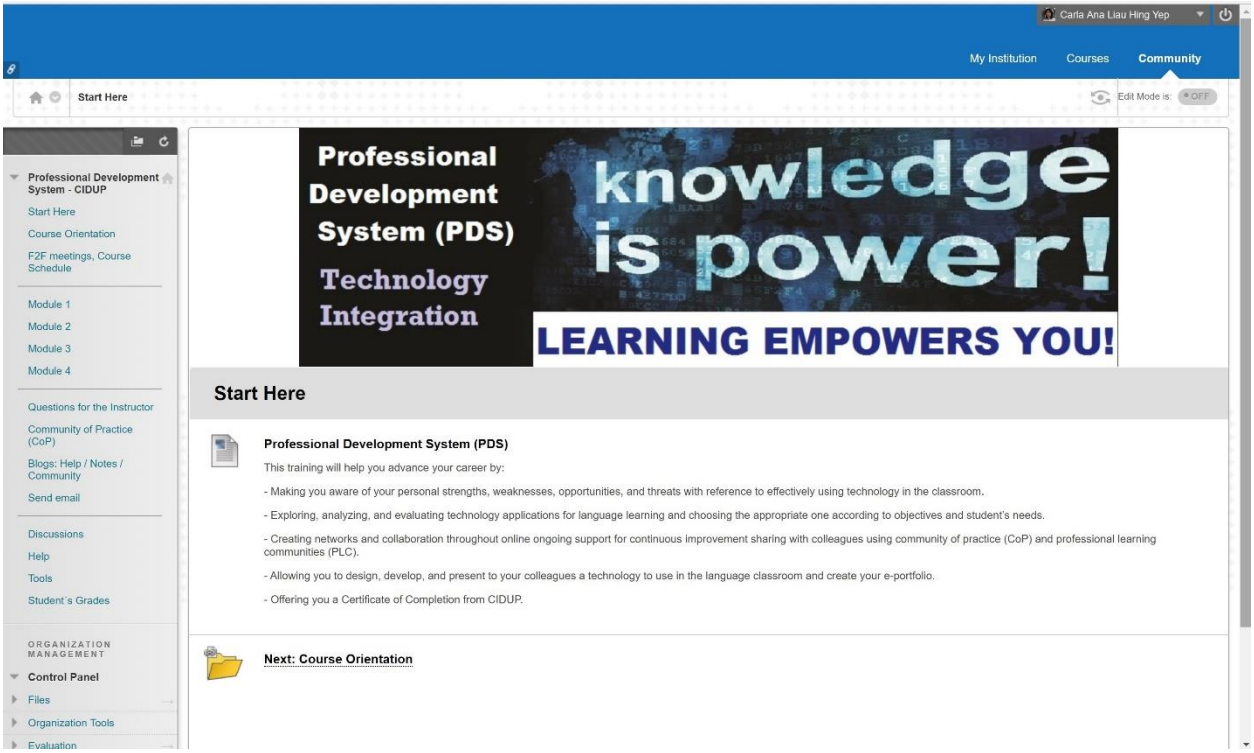
5: Excellent 4: Very Good 3: Good 2: Regular, needs to improve 1: It is essential to improve

	Criteria	1	2	3	4	5	Comments
TECHNOLOGY INTEGRATION							
1	Technology available in classroom						
2	Use of LMS: BlackBoard						
3	If something goes wrong with technology, have a backup plan or know how to fix it						
4	Additional material created using technology						
5	Encourage use of technology by students (BYOD, laptop, cell phone, tablet, etc.)						
6	Model variety of technology use in the classroom for students that can be used outside of classroom						
7	Technology choice enhance learning in the classroom						

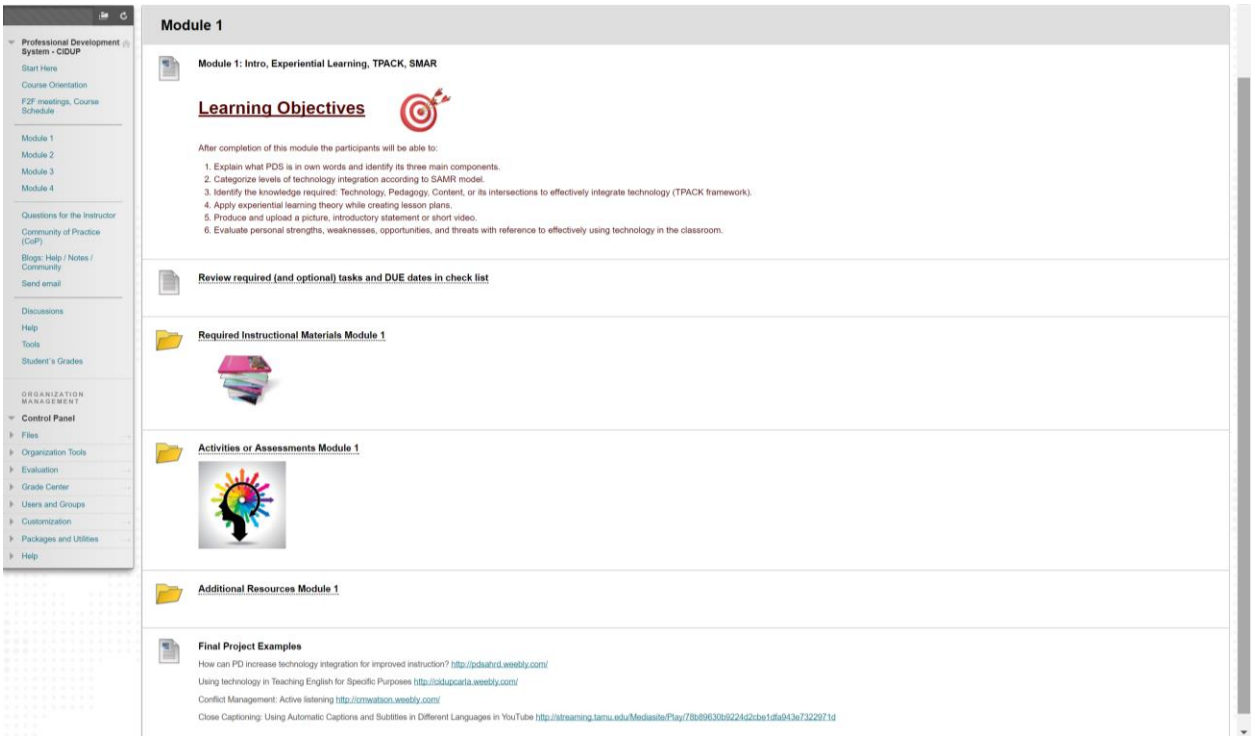
8	Use internet in classroom to gather information or ask students to use it						
9	Use of technology applications in foreign language learning						
10	Communicate with students electronically						

Observational Protocol: _____ Length of observation: ___ minutes	
Descriptive Notes	*Reflective Notes*
Time:	
Time:	
Time:	
Time:	
Time:	

APPENDIX 10. PDS WELCOME SCREEN AND EXAMPLE OF MODULE 1



NOTE: Logo had been deleted to preserve confidentiality of Higher Education language institute



APPENDIX 11. EXAMPLE OF FACE-TO-FACE (F2F) AGENDA

IRB NUMBER: IRB2016-0422D
IRB APPROVAL DATE: 06/30/2016
IRB EXPIRATION DATE: 06/15/2017

Professional Development System (PDS) 1st class

Thursday, September 08, 2016

Introduction	
Introduce PDS and how it helps advance career	Demonstration of the use of the online component, how to navigate it, and basic functions: Start here, course orientation, netiquette
Participants introduce themselves using Bb	Pair participants according to introduction ensuring access to smart phone per pair. Introduce yourself to your classmates and help each other.

Getting to know each other in the online environment	
Upload picture in BlackBoard	Participants take pictures of each other to upload in Bb as part of their profile. If help is needed, see Additional Resources Module 1.
Answer Discussion Board: Activities	Answer first discussion board to at least 2 classmates.

Reflect on technology integration uses posted in discussion board (DB)	
Review technology/websites listed on DB	Participants share their knowledge while creating a trusted and collaborating environment. Explain Question for instructor and Community of practice (CoP) DB.

Explain PDS in more detail including its 3 components / Certificate	
PDS	Review content in Required Instructional Materials Module 1: Graphic of PDS, and 3 components
How to receive Certificate	Review requirements to obtain certificate: Come to all face-to-face classes.

Activity: Personal Technology Strategic Plan	
Participants fill Personal Technology Strategic Plan	Watch Technology Integration video, comment & reflect. Blended video. Questions in Activities. Participants fill out the Word reflecting in their SWOT, learning goals, and strategies for PDS.

Conclusion	
Is support necessary for technology integration? Final Project	Reflect on what we learned, possible application on classroom, ability to use discussion boards, upload picture, uses technology in and outside classroom. Additional resources to explore more in depth. Website links (different levels & choices).Create intro video Collaboration, networking, CoP, questions for instructor. Choices for final project.

Carla Liau-Hing **cliauhing@tamu.edu** **1**

IRB NUMBER: IRB2016-0422D
IRB APPROVAL DATE: 06/30/2016
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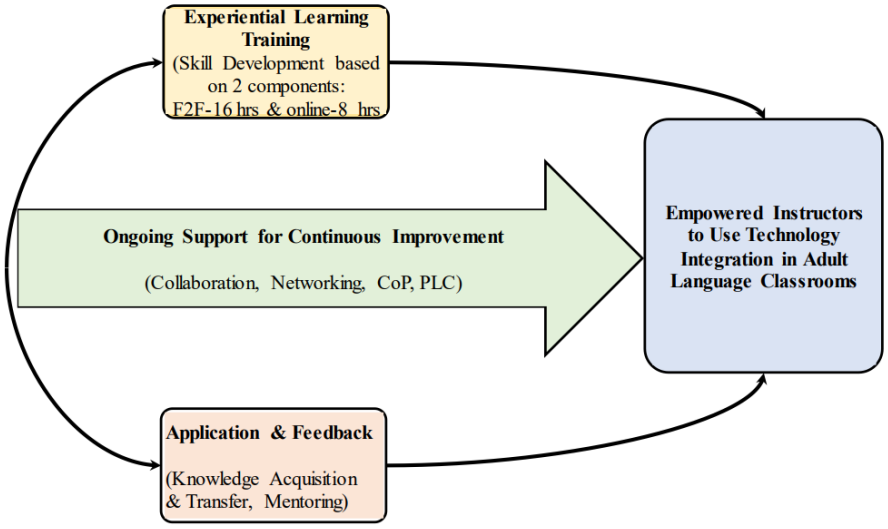
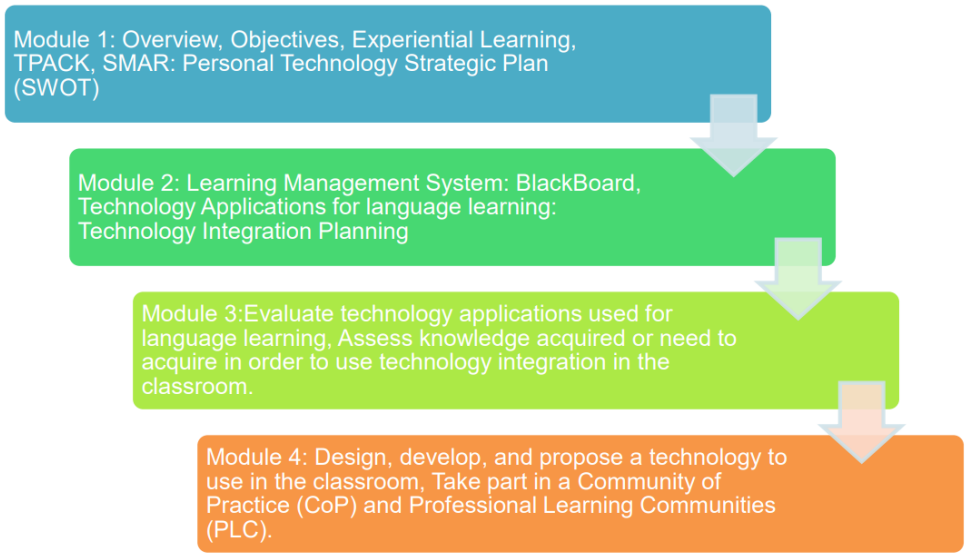


PROFESSIONAL DEVELOPMENT SYSTEM (PDS)

Modules Overview



APPENDIX 12. STRUCTURE OF PDS IN BLACKBOARD

Online PDS

- Start Here
  - Professional Development System (PDS)
  - Next: Course Orientation
- Course Orientation
  - Welcome from your instructor
    - Carla Liau-Hing
  - Introduce Yourself
  - F2F meetings - Course Schedule
  - Questions for the Instructor
  - Netiquette
    - Netiquette
  - Technical Requirements / Support
    - Technical Requirements
  - Learner Support
    - For Blackboard Student's Help
- F2F meetings, Course Schedule
  - Modules content
  - Agenda 1st Face-to-face meeting: Sep 8
  - Agenda 2nd Face-to-face meeting: Sep 13
  - Agenda 3rd Face-to-face meeting: Sep 15
  - Agenda 4th Face-to-face meeting: Sep 20
  - Agenda 5th Face-to-face meeting: Sep 22
  - Agenda 6th Face-to-face meeting: Sep 27
  - Agenda 7th Face-to-face meeting: Oct 4
  - Agenda 8th Face-to-face meeting: Oct 6

- Module 1
  - Module 1: Intro, Experiential Learning, TPACK, SMAR
  - Review required (and optional) tasks and DUE dates in check list
  - Required Instructional Materials Module 1
    - Professional Development System (PDS)
      - PDS graphic
      - Experiential Learning (EL) Training
      - Application and Feedback
      - Ongoing Support for Continuous Improvement

- An Introduction to Technology Integration
- Blended Learning: Making it Work in Your Classroom
- Experiential Learning (EL) theory
  - Foundations of Experiential Learning
  - Experiential Learning (EL) Cycle
  - Experiential Learning Model: Designer, Facilitator, Learner perspectives
- TPACK - Technological Pedagogical Content Knowledge
  - TPACK Graphic
  - Technology knowledge (TK)
  - Content Knowledge (CK)
  - Pedagogical Knowledge (PK)
  - Pedagogical Content Knowledge (PCK)
  - Technological Content Knowledge (TCK)
  - Technological Pedagogical Knowledge (TPK)
  - Technological Pedagogical Content Knowledge (TPACK)
- SAMR: Levels of technology integration
  - SAMR model
  - Substitution
  - Augmentation
  - Modification
  - Redefinition
  - SAMR examples
  - Tools for each SAMR according to Bloom's Taxonomy
- Where do you switch it on?

- Activities or Assessments Module 1
  - Introduce yourself to your classmates (Required)
  - Personal Technology Strategic Plan (Required)
  - Mod 1: Article 'Where do you switch it on?' (Required)
  - Questions for the Instructor
  - Community of Practice (CoP)
  - Questions for videos
- Additional Resources Module 1
  - How to upload your picture in BlackBoard
  - Kizoa - How to create a video (Instructions)
  - Free Online Movie Maker and Video Editor: Kizoa link
  - Videos
  - Beyond SAMR: The Teacher's Journey To Technology Integration Posted on October 21, 2013 by Catlin Tucke

- New Padagogy Wheel Helps You Integrate Technology Using SAMR ModelBy Jeff Dunn on May 28, 2013
- Models for Understanding Technology Integration: SAMR & TPACK
- Create a YouTube channel
- Office Mix for Education

- Final Project Examples

- Module 2
  - Module 2: BlackBoard, Technology Applications Language
  - Review required (and optional) tasks and DUE dates in check list
  - Required Instructional Materials Module 2
    - BlackBoard use and help for instructors
      - Create content containers and content
      - Types of Course Content
      - Help to create course materials, assignments, test
      - Additional Resources, FAQ
    - Technology applications for language teaching
      - Learning Language Without and With Technology Integration
      - Teaching Style Without, With Technology and Examples Using Technology
      - Student Interaction With Technology and Examples Using Technology
      - Context for Learning With Technology and Examples Using Technology
      - Assessment With Technology and Examples Using Technology
    - Technology Integration Planning (TIP)
      - TIP graphic
      - TIP model
      - TIP Phase 1: Analysis of Learning and Teaching Needs
      - TIP Phase 2: Planning for integration
      - TIP Phase 3: Post-Instruction Analysis and Revisions
    - Quality Matter Rubric
    - Transformational Teaching: Theory, Principles & Methods
  - Activities or Assessments Module 2
    - Module 2 Reflection
    - Technology Integration Planning (TIP) Model Example
    - Own TIP based on experience

        - Mod 2: Article Transformational teaching: theoretical underpinnings, basic principles, and core methods
    - Additional Resources Module 2
        - How-to documents in BlackBoard
        - Search the Knowledge Base IT Self-Service (TAMU)
        - Video from BlackBoard learn: Course Environment (Basic)
        - Why teach with technology?
        - Web 2.0 guides and resources
        - Technology Resources for teaching - Kathy Schrock
        - Welcome to Weebly video
        - Beginner's Guide to Making Websites with Weebly 2014
        - Weebly for Education Demo
- Module 3
    - Module 3: Final Project, Continuous Improvement
    - Review required (and optional) tasks and DUE dates in check list
    - Required Instructional Materials Module 3
        - Technology for Language Learning
            - Role of Technology in Language Learning
            - Pedagogical Characteristics
            - Design characteristics
            - Technical Characteristics
        - Examples of Technology applications for language teaching
            - Building a Learning Community
            - Vocabulary: Word puzzles
            - Grammar - Reference Sites
            - Listening - Someone I know
            - Speaking - Unscripted and scripted dialogues
            - Writing - Blogging summary
            - Listening - Reorder video story
        - e-book 'Innovation in learning technologies for English language teaching'
    - Activities or Assessments Module 3
        - Module 3 Reflection
        - Mod 3: e-Book Innovation in learning technologies for English language teaching
    - Additional Resources Module 3
        - Columbia University - Language Resource Center: Useful Tools
        - Cambridge Dictionary
        - Better Speaking - BBC

        - English Grammar Reference and Exercises
        - English Central - Videos
        - Listening Practice and Quizzes
- Module 4
    - Module 4: Present Final Project, Build Community
    - Review required (and optional) tasks and DUE dates in check list
    - Required Instructional Materials Module 4
        - Community Welcome. Connect, collaborate, and share resources with people who are passionate about improving education
        - Technology Integration Resources
        - Merlot / FacultyDevelopment
        - Connected World for educators
        - Teacher Blog Resources
        - Technology Integration in ESL Classrooms: Promises and Challenges of Integration
        - Model of Training Transfer
        - Twitter for beginners
        - Education Chats in Twitter
        - Webinars from ELLA-Virsity TAMU
    - Activities or Assessments Module 4
        - Module 4 Reflection
        - Final Project
        - Mod 4: Article 'A Pedagogical Framework for Technology Integration in ESL Classrooms: The Promises and Challenges of Integration'
        - Mod 4: Article 'A Study of Best Practices in Training Transfer and Proposed Model of Transfer'
    - Additional Resources Module 4
        - Classroom Aid - The world is your classroom
        - What you wanted to know about Blogging!
        - Badge your classroom - Individualize your teaching and learning

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- Questions for the Instructor
- Community of Practice (CoP)
- Blogs: Help / Notes / Community
- Send email
    - All Users
    - All Groups

- All Assistant Users
- All Participant Users
- All Leader Users
- Select Users
- Select Groups

- Discussions
  - Introduce yourself to your classmates (Required)
  - Questions for the Instructor / Suggestions to improve PDS
  - Community of Practice (CoP)
  - Mod 1: Article 'Where do you switch it on?'
  - Mod 2: Article Transformational teaching: theoretical underpinnings, basic principles, and core methods
  - Mod 3: e-Book Innovation in learning technologies for English language teaching
  - Mod 4: Article 'A Pedagogical Framework for Technology Integration in ESL Classrooms: The Promises and Challenges of Integration'
  - Mod 4: Article 'A Study of Best Practices in Training Transfer and Proposed Model of Transfer'
  - Introduce yourself to your classmates (Required)
  - Questions for the Instructor / Suggestions to improve PDS
  - Community of Practice (CoP)
  - Mod 1: Article 'Where do you switch it on?'
  - Mod 2: Article Transformational teaching: theoretical underpinnings, basic principles, and core methods
  - Mod 3: e-Book Innovation in learning technologies for English language teaching
  - Mod 4: Article 'A Pedagogical Framework for Technology Integration in ESL Classrooms: The Promises and Challenges of Integration'
  - Mod 4: Article 'A Study of Best Practices in Training Transfer and Proposed Model of Transfer'
- Help
  - Questions for the Instructor
  - Learner Support
  - Technical Requirements / Support
- Tools
  - Announcements
  -  Contacts

- Calendar
-  Blogs
- Glossary
- Groups
  - PDS 12:00 to 14:00 hrs. GROUP
- My Grades
- Roster
-  Journals
- Blackboard Help for Students

- Student´s Grades

APPENDIX 13. EXAMPLE OF INTERVIEW TRANSCRIPT (SMALL FRAGMENT)

…

I: What is the major take away that you have taken from the professional development system?
A: It has opened my eyes wider and I have seen many applications that I have no idea of and shows you that you have to keep on exploring and talking to people because you alone will never find all the applications that exists and applications are being created every day so you have to talk and interact with other coworkers or colleagues to share. Actually we're going into a society where sharing is an everyday way of life, perhaps it was not a fact in the world 10 or 15 years ago, people were very careful not to give too much information to other people, but nowadays everybody shares, they create on they share, they find and they share, collaboration is increasing among people, among students, coworkers, colleagues, and I think that we need to understand that, and Millennials have that very clear, but none Millennials needs to learn this from Millennials I think that that is going to help us a lot.

I: What was the best part of the professional development system?
A: Everything was well structured and well done, perhaps the best part in my case, what I found really interesting was the fact open my eyes to new knowledge, applications, new possibilities of what could be done think that it was very good. Now, I have to work on using it, but it is easier to work on something that you already know, when you have options or know that exist, before I didn't even know that these things even exist. I have to try little by little and the more you try and use it, you can implement it in your courses, because as I mentioned I have Millennials in my classes and they enjoyed this kind of information. I also have a student that she's not Millennial but she is a manager of innovation, she is a technology engineer, so she loves a lot of this. This week she's going to a conference in Anaheim, California about technology and she has a lot of information, and she mentioned that she can help the classroom to create their own website, so I think there's a lot to do here. This help me understand the needs of my students, especially the Millennium and improve my class.

I: Due to the professional development system have you made any changes in your technology integration in your classroom?
A: Yes, I am building my own web page in order to have the students use it as a supplemental source of information, interact with them a little bit, and as a way for them to use it as a tool in the class. The information that I'm going to put in the website is going to be related to what we are doing in the class and a bit more so in their free time they can use it as a tool in order to watch more videos, in order to look for some grammar structures that perhaps we have not covered in class or some students might not catch things at the first time, they would go there because what I have noticed is, since we have students that are millennials are not millennials, some of them catch things very fast, but for others takes more time. And if they do not have other tools, you have to help the ones that are a little bit slower, and the other ones are going to be a little bored. Although you can also use some of the typical techniques where the fast learner help the slow ones, you can do that in class, but it could also be helpful for them to look for their own information.

I: Due to the professional development system have you made any changes in your teaching practice? Pedagogy?
A: Well I have implemented a student video recording and part of what I am changing is the way they're going to show that to each other because so far they kept them for themselves, the idea is using the web page of the class all the students can share and watch each other videos, and everybody can share what they have learned and how much they have improved.

I: That's good. Due to the professional development system have you made any changes in your content knowledge of your classes?
A: I have increased the amount of videos that we use in class as a way to reinforce and add to the information that we have seen in class.

I: Can you tell me the overall impact of the professional development system in your teaching?
A: I think it has changed the way I look at teaching and how is going to be applied and developed in the coming years. Actually I am trying to have another students from another class create their own web page so they can post their own videos and the final purpose is to be able to publish their videos with their own links. I think everything is being changed and that is the trend and where technology is taking everybody, so either we do it sooner or later, and the sooner the better. So that is what is helping me to improve and being on the new frontier of education and knowledge.

I: Very good so how can you summarize your professional development system experience?
A: I think it was great! I think it has given me new tools to improve teaching, the way I work, the way I see things, and the way I teach my students. I think every teacher should go through this experience because I think really changes the whole teaching experience and the whole teaching philosophy.

I: Has the professional development system empowered you to teach with technology?
A: Yes! This kind of classes transform you because the problem is that teachers don't know how many tools they have out there so they are not able to develop a new course, establish a new teaching routine or technique, but once they learn about it they are able to apply it. Perhaps not everybody will apply at the same speed because not everybody is as happy or as comfortable with technology but that will depend, the more technology you use the better you will be at. Perhaps is like in the past everybody would use a dial tone telephone because it was all they knew or until you don't have it anymore, it is something similar, we probably will be able to use more technology very soon, and the more we know about it, the more will use it, just being aware of all the different things that we can use and then we can actually choose whatever we need according to the situation.

…

APPENDIX 14. EXAMPLE OF JOURNAL ENTRIES

Journal Entry Module 2

Dear Colleagues:

When I come to think of the advantages I have gained after this module 1, I believe that my classes are being more motivating, classes have become more memorable and my students like them a lot.

The fact of using blackboard and being able to make a video is so practical. I believe that the benefits are endless because I can even take pictures of previous corrected writings and explain my students how to avoid common mistakes (and I am just beginning).

I believe that I would only need a computer and internet connection to make things happen.

Thank you.

Journal Entry Module 3

Good morning class,

When I think back about what I have been learning in this course is that technology is here to help me design and make my classes more enjoyable and memorable. This experience has taught me that technology is not that hard to understand and I have become even more confident when using it.

I have made a video, I have been exploring and using blackboard in a more efficient way and I have also figured out how the new generations are so receptive regarding information they receive by using technology. Finally, I believe they are eager to learn and experience satisfaction during the process of learning has increased too.

I believe that I what I need to do now is to learn more about the taxonomy of different applications to be used when teaching. In this way, I can also offer my students different ways to express themselves.

Thank you.

Journal Entry Module 4

- I think technology is a tool that has improved our lives in general. However, we have to be prepared in order to take advantage of it.
- I have explored my platform and created my own forum for my current course. Also, I have started my webpage and I´m analyzing the contents to be uploaded.
- We need to manage our time to keep a dynamic and innovative webpage. It´s important to revise it regularly and post new topics. Having a boring webpage with the same contents for a long time is useless and could damage our image as teachers.
- I am sure that this knowledge is actually helping me to solve problems, for example I used to spend too much time trying to find the right video to introduce a topic now I know I can create my own video and that's what I like about it, it's amazing because I can do what I want and personalize material that I have recycled.
- Thanks for everything, what I learned is really useful, I am really happy. I know I have to keep working but I know it is not going to be as hard as thought last month.

APPENDIX 15. EXAMPLE OF OBSERVATION PROTOCOL

Teacher: ____ZoeF6046A_____ Date: ___10/20/16___ Observer: _____CLH_____
Course: _____CL10_____ Start Time: ____7:00pm_____
No. Students: _____11_____ End time: _____8:00pm_____

Observation Form 1-1 mentoring / Feedback / Support

Qualitative equivalence score:
5: Excellent 4: Very Good 3: Good 2: Regular, needs to improve 1: It is essential to improve

Criteria		**1**	**2**	**3**	**4**	**5**	**Comments**
TECHNOLOGY INTEGRATION							
1	Technology available in classroom					X	Projector, Bb, internet, videos, digital book
2	Use of LMS: BlackBoard					X	Used for vocabulary & grammar. Websites to practice in Bb, unit 2
3	If something goes wrong with technology, have a backup plan or know how to fix it				X		Additional activities planned just in case
4	Additional material created using technology					X	Own website. 350 English questions & answers. 20,000 English words in English conversations
5	Encourage use of technology by students (BYOD, laptop, cell phone, tablet, etc.)				X		Use of Bb-Dashboard, showed it to students
6	Model variety of technology use in the classroom for students that can be used outside of classroom					X	Use of internet websites to find out own mistakes
7	Technology choice enhance learning in the classroom					X	Video to motivate conversation, answer questions in pairs, discussion debrief as class
8	Use internet in classroom to gather information or ask students to use it					X	Use phone for searching information in mini projects, small groups. Go to Internet & practice to have fun while learning
9	Use of technology applications in foreign language learning				X		Practice using the chart of uses in tenses,

							can repeat exercises in internet, immediate answers ☺
10	Communicate with students electronically				X		Through Bb

Observational Protocol: _____ Length of observation: _60_ minutes	
Descriptive Notes	*Reflective Notes*
Used Essay website to show students how to write an intro, body & conclusion	Before she just explained or wrote short examples on board, now she was able to show complete and several examples
Showed Vocabulary website to agree and disagree in English with activities to practice	Not only allowed additional practice outside classroom but individualized attention according to student's need and time. Very happy with student's motivation, ownership of learning process & sense of accomplishment.
Created own website to introduce grammar topic	More confident using her IT skills, even trying to solve problems herself such as audio volume in class
Students motivated to participate, happy to be allowed to use cell phone in class	Activity was well planned, group of 3, and short in time to keep students participating and focused without extra time to waste time. Accountable because they have to report to the whole class as part of the final debrief.

APPENDIX 16. EXAMPLE OF EXIT EVALUATION CREATED BY HIGHER EDUCATION LANGUAGE INSTITUTE

UNIVERSIDAD DEL PACÍFICO | CENTRO DE IDIOMAS

PROFESSIONAL DEVELOPMENT SYSTEM (PDS) EVALUATION

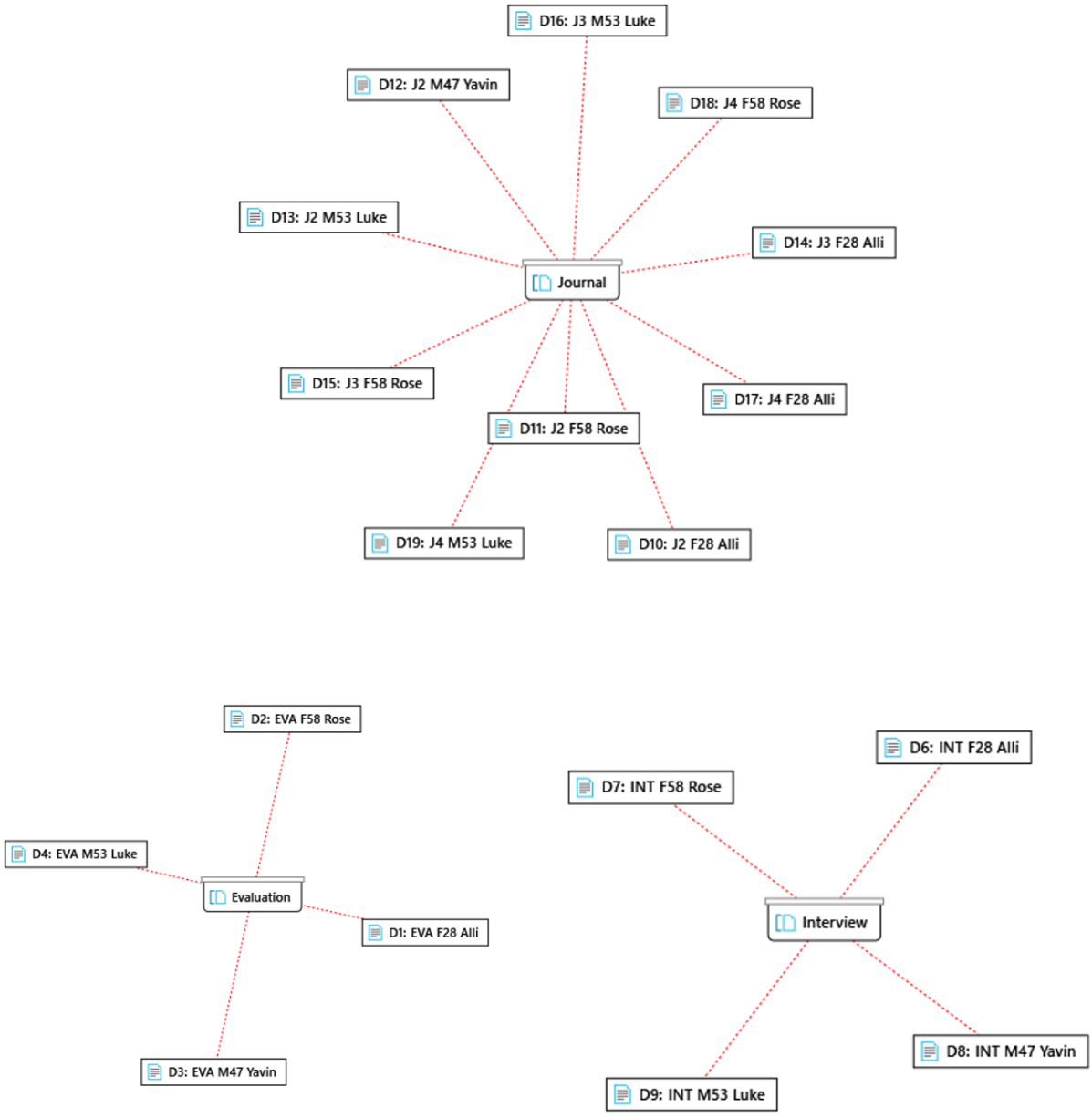
Legend: (SD1) = Strongly Disagree, 1 point (D2) = Disagree, 2 points (N3) = Neither Agree or Disagree (A4) =Agree, 4 points (SA5)=Strongly Agree, 5 points

1	The instructor was well prepared, knowledgeable, demonstrated interest in participants' progress, and created a course climate conducive to respecting diverse viewpoints. **Comments:** **Definitely.** However, I have to add one more and crucial element: **Great Expectations!** Carla, our instructor had great expectations for us which were transferred to all of us…we had great expectations and we accomplish them…we continue our path of improvement.	SD1	D2	N3	A4	**SA5**
2	Experiential face-to-face learning was hands-on, well-structured, and had clear objectives in each module. **Comments:** Everything was **excellent**. State of the Art. We understood everything while enjoying it.	SD1	D2	N3	A4	**SA5**
3	The online component was useful, encouraged online communication / continuous support, and allowed individualized instruction. **Comments:** **Totally** Useful, Revealing & Addictive.	SD1	D2	N3	A4	**SA5**
4	The observation / individual coaching-mentoring session / interview allowed me to apply my learning, ask doubts, and express my perspectives about the Professional Development System (PDS). **Comments:** I have not only learned, Carla´s passion was transferred to me. I own it now. I feel at ease with technology. I am empowered!	SD1	D2	N3	A4	**SA5**
5	Overall, the instructor was a good teacher. **Comments:** Definitely! Carla is effective, clear, patient, respectful, accessible, enthusiastic and caring.	SD1	D2	N3	A4	**SA5**
6	On the whole, this course was worth of your time. **Comments:** It was not only worth it; it was necessary. It was a MUST. Before the course I was very respectful of technology meaning, I was really afraid of it. Now, I feel comfortable, very comfortable with it. I love it and I am ready to go further and further.	SD1	D2	N3	A4	**SA5**
7	Please add your overall thoughts on the course and instructor. **Comments:** Carla is the most enthusiastic teacher / facilitator / /instructor I've ever had. She is very enthusiastic at teaching and her concern was for us to learn and enjoy. The Inclusion of real world items in course was excellent. Materials, tools, approach, etc. were all excellent and enjoyable. I loved the course. It has given me knowledge, confidence and power. I am forever grateful!	SD1	D2	N3	A4	**SA5**

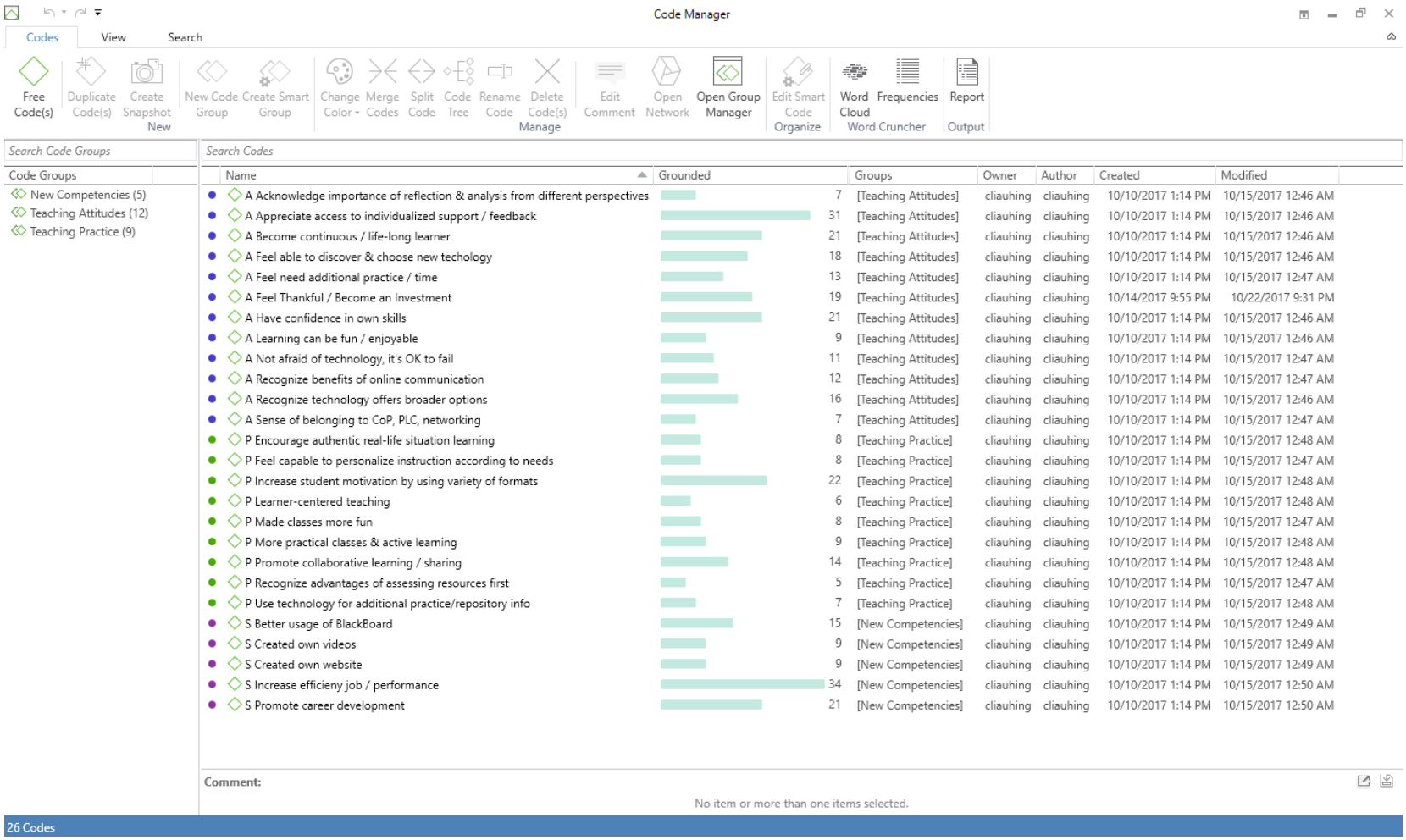
Thank you for your participation!

NOTE: Logo had been deleted to preserve confidentiality of Higher Education language institute

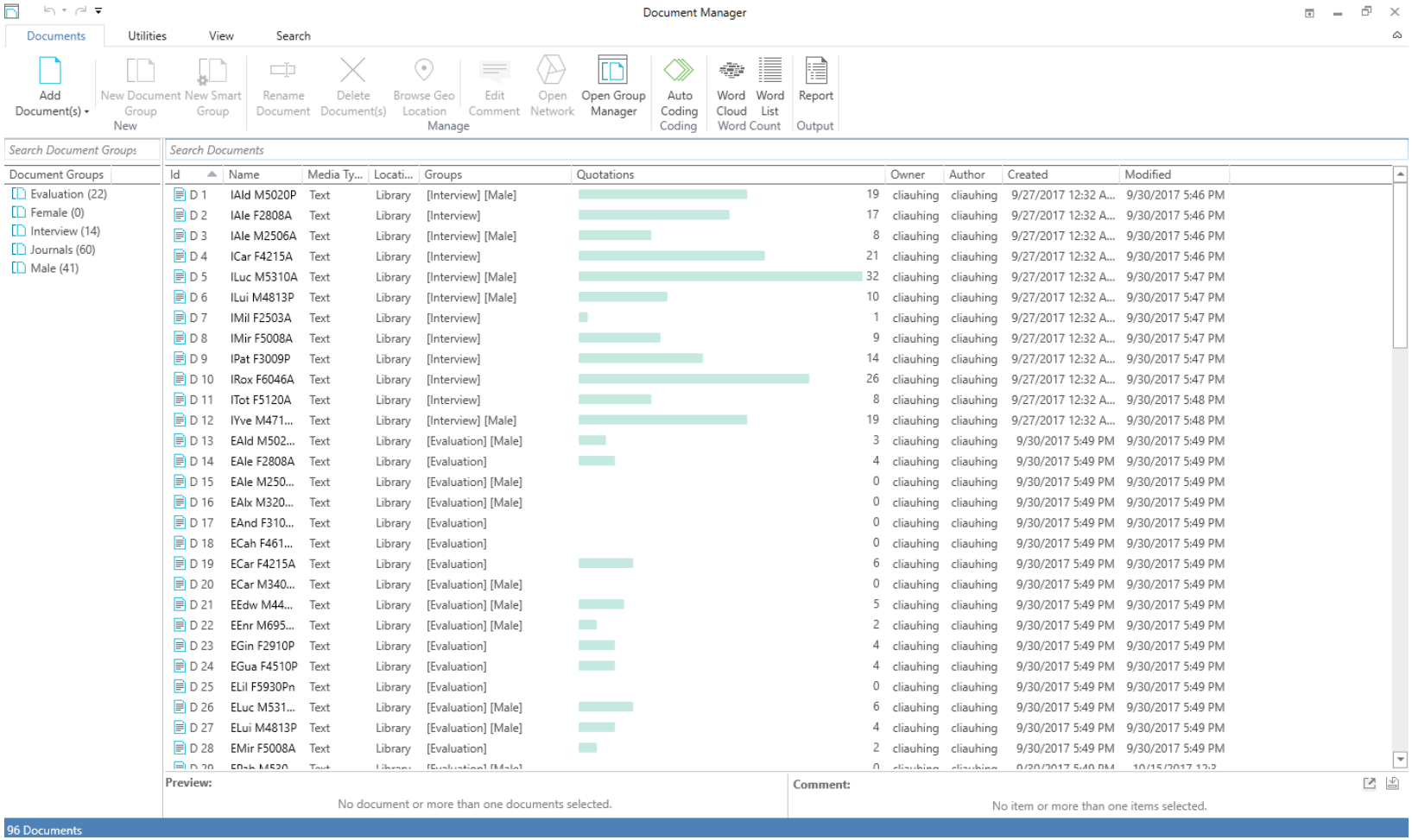
APPENDIX 17. ATLAS.TI 8.0 PRINT SCREENS



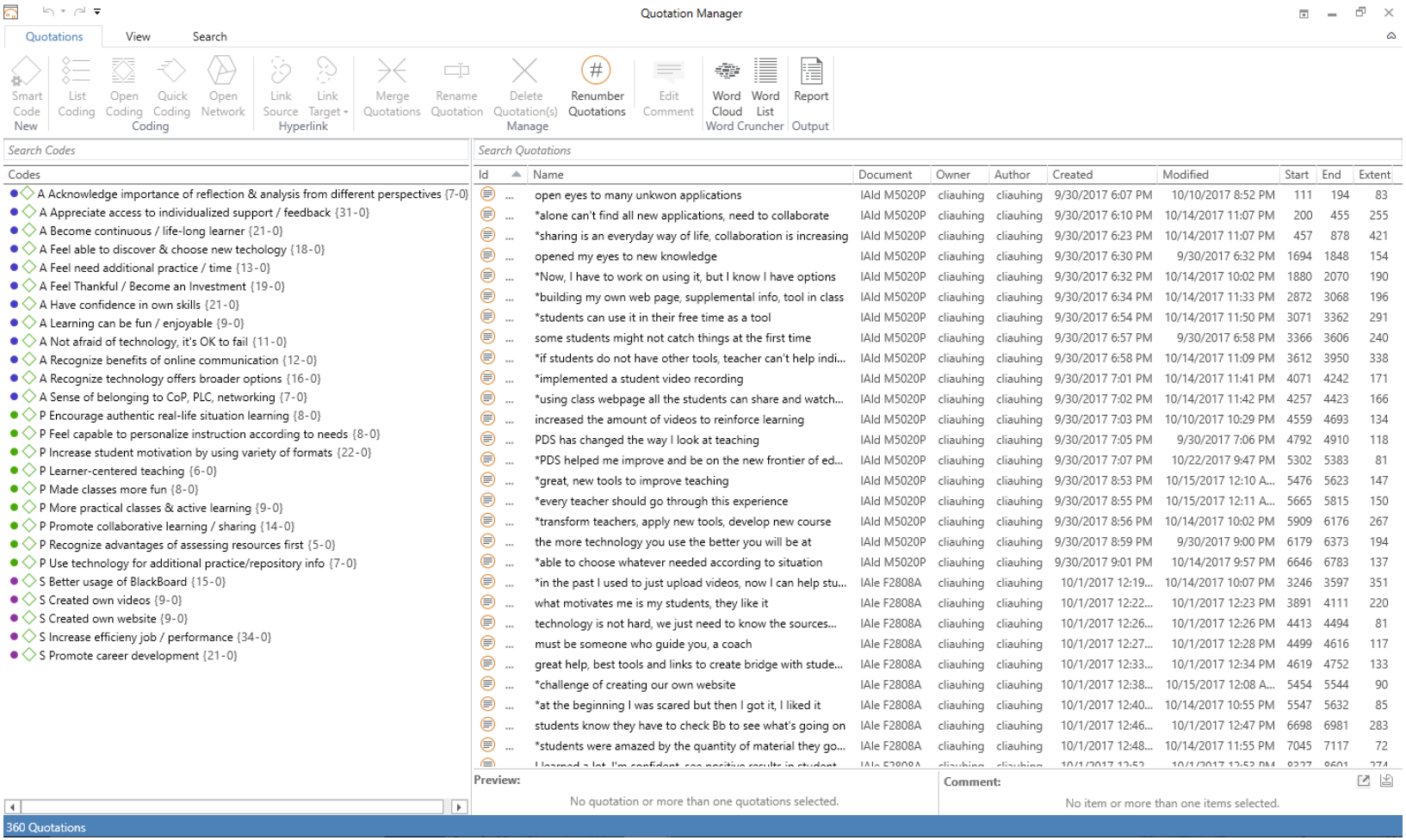
17.1. Example of Documents Used in PDS Trial in Atlas.ti 8.0.



17.2. Example of Atlas.ti 8.0 Code Manager.



17.3. Example of Atlas.ti 8.0 Document Manager.



17.4. Example of Atlas.ti 8.0 Quotation Manager.

APPENDIX 18. DETAIL OF QUOTATIONS BY TYPE OF DOCUMENT

	Interview	Evaluation	Journals	Totals
Appreciate access to individualized support / feedback	8	21	2	31
Become continuous / life-long learner	8	4	9	21
Have confidence in own skills	10	5	6	21
Feel Thankful / Recognize PDS as an investment	11	4	4	19
Feel able to discover & choose new technology	6	3	9	18
Recognize technology offers broader options	9	2	5	16
Feel need additional practice / time	6	3	4	13
Recognize benefits of online communication	7	2	3	12
Not afraid of technology, it's OK to fail	7	1	3	11
Learning can be fun / enjoyable	4	3	2	9
Acknowledge importance of reflection & analysis from different perspectives	3	3	1	7
Sense of belonging to CoP, PLC, networking	6	1	0	7
Total Teaching Attitudes	**85**	**52**	**48**	**185**
	Interview	Evaluation	Journals	Totals
Increase student motivation by using variety of formats	11	0	11	22
Promote collaborative learning / sharing	4	3	7	14
More practical classes & active learning	7	0	2	9
Encourage authentic real-life situation learning	5	1	2	8
Feel capable to personalize instruction according to needs	6	1	1	8
Made classes more fun	8	0	0	8
Use technology for additional practice/repository info	5	0	2	7
Learner-centered teaching	2	0	4	6
Recognize advantages of assessing resources first	4	0	1	5
Total Teaching Practice	**52**	**5**	**30**	**87**
	Interview	Evaluation	Journals	Totals
Increase efficiency job / performance	21	5	8	34
Promote career development	14	2	5	21
Better usage of BlackBoard	8	0	7	15
Created own videos	4	0	5	9
Created own website	6	0	3	9
Total New Competencies Developed	**53**	**7**	**28**	**88**