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# Exploring the Needs, Practices, and Attitudes Toward Technology Integration of Community College ESOL Instructors: Recommendations for Professional Development Through Action Research

Courtney Cunningham

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EXPLORING THE NEEDS, PRACTICES, AND ATTITUDES TOWARD  
TECHNOLOGY INTEGRATION OF COMMUNITY COLLEGE ESOL  
INSTRUCTORS: RECOMMENDATIONS FOR PROFESSIONAL DEVELOPMENT  
THROUGH ACTION RESEARCH

by

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Submitted in Partial Fulfillment of the Requirements

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## DEDICATION

This dissertation work is dedicated to all ESOL instructors working within the community college context. Your work is challenging, but incredibly meaningful. You face your challenges with open hearts and open minds. It is evident the success you want to bring to your students' lives through the work you do. The creativity, commitment, compassion, cultural awareness, and sensitivity you exude truly changes the lives of those students. Thank you for all of your efforts in bettering the lives of our country's immigrants and for helping them become further integrated into the fabric of our communities.

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I would like to begin by thanking Dr. Michael Grant whose guidance and expertise helped me craft my study. His patience and confidence provided me the with tools to move from designing a study to executing it. I would also like to thank my committee—Drs. Anna C. Clifford, Ismahan Arslan-Ari, and Hengtao Tang—for the feedback provided to me, which illuminated areas for improvement and helped strengthen my work.

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I owe a huge thank you to Deborah Healey, a former colleague, mentor and friend. Not only did she encourage me to pursue my doctorate, but she acted as a critical friend. Being a seasoned veteran in the field of TESOL and in technology integration for language learning, her feedback and suggestions were invaluable.

I would also like to thank my mom, my dad, and my late grandparents. These people have played a huge role in who I am today. Without them, I would not have the value for education nor would I have the work ethic necessary to complete such a huge undertaking. I love each of them more than I can express with words.

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## ABSTRACT

Research has established both the importance of integrating technology in English language learning and of properly training teachers in order to integrate technology effectively. Inadequate teacher and learner training prevent technology from being utilized to its fullest potential in the English language classroom. A portion of the problem is due to lack of training for practicing teachers. While this is true for English as a second language teachers in all contexts, there is a strong need for instructors working with adult learners to utilize technology and be properly trained in technology integration.

Professional development is a way to overcome barriers preventing successful technology integration. For professional development to be successful, it should cater to the specific needs of the instructors. This research explored the needs, current technology integration practices, and attitudes toward the use of technology with English to Speakers of Other Language (ESOL) educators within a community college context in order to make recommendations for professional development in technology integration.

The following research questions guided the study: 1) What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration? 2) What are the current technology integration practices of the ESOL instructors at PNWCC? 3) What are the current attitudes toward technology of the ESOL instructors at PNWCC? With answering these questions, recommendations have been made for how professional development in technology integration should be

developed and implemented to best support instructors in increasing their technology integration practices.

Using an interpretive-descriptive qualitative design, this action research study collected data in the form of a survey, classroom observations, one-on-one instructor interviews, a focus group interview, and an action researcher journal. Acting as a needs analysis, these qualitative data were analyzed inductively in order to make recommendations, in collaboration with the ESOL faculty at the community college, regarding professional development in technology integration. Based on the needs of the participants, it was determined that they would benefit from a technology mentor/coach, as well as a professional learning community or community of practice, which would provide support, as well as the opportunity to collaborate, resulting in increased technology integration, including both instructor and students uses of technology.



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## CHAPTER 1: INTRODUCTION

### **National Context**

Technology is essential in learning today; it can support learners in developing their ability to communicate, collaborate, create, think critically, and problem solve, which are important skills to succeed in the 21<sup>st</sup> century (Sheninger, 2014; Smaldino, Lowther, & Russell, 2012; U.S. Department of Education, 2017; Whitehead, Jensen, & Boschee, 2013). The importance of technology in education applies to teaching and learning within all contexts, including English as a Second (ESL) language. When referring to students who are learning and using English within a country where it is the native language, the acronym *ESL* is commonly used, and when referring to the teaching of English to speakers of other languages, *TESOL* is used. The use of technology within TESOL has been established as beneficial to both increasing language skills and computer literacy skills.

Integrating technology into language teaching has shown to aid learners in reaching higher proficiency levels, as well as increase their autonomy (Adair-Hauck, Willingham-McLain & Earnest Youngs, 2013; Center for Applied Linguistics, 2010; Chapelle, 2008; Coryel & Chlup, 2007; Healey et al., 2011; Warschauer & Liaw, 2010). Healey et al. (2011), identified three general themes that identify a need for technology standards for TESOL. Those themes include: 1) research shows that there are benefits from the use of technology in language learning and teaching; 2) technology should be integrated to support acquiring the second language and to develop electronic literacy;

and 3) research shows that technology in learning is not being used to its fullest potential because of inadequate teacher and learner training. Because of the benefits of technology for English language teaching and learning, these themes have been developed within TESOL for best practices of technology integration in the language classroom. In these, it has been established that inadequate teacher and learner training is not allowing technology to be utilized to its fullest potential (Healey et al., 2011). This is partially due to teacher preparation programs, but a large portion of the problem is due to lack of training for practicing teachers (Egbert et al., 2002; Kessler, 2006; Healey et al., 2011).

Even though it has been established that formal training in computer-assisted language learning ([CALL]; Note that within the field of language learning, CALL is generalized to include all types of technology-supported language learning.) is necessary to successfully utilize it for language teaching and learning, the majority of training is acquired through conference workshops, personal reading, and other modes of self-education (Egbert et al., 2002; Healey et al., 2011; Kessler, 2006, 2007). It is hoped that the TESOL technology standards will motivate professional organizations, teacher education departments, and individual English language programs to evaluate and educate their teachers to meet targets articulated in the performance indicators of the technology standards (Healey et al., 2011).

Teacher training and professional development (PD) regarding technology integration in English language teaching/learning needs to take place in order for technology to be utilized effectively (Arnold & Ducate 2015; Center for Applied Linguistics, 2010; Chapelle, 2008; Healey et al., 2011; Hubbard, 2008; Hubbard & Levy 2006). Chapelle (2008) recognized that even though some language professionals have

had limited technology training, such as in a general education course, more training is necessary to understand specifics about technology in language teaching. While this is true for ESL teachers in all contexts, there is a strong need for instructors working with adult learners to utilize technology and be properly trained in technology integration (Center for Applied Linguistics, 2010; Chisman, 2008; Warschauer & Liaw, 2010).

Three large bodies of research established both the importance of integrating technology with adult English language learners and the importance of properly training teachers to integrate technology: 1) The Center for Applied Linguistics; 2) *Passing the Torch: Strategies for Innovation in Community College ESL* (Chisman & Crandall, 2007); and 3) TESOL Technology Standards (Healey et al. 2011). The Center for Applied Linguistics (2010) determined that practitioners working with adult English language learners need continual PD following a specific framework, which they developed because of the rapid growth of the immigrant population in the United States in the last 20 years. In this framework, one of the essential elements is the appropriate use of technology to support learners before, during, and after their courses. Chisman and Crandall (2007) conducted one of the largest studies regarding adult ESL community college programs in the United States, which studied five exemplary ESL community college programs for two years. The study revealed that a contributing factor to the success of these colleges were a variety of PD activities offered through the colleges to their faculty and staff, including ongoing technology training and support (Chisman & Crandall, 2007). The study found that in-house PD and support is “essential to maintaining a high-quality faculty” (Chisman & Crandall, 2007, p. 91). In the TESOL technology standards, it is stated that there is a lack of proper training among ESL



teachers and learners regarding effective uses of technology in English language learning (Healey et al., 2011). This suggests that PD is necessary in order to support teachers in technology integration in the language classroom.

PD provides the opportunity for teachers to acquire new perspectives, knowledge, and skills through both formal and informal experiences; these experiences come in a variety of formats including structured in-service trainings, peer teaching, mentoring, books clubs, and informal discussions (Coldwell, 2017; Desimone, 2009; Gaines et al., 2019; Richter, Kunter, Klusmann, Ludtke, & Baumert, 2010). PD is considered effective when teacher practices are improved and student achievement increases as a result (Avalos, 2011; Coldwell, 2017; Desimone, 2009; Evens, Elan, Larmuseau, & Depaepe, 2018; Gaines et al., 2019; Twining, Raffaghelli, Albion, & Knezek, 2013).

In order to determine what type of PD will best support teachers within a given context, it is important to understand the needs of the instructors within that context. Oliver and Townsend (2013) and Kopcha (2012) assert that a needs assessment is important in developing PD opportunities that cater to the needs of a specific teacher population and their context. A needs assessment is an effective way of determining the internal/personal factors, such as beliefs, that teachers hold that may impact the type of training that is best for them (Ireh, 2006; Kopcha, 2010; Vatanartiran & Karadeniz, 2015). Therefore, prior to implementing PD in technology integration, it is essential to fully understand the context in which it will take place (Ertmer, 1999; Hew & Brush, 2007; Hixon & Bruckenmeyer, 2009; Kopcha, 2010, 2012; Oliver & Townsend, 2013).

Additionally, in developing and implementing PD opportunities for educators, it is important to align with theories of adult learning, which emphasizes the self-directed nature of these learners (Beavors, 2018; Center for Applied Linguistics, 2010; Trotter, 2006).

My interpretive-descriptive qualitative study, acting as a needs assessment, sought to fully understand the resources, skills, and concepts that the instructors within the proposed context currently had. Through exploring their interests, needs, insights and ideas, we collaborated to determine PD endeavors that could be developed to best support the faculty in increasing technology integration in their courses.

### **Local Context**

The context of my proposed research was in the adult English to speakers of other languages (ESOL) program at a community college in Oregon, which for the purpose of this study, was referred to by the pseudonym of Pacific Northwest Community College (PNWCC). ESOL programs within Oregon community colleges fall within adult basic skills and are committed to aiding their learners in meeting the adult learning standards that align with the National College and Career Readiness Standards (Higher Education Coordinating Commission, n.d.). The standards for English language arts and literacy include several domains including, reading, writing, speaking, and listening. Within the standards across these domains is the analysis and integration of information from media to reflect the importance of the students' ability to adapt and utilize new technologies (Pimentel, 2013). The Oregon adult learning standards recognize the importance of technology in teaching and learning to prepare learners for the skills they need for work or educational endeavors after the community college.

The Oregon Higher Education Coordinating Commission houses information regarding the adult learning standards on the state's government website (<https://www.oregon.gov/highered/institutions-programs/ccwd/Pages/abs-resources.aspx>). They provide access to program planning and reporting, the learning standards, statements regarding accountability and assessment, among other resources. Among these resources, they include PD, which is said to be available through various resources, which are included in the Oregon adult basic skills policy manual. Within the manual, there are specifications about PD requirements for professionals within different positions at community college institutes. For instructors, there is only a link back to the page referred to above that contains the standards and other resources. Within this page, there are resources to help users understand and navigate the standards. Included in these resources are a PowerPoint (PPT) presentation and a handbook.

Local PD in technology integration is lacking. Regarding PD for adult basic skills educators in Oregon, as provided through the Oregon Higher Education Coordinating Commission (Oregon.gov), few resources exist. This issue is apparent at the college of this study. The ESOL program at PNWCC does not provide PD in areas specified as important in the adult basic skills learning standards. Based on my observation and experience as an instructor at PNWCC, as well as conversations with other instructors and the department chair, instructors within this institute are lacking the knowledge, skills, and/or support needed to successfully integrate technology in their classes. The instructors are aware that we are supposed to aid students in increasing language skills and computer literacy, and that the integration of technology can aid with both of these. Possible reasons for a lack of technology integration include deficient knowledge and

skills regarding technologies to support their learners (Ertmer & Ottenbriet-Leftwich, 2010; Hew & Brush, 2006; Mueller, Wood, Willoughby, Ross, & Specht, 2008) and/or affective factors such as their beliefs about their own abilities to use technology (Brinkerhoff, 2006; Hall & Martin, 2008; Holden & Rada, 2011) and/or their pedagogical beliefs (Ertmer, 2012; Petko, 2012; Tondeur, van Braak, Ertmer, & Ottenbriet-Leftwich, 2017).

Based on communication with the instructors, one of which was the department chair at the time of this study, only one had reported having formal CALL training in their Master's program. While a \$150.00 stipend a year for PD is provided for PNWCC instructors, the majority of us do not use these funds (personal communication with then department chair, January 25, 2018). Yet, this is the only incentive for PD opportunities. The department chair felt that technology integration, in particular, was an area that the instructors needed PD about, herself included. According to the then department chair, though some were utilizing technology, they needed further support in order to fully maximize the benefits of CALL. Additionally, they needed an opportunity to share and collaborate regarding the current technologies they used and to evaluate if these technologies are being utilized effectively (January 25, 2018).

### **Statement of Problem**

Instructors in the ESOL department at PNWCC lack knowledge and skills regarding technology integration, as well as PD opportunities specific to technology integration in English language learning. An understanding of their needs was necessary in order to recommend PD opportunities to best support them.

## **Purpose Statement**

The purpose of this action research (AR) was to explore and describe the needs, technology integration practices, and attitudes toward technology of the ESOL instructors at PNWCC in order to recommend and plan for PD opportunities in technology integration to meet their needs.

## **Research Questions**

The specific research questions that guided this study were:

1. What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration?
2. What are the current technology integration practices of the ESOL instructors at PNWCC?
3. What are the current attitudes toward technology of the ESOL instructors at PNWCC?

## **Researcher Subjectivities and Positionalities**

I am an educator who is passionate about the use of technology in teaching and learning. I believe when utilized with purpose, technology has the ability to positively transform learning environments. This passion was ignited as a graduate student from 2007-2010, when I had my first real encounters with the use of technology in education. PowerPoint was incorporated into lectures; having a strong visual component was immensely helpful. I was a student in a hybrid course. Learning in this modality was ideal for me. The online aspect allowed for both flexibility and time to reflect and fully process the material before face-to-face meetings. Thus, the face-to-face interactions were more productive. Also, I was utilizing the internet far more than I had as an

undergraduate student from 1998-2003. The powerful role that technology was playing in my learning was apparent, and I wanted to provide the same experience for my students.

As a student teacher in Germany during the Summer of 2009, I used technology to support lessons whenever appropriate. The positive response from students was almost overwhelming. They were clearly engaged and motivated when technology was integrated into the lesson. I continued to use technology as an instructor at the University of Oregon's American English Institute (UO AEI), where I worked from 2011-2015. My ability to seamlessly utilize technology to support course goals and objectives in lessons, activities, and class projects resulted in a position to train English as a foreign language educators worldwide via UO AEI's eLearning program. In this program, I trained teachers in integrating technology in the language classroom through a course known as Webskills. Through this course, I was invited to be a plenary speaker at two international conferences, where integrating technology in language teaching was the focus of my talks. These experiences showed me how technology can transform education. All of this led to my desire to pursue a doctoral degree in educational technology.

A key component of my doctoral degree has been conducting the research for this dissertation. In order to do this, I identified the research paradigm and worldview, which is constructivist, to guide my study. I believe that human beings understand the world based on their experiences and interactions with other humans and that they ultimately desire to make sense of the world in which they live and work (Creswell, 2014). As far as research within this paradigm, it is qualitative in nature and inductively creates meaning through data collected in the field (Creswell, 2014). My research involved understanding how to effectively support teachers of ESOL to integrate technology into their daily

teaching practices. Using a survey, one-on-one instructor interviews, classroom observations, a focus group interview, and an action researcher journal, I explored the needs, attitudes, and current technology integration practices of the instructors. Based on my findings, I recommended how to proceed in order to increase technology integration in the ESOL program at PNWCC.

In conducting this research, I thought carefully about my positionality, which refers to my position within the context of the study (Herr & Anderson, 2005). According to the continuum presented by Herr and Anderson (2005), I was an insider in collaboration with other insiders. Within my interpretive-descriptive study, I worked closely with the participants to explore and understand the phenomenon from an inside perspective (Elliott & Timulak, 2005) and to form a plan of action for the betterment of instructional practices. Individuals working within this positionality have shared goals of moving from working individually to working in a collaborative community, influencing organizational change, and providing opportunities for transformation personally, professionally, and institutionally (Herr & Anderson, 2005). My hope, as an insider in collaboration with insiders, was to encourage opportunities to meet more regularly in order to discover ways to improve both our practices and the ESOL program at large.

Though I collected the data and collaborated with my fellow colleagues, I was the researcher. Therefore, I was careful not to position myself as an outsider working with insiders. The difference between insider and outsider can often be a matter of only a degree; the outsider collaborating with insider positionality can occur when the university researchers have a more vested interest in the research than the other practitioners (Herr & Anderson, 2005). For this reason, it was essential for me to recognize that “the issue of

what each stakeholder wants out of the research needs to be carefully negotiated if reciprocity is to be achieved” (Herr & Anderson, 2005, p. 39). Through careful and open-minded communication, I put forth best efforts to fully understanding what each stakeholder wanted and needed out of the research. My recommendations have strived to take action to ensure that everyone’s needs are met.

To be successful in this research, I had to negotiate my positionality. The first step in negotiating my positionality was to get permission from PNWCC to conduct the research. My next step was to obtain permission to conduct the research from the Institutional Review Board (IRB) at the University of South Carolina. This meant carefully articulating exactly what I would do. I also obtained informed consent from the instructors in the ESOL department at PNWCC who agreed to participate in this study (Mertler, 2017). In this, I expressed to them the active role that they would play in the research; they were co-constructors of the research and their input guided the design and implementation of the study (Banister, 2007). It was essential that all parties in the research were clear about my role, as well as their role in the research, and that I stayed continually aware of my position.

The values and biases that I hold made positive contributions to my role as an educational technology researcher. They helped shape the way I conducted my study, as well as interpreted my participants’ needs and behaviors. I am passionate about technology in education, dedicated to understanding how to utilize it, as well as to sharing my knowledge with others. Further, I believe myself to be a leader. I am a motivated and ambitious individual with strong interpersonal communication skills. I have had the opportunity to train English language teachers in technology integration



from all backgrounds and in both online and face-to-face venues. Through these experiences, I have developed the ability to recognize what technological tools are most effective to English language learning specific to various contexts. I have also learned to recognize when and how to assist teachers in learning both about these tools and how to use them. Working with teachers from various backgrounds has given me valuable insight into working with diverse learners and helping them through challenges and encouraging them to succeed. I utilized these skills when working with the participants of my study.

My positionality and background are personal attributes as an educational technology professional and researcher. I had the contextual knowledge to understand the learner population and appropriate technologies to use with them, as well as an understanding of the challenges that are common within this specific context for both learners and instructors. Though I felt confident in my uses of technology with this population and utilize a variety of tools for various purposes, I learned a great deal from the participants of this study, whose uses of technology were different from my own, but equally as effective, from my perspective. Conducting this AR allowed me to learn and grow as an educator and researcher. Part of being an educational technology professional is to collaborate and learn from others, as well as learn independently. I need to continue to be dedicated to learning and collaborating with others, as this AR has shown, so that I may successfully take part in “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (Januszewski & Molenda, 2013, p.1). I plan to continue conducting AR studies, in order to achieve this.

## **Definition of Terms**

**Anticipated or future needs-** This refers to needs that may arise due to changes in the future (Morrison, Ross, Kalman, & Kemp, 2013).

**Computer assisted language learning (CALL):** When referring to the technologies used in the language classroom, this includes systems that rely on computer chips, digital applications, and networks in all forms including DVD players, data projectors, interactive whiteboards, as well as computer-driven mobile devices and MP3 players (Healey et al., 2011). For my study, when referring to technologies in the language classroom and/or the computer lab, one or more of the previously listed will be included.

**ESOL-** This refers to English to Speakers of Other Languages (ESOL), including ESOL instructors and ESOL students.

**Expressed needs-** This refers to a felt need that results in an action. For example, if an individual feels an expressed need, they may take a course or attend professional development related to that need (Morrison et al., 2013).

**First order barriers:** First order barriers as those that are external to teachers, such as resources, time, and support, and second order barriers (Ertmer, 1999).

**Needs analysis/assessment-** Often used interchangeably, a needs assessment or analysis is used to identify gaps in performance in order to determine whether an intervention is necessary. If a gap warrants intervention, recommendations are made (Morrison et al., 2013).

**Normative needs-** This type of need compares the target audience with a national standard. (Morrison et al., 2013).

**Pedagogical beliefs:** Pedagogical beliefs are defined as the educational beliefs teachers have about teaching and learning (Ertmer, 2012).

**Professional development (PD):** PD provides the opportunity for teachers to acquire new perspectives, knowledge, and skills through both formal and informal experiences; these experiences come in a variety of formats including structured in-service trainings, peer teaching, mentoring, books clubs and informal discussions (Desimone, 2009; Coldwell, 2017; Gaines et al., 2019; Richter, Kunter, Klusmann, Ludtke, & Baumert, 2010).

**Self-efficacy beliefs:** These refer to what teachers believe their technological abilities to be and in turn, how confident they are to use technology in their teaching (Oliver & Townsend, 2013).

**Technology integration:** The incorporation of technology into instructional practices to facilitate teaching and support student learning.

## CHAPTER 2: LITERATURE REVIEW

### **Introduction**

The purpose of this AR was to explore and describe the needs, technology integration practices, and attitudes toward technology of the ESOL instructors at PNWCC in order to recommend and plan for PD opportunities in technology integration to meet their needs. The research questions that guided the study were: 1) What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration? 2) What are the current technology integration practices of the ESOL instructors at PNWCC? 3) What are the current attitudes toward technology of the ESOL instructors at PNWCC?

The major topics in the literature review are related to technology integration in higher education and the community college ESOL context. Subtopics related to technology integration include: models of technology integration; instructor attitudes and beliefs toward technology; enablers and barriers to technology integration; overcoming barriers to technology integration; and identifying faculty members' needs for technology integration. Subtopics related to community college ESOL include: computer assisted language learning (CALL); characteristics of ESOL students; teaching in community college ESOL programs; and activities, topics, teaching strategies, and technologies to support English language learners in the community college context.

The initial searches for this literature review were done in Google Scholar and through the University of South Carolina Library, which provides access to a variety of databases. My searches generally led to journal articles in EBSCOhost. Keywords for the initial searches, as identified through the variables in the research questions, included: technology in education, technology in language learning, computer assisted language learning, technology enhanced language learning, technology integration, professional development, teacher training, and/or some combination of those words. There were no indexes included to refine these searches. Articles and resources were chosen that were published within the last 10-12 years. These searches resulted in research articles, books, reports, dissertations, and government documents.

More refined searches took place through the University of South Carolina Library, with the following indexes: articles, peer reviewed, academic journals, and 2011-2018. These searches led predominantly to articles in EBSCOhost. Keywords in these searches included: action research technology integration, computer assisted language learning teacher education, adult English to speakers of other languages, computer assisted language learning, professional development English language teaching, or some combination of these words.

After completing the initial topical outline, gaps in my literature review were apparent. One area that needed further support was adult learning theories. As a result, searches were conducted for sources related to this topic. These searches took place in both Google Scholar and through the University of South Carolina Library. Keywords for these searches included adult learning theories, teacher cognition, and adult learning theories and professional development. No indexes were included in these searches.

Additionally, more resources were needed for technology integration specific to higher education, as well as the role of teachers' attitudes toward technology in regard to their technology integration practices. Searches for resources related to these areas was conducted through ScienceDirect. Keywords included technology integration higher education, teacher attitude technology integration, and teacher beliefs technology integration. Finally, it was necessary to find research regarding models for technology integration in higher education. Previous literature revealed that Diffusion of Innovations theory, technology acceptance model (TAM), and technological pedagogical content knowledge (TPACK) were models or frameworks that led to successful technology integration. Therefore, searches were conducted using these words and/or in combination with technology integration higher education. These searches were conducted predominantly in the University of South Carolina Library leading to a variety of databases including EBSCOhost and ScienceDirect.

A method employed for collecting sources for this literature review that was continually utilized was mining the references of valuable resources. This method provided some of the most relevant and applicable resources for my research. It should also be noted that when reviewing my working draft(s) of my review of literature, areas that needed further support were evident. Therefore, searches continued both through Google Scholar and the University of South Carolina Library, and databases therein, to fill these needs.

The review of literature is organized into two primary sections. These sections include Technology Integration in Higher Education and ESOL and the Community

College Context. A more detailed discussion of each topic, and subtopics therein, follows.

### **Technology Integration in Higher Education**

Technology integration was a central variable in my research. This section begins with a definition of technology integration as provided and synthesized by a variety of sources. Five subtopics follow. The first is a discussion of three models for technology integration: TPACK, TAM, and Diffusion of Innovations theory. There is a focus on how these models have been used in higher education. The second subsection provides a discussion of instructors' attitudes and beliefs toward technology. This is followed by the third subsection which focuses on both the enablers and barriers to technology integration. The next subsection highlights ways to overcome these barriers. The final subsection deals with identifying faculty members' needs for increasing technology integration practices.

It should be noted that though my research is focused on higher education within a community college context, studies regarding K-12 technology integration have also been included in this review. This practice is reflected in the TESOL technology standards. These standards were formatted according to the features of both the Pre-K-12 TESOL ESL standards and the Adult Education ESL program standards and include content from The National Technology Standards, intended for K-12 (Healey et al., 2008). Healey et al. (2008) note that standards for students and teachers of all levels are combined together; while activities for different learner levels may be different, the standards are the same.

Using K-12 research regarding technology integration for higher education is not uncommon within educational research in general. The higher education supplement to The National Technology Standards is built upon the same principles specified in the national standards (U.S. Dept. of Education - Office of Educational Technology, 2017). It is recognized that though the context is different, the same principles for technology integration apply. Sheninger (2014) suggests that digital leadership is needed within higher education and recommends using K-12 principles for technology integration within their programs. Other research supports converging and connecting the contexts of K-12 and higher education. Stoltzfus, Scragg, and Tressler (2015) recognize that the different contexts can learn from one another. Regarding the use of specific technologies to support learning, several studies discuss the use of these technologies within both the K-12 and higher education contexts (Cheung & Hew, 2009; Hew, 2009; Hew & Cheung, 2014; Merchant, Goetz, Cifuentes, Keeney-Kennicutt, & Davis, 2014). Because the TESOL technology standards are intended for both K-12 and higher education, research supports the convergence and connection between K-12 and higher education, and other studies regarding technology integration have referred to the use of specific technologies within both context, research utilized for this section corroborates studies within K-12 and higher education.

### **Defining Technology Integration**

Meaningful technology integration involves using technology to facilitate learning that is student-centered and involves learners in authentic tasks (Ertmer, 1999, 2005; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Judson, 2006). Through the use of technology, learners develop skills for communication, collaboration, and



problem solving (Ertmer et al., 2012; Sheninger, 2014; Smaldino, Lowther, & Russell, 2012; U.S. Department of Education, 2017). For the purpose of this research, technology integration will be defined as the incorporation of technology into instructional practices to support student learning.

Because technology integration is focused on supporting student-centered learning, technologies utilized for teaching and learning purposes should be chosen with a focus on content and the instructional practices they will support. Content and delivery should be the focus of technology; it is not a matter of the type of technology used, but how it is used and for what purpose (Harris, 2005). Simply put, curriculum should drive the technology and not the other way around (Dockstader, 1999).

With a focus on content and pedagogy and the importance of technology in education today, Mishra and Koehler (2006) developed the technological pedagogical content knowledge (TPACK) framework, discussed in further detail in the next section. This framework centers on the subject matter taught, the teaching methods that will be used, and the technologies that support them. It advocates considering the relationship between the content, pedagogical choices, and technology to best support learners in reaching their goals. The following section discusses how TPACK, as well as TAM and Diffusion of Innovations theory, have been used in technology integration in higher education.

### **Models of Technology Integration in Higher Education**

A multitude of research has been focused on models and/or frameworks that lead to effective technology integration. These studies explain how these models have been developed and/or used to inform successful technology integration practices in education.

Models frequently referenced in the research that offer important considerations regarding the proposed research include TPACK (Arnold & Ducate, 2015; Cubeles & Riu, 2018; Harris, Mishra, & Koehler, 2009; Harris, Phillips, Koehler, & Rosenberg, 2017; Mishra & Koehler, 2006, 2009; Sherer, Siddiq, & Tondeur, 2019; Stover, 2013), TAM (Altanopoulou & Teslios, 2017; John, 2015; Oye, Iahad, & Rabin, 2011; Petko, 2012; Sherer, Siddiq, & Tondeur, 2019) and Diffusion of Innovations theory (Iftakhar, 2018; John, 2015; Less, 2003; Medlin, 2001; Moore, 1996; Parrisot, 1995; Rogers, 1995, 2003; Sahin & Rogers, 2006; Straub, 2009). The following provides a discussion of these models, with a focus on studies in higher education, including how they have been used and how they benefit technology integration.

**Technological Pedagogical Content Knowledge.** Mishra and Koehler (2006) developed the TPACK framework as a result of a five-year research program centered on teacher and faculty development in higher education; a design experiment that aided in understanding teachers' growth in effective incorporation of technology for both K–12 teachers and university faculty. The framework is an attempt to address the complicated, varied, and contextualized nature of the knowledge that teachers need for effective technology integration. They emphasize the importance of theoretical grounding in understanding the complex process of technology integration.

Mishra and Koehler (2006) built on Shulman's (1987) notion of pedagogical content knowledge (PCK) to acknowledge the relationship between content knowledge (CK) and pedagogical knowledge (PK), which had previously been considered separate entities. PCK depicts the union of content and pedagogy; it facilitates an understanding of organizing, adapting, and representing the subject matter in teaching practices; central to

this idea is “the manner in which subject matter is transformed for teaching” (Mishra & Koehler, 2006, p. 1021). When Shulman (1987) proposed this concept, technology was not as prominent in education as it is today. Mishra and Koehler (2006) believed that because of technology’s growing role in education since the 1980s, it justified a place in this model; therefore, they included technology as a component to introduce technology pedagogical content knowledge (TPCK), now TPACK.

As emphasized by Mishra and Koehler (2006), TPACK is a foundation for good teaching with technology that requires an understanding of the concepts related to utilizing technology, instructional techniques for integrating technology in constructive ways, as well as how technology can be used to support students and the challenges they face with difficult concepts to learn. The TPACK model is a contribution to the theory, pedagogy, methodology, and practice that go hand in hand with sound instruction that incorporates technology (Harris et al., 2009; Harris et al., 2017; Koehler et al., 2011; Mishra & Koehler, 2006).

Extensive research has explored TPACK’s role in technology integration in K-12 and post-secondary contexts, as well as in informal learning environments. Harris et al. (2017) note that, at the time they wrote their article, there were 1,200 publications dedicated to further understanding and supporting teachers’ development in TPACK. Though TPACK is widely referred to and used as a model for technology integration, it has shortcomings. Cubeles and Riu (2018) acknowledge that the majority of research in TPACK is within primary and secondary context; their study sought to further understand its application for university instructors. Graham (2011) critiques the TPACK framework in several areas, particularly regarding its clarity and theoretical development.

TPACK may need further development, especially in regard to higher education, but it contains important considerations for technology integration. As stated by Mishra and Koehler (2006) “no single framework tells the ‘complete story’; no single framework can provide all the answers. The TPACK framework is no exception” (p. 1047).

**Technology Acceptance Model.** Davis (1989) posited that perceived usefulness and perceived ease of use were among the major variables determining the acceptance or rejection of new technologies. Perceived usefulness is “the degree to which a person believes that using a particular system would enhance his or her job performance” (p. 320). Perceived ease of use is “the degree to which a person believes that using a particular system would be free of effort” (p. 320). Based on these premises, Davis (1989) developed and refined multi-item scales for each variable to evaluate the relationship between them and their self-reported usages. The scales included six items for each construct and were tested on 40 participants and two graphic systems. This study was the foundation of the TAM model, which has been used to examine technology adoption and practices in education (Altanopoulou & Tselios, 2017; Fathema, Shannon, & Ross, 2015; John, 2015; Lui, Chen, Sun, Wibble, & Kuo, 2010; Oye, Iahad, & Rabin, 2011; Park, 2009; Schoonenboom, 2014; Sherer, Siddiq, & Tondeur, 2019).

TAM is based on the Theory of Reasoned Action (TRA) (Altanopoulou & Tselios, 2017; John, 2015; Oye et al., 2011). According to TRA, an individual's intent to complete a behavior is dependent on that individual's attitude toward the behavior; attitude predicts intention and intention determines the actual behavior (Ajzen, 1991; Altanopoulou & Tselios, 2017; John, 2015; Oye et al., 2011). TAM proposes that perceived usefulness and perceived ease of use determine the intended behaviors of

individuals toward the adoption of technology. Research on TAM establishes it to be a powerful model for predicting user acceptance of technology (Venkatesh & Davis, 2000).

Though TAM offers guidance in understanding technology adoption, many studies have expanded it (e.g., Fathema, Shannon, & Ross, 2015; Lui, Chen, Sun, Wibble, & Kuo, 2010; Venkatesh & Davis, 2000), or used it in combination with other models (e.g., John, 2015; Oye et al., 2011) to evaluate technology adoption and practices. This suggests that the TAM model has insufficiencies. Venkatesh and Davis (2000) proposed an extended model of TAM, which includes theoretical constructs of social influence processes including subjective norm, voluntariness, and image, as well as cognitive processes including job relevance, output quality, result demonstrability, and perceived ease of use. Fathema et al. (2015) extended TAM to include the external variables of system quality, perceived self-efficacy, and facilitating conditions to examine faculty's use of a learning management system. Lui et al. (2010) suggested that TAM provides only a general view of whether a new technology has been adopted, and therefore, expanded the model to include variables to further understand users' intentions. Oye et al. (2011) used TAM in combination with the Unified Theory of Acceptance and Use of Technology (UTAUT) to understand barriers and factors influencing technology acceptance at a university in Nigeria. John (2015) used TAM in combination with the Diffusion of Innovations theory to investigate the perceptions and significant factors influencing university professors in Asia to adopt technology into their teaching practices. These studies suggest that TAM is a worthy tool for understanding technology integration practices, but that it needs further development to be used alone.

There are also controversies and inconsistencies with TAM's ability to predict technology adoption. Sherer et al. (2019) conducted a meta-analysis to synthesize the existing body of empirical research on TAM. They sought to clarify controversies and inconsistencies within the findings. They concluded that TAM is effective in hypothesizing direct and indirect variables leading to technology use by teachers. They suggest linking TAM with the professional knowledge of teachers to gain insight on the process of technology acceptance; this would extend the current view of TAM as a model for simply predicting users' intentions and uses to the meaningful integration of technology in instruction.

TAM has established itself in technology adoption research and should be understood and considered by those seeking to examine the general factors contributing to the acceptance and usage of new technologies. Other frameworks, such as Diffusion of Innovations theory, offer a more comprehensive view of technology adoption and the factors that influence it.

**Diffusion of Innovations theory.** The Diffusion of Innovations theory is a widely used theoretical framework regarding the adoption of innovative practices, including technology (Sahin, 2006). Rogers developed the theory in order to analyze technology adoption patterns and understand how, why, and at what rate innovations advance (Itfakhar, 2016; Rogers, 1995, 2003). Rogers (2003) asserted that even when a new idea is clearly advantageous it is often difficult to get it adopted.

In order to provide a solid understanding of Rogers' theory, it is important to review his definition of diffusion. "Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social

system” (Rogers, 2003, p. 3). In this, he established the four main elements as the *innovation, communication channels, time*, and the *social system*. He claimed that these elements are included in every diffusion research study. Within this definition and construct, innovation is defined as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption” (p. 7). He uses technology and innovation synonymously and claims that it is the characteristics of the technology, as viewed by the members of the social system, that determine at what rate it is adopted (Rogers, 2003). Rogers’ explanations of attributes of the innovation, the innovation-decision process, and adopter categories aid in understanding the adoption of new technologies.

A breadth of disciplines uses Diffusion of Innovations theory to understand the complex process of technology adoption (Rogers, 2003; Straub 2009; Sahin, 2006). Regarding education, some consider it the most appropriate for understanding technology adoption in higher education (Iftakhar, 2016; Medlin, 2001; Parisot, 1995; Sahin, 2006). As a result, several studies in higher education context used the theory to further understand the technology adoption practices of their faculty (Iftakhar, 2016; John, 2015; Less, 2003; Medlin, 2001; Parisot, 1995). Follows is a discussion of these studies.

Iftakhar (2016), Less (2003), and Parisot (1995) used Diffusion of Innovations to understand the technology adoption of faculty in higher education. Iftakhar (2016) investigated uses of Google Classroom at Daffodil International University. Less (2003) and Parisot (1995) both used the Diffusion of Innovations theory to understand the technology adoption of community college faculty. Iftakar (2016) and Parisot (1995) found that the characteristics of complexity, compatibility, observability, trialability, and

relative advantage were the factors that encourage or discourage the adoption of technology. These characteristics are Rogers' (2003) attributes of innovation.

Less (2003) used the Diffusion of Innovations theory as a foundation for classifying faculty teaching in degree programs across the North Carolina Community College System, staying consistent to the theory's five categories of technology adoption. Rogers' (2003) technology adoption categories, used to describe people and their approaches to new technologies, include: innovators, early adopters, early majority, late majority, and laggards. In these categories, innovators are considered venturesome and eager to learn and implement new technologies; Early adopters use new innovations with a critical eye and peers often seek advice from them about new innovations; Early majority adopt innovations just before the average member of the social system; Late majority, on the other hand, are more skeptical and adopt new ideas just after the average member; Laggards are the last to adopt new technologies (Rogers, 2003). The study compared those factors across the following demographic criteria: age, gender, race/ethnicity, teaching experience and highest degree attained. Understanding how instructors are classified, and Rogers' explanations of these classifications, can be used to address the needs of the faculty regarding their adoption and continued use of technology in their teaching.

These studies offer insight regarding the use of Diffusion of Innovations theory to explore and understand technology integration practices. Several studies used Rogers (2003) theory, specifically in higher education contexts, to understand the extent to which faculty were adopting technology in their teaching and the potential reasons why they were or were not using it. The Diffusion of Innovations theory has been used, as has



TPACK and TAM, to further explain and understand technology integration in education. While TPACK focuses on the importance of understanding the content and pedagogy and how these intersect with technology to determine its successful implementation, TAM and Diffusion of Innovations theory focus on evaluating attributes of the technology and how they impact the acceptance and adoption of these technologies.

John (2015) and Medlin (2001) acknowledge similarities between Diffusion of Innovations theory and TAM, demonstrating how these models have identified common variables that explain technology integration practices. While TAM is predominantly concerned with the perceptions about the technology, specifically its perceived usefulness and ease of use, the Diffusion of Innovations theory considers these and other factors, including the process for deciding to adopt the technology, as well as the categories of adopters and how these factors determine and explain the rate of adoption.

The perceptions toward a new technology regarding its ease of use and usefulness as described in TAM (Davis, 1989) and the attitudes toward technology that determine its rate of adoption and adopter categories identified by Rogers (2003) are major factors that can lead to successful technology integration. The attitudes and beliefs of instructors toward technology and their ability to use it are key factors in its adoption and use in the classroom. The following section addresses and expands on this area.

### **Instructor Attitudes and Beliefs toward Technology**

This section explores how teachers' attitudes and beliefs determine their uses of technology for teaching. The two areas of focus are a) teachers' pedagogical beliefs and b) their beliefs about their ability to use technology, known as, self-efficacy.

Teachers' attitudes and beliefs determine how likely they are to integrate technology into classroom practices (Ertmer, 1999; Ertmer et al., 2012; Hakim, 2015; Ottenbreit-Leftwich, Glazewski, Newby, & Ertmer, 2010; Petko, 2012; Prestridge, 2012;). Teacher beliefs are difficult to define, as the literature offers diverse meanings (Prestridge, 2012). Several authors rely on the work of Pajares (1992) to provide an explanation of teacher beliefs (Ertmer & Ottenbreit-Leftwich, 2010; Kim et al., 2013; Ottenbreit-Leftwich et al., 2010; Ottenbreit-Leftwich, Liao, Sadik, & Ertmer, 2018; Petko, 2012; Prestridge, 2012). Pajares (1992) determined that "All teachers hold beliefs, however defined and labeled, about their work, their students, and their roles and responsibilities" (p. 314). These beliefs predict and determine teaching practices and are considered to play a more influential role in teaching practices than actual knowledge (Kim et al., 2013; Pajares, 1992). In the literature regarding beliefs about technology in teaching, these beliefs are often discussed in terms of teachers' pedagogical beliefs as well as their beliefs about their ability to use technology, or their self-efficacy toward technology (Kim et al., 2013; Oliver & Townsend, 2013; Ottenbreit-Leftwich et al., 2018; Petko, 2012; Prestridge, 2012; van den Beemt & Diepstraten, 2015).

**Pedagogical beliefs.** Pedagogical beliefs are defined as the educational beliefs teachers have about teaching and learning (Ertmer, 2012). The personal theories that teachers hold about learning have a considerable influence on all aspects of their instruction (Applefield, Huber, & Moallem, 2001). This applies to their use of technology as well. Teachers' pedagogical beliefs are reported as one of the major factors determining whether they integrate technology into their teaching practices (Kim et al.,

2013; Inan & Lowther, 2010; Ottenbreit-Leftwich et al., 2010; Petko, 2012; Prestridge, 2012; van den Beemt & Diepstraten, 2015).

Ottenbreit-Leftwich et al. (2010) collected data in the form of interviews, observations, and electronic portfolios of eight award winning teachers to measure their values and beliefs regarding the use of technology in teaching and learning. In order to understand what they mean by value beliefs, they explained that belief systems are complex networks of attitudes and beliefs. Within the belief system are value beliefs, which determine the importance or value of something. When a teacher views a technology as valuable, they are more likely to spend the time and energy to learn about the new technology. In their study, they used observations to examine technology integration practices and interviews to investigate teachers' values related to technology. They found that based on their values and beliefs, teachers used technology to improve as professionals in the following ways: facilitating business and organization in the classroom, creating materials customized to their classes, and participating in PD. Further, they determined that the core value driving technology use was its benefit to students; all of the ways in which the teachers were using technology were to ultimately better aid students with their learning.

In reference to pedagogical beliefs and technology integration, research shows that teachers with a constructivist approach are more likely to incorporate higher levels of technology into their instruction (Ertmer & Ottenbreit-Leftwich, 2010; Ertmer, et al., 2012; Judson, 2006; Petko, 2012; Prestridge, 2012; Tondeur, van Braak, Ertmer & Ottenbreit-Leftwich, 2016). Simply put, constructivists believe that individuals create meaning based on their experiences (Ertmer & Newby, 2013). Applefield, Huber, and

Moallem (2001) specify four central characteristics of constructivist beliefs: 1) learners construct their learning, 2) students' new learning depends on their existing understanding, 3) social interaction is critical to learning, 4) authentic learning tasks are necessary for meaningful learning. Constructivist believe in a student-centered approach and their use of technology is reflected in this belief (Judson & Judson, 2006).

Because of the affiliation of constructivist beliefs facilitating the use of technology in teaching, Petko (2012) focused on the impact of constructivist beliefs on the likelihood of using technology tools for instruction. The study found a positive correlation between the two. Ertmer (2005) and Ertmer et al. (2012) discussed how teachers with constructivist beliefs tend to use technology to support student-centered learning. Student-centered learning involves authentic experiences through active learning that leads to the creation of a new artifact or product (Ottenbreit-Leftwich et al., 2010). Prestridge (2012) confirmed that there is a link between teachers' constructivist beliefs and using technology to promote creative thinking and learner-centered activities.

Though pedagogical beliefs are a major influence in the adoption and integration of technology to support instruction, there are other factors, as well. Teachers' ability to use technology and their beliefs about that ability, referred to as self-efficacy, is also a critical factor in their technology integration practices (Albion, 1999; Brinkerhoff, 2006; Holden & Rada, 2011; John, 2015; Kim et. al, 2013; Oliver & Townsend, 2013).

**Self-efficacy beliefs.** Self-efficacy beliefs regarding technology integration refer to what teachers believe their technological abilities to be and in turn, how confident they are to use technology in their teaching (Oliver & Townsend, 2013). Ertmer and Ottenbreit-Leftwich (2010) suggest that self-efficacy may be a more prominent factor in

determining whether teachers incorporate technology into their teaching than knowledge; Ertmer and Ottenbreit-Leftwich cite numerous studies supporting that teachers' confidence with technology is instrumental in their likelihood to use it for instructional purposes. John (2015) and Holden and Rada (2011) investigated teacher self-efficacy of technology in relation to the TAM model. John (2015) found that among the strongest indicators that influence technology integration was computer self-efficacy, which in addition to other factors, determines the attitude of teachers toward technology in teaching and learning. Holden and Rada (2011) found that technology self-efficacy directly influenced perceived ease of use and usability of technology. Inan and Lowther (2010) examined eight factors affecting technology integration in their study. They found the most significant factor influencing technology integration to be teacher readiness and confidence with technology, aligning with other studies' findings of the importance of computer self-efficacy.

In an effort to understand what prevents teachers from integrating teaching into instruction, Ottenbreit-Leftwich et al. (2018) focused on self-efficacy. The study found that the more teachers integrated technology into their teaching, the more their self-efficacy, or confidence in using the technologies for teaching, increased. Self-efficacy can play a positive role in technology integration or it can be a barrier (Brinkerhoff, 2006; Kim et al., 2013; Oliver & Townsend, 2013; Ottenbreit et al., 2010; Ottenbreit et al., 2018; Prestridge, 2012). The following section explains both the enablers and barriers to effective technology integration in higher education.

## **Enablers and Barriers to Technology Integration**

In this section, the factors that influence success with technology integration, referred to as enablers, as well as factors that present barriers are discussed. Enablers to technology integration are discussed first followed by a discussion of barriers.

**Enablers.** Effective technology integration facilitates learning that is student centered, engages students in authentic tasks, and promotes higher-order thinking (Ertmer, 1999, 2005; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Judson, 2006; Polly, Grant, & Gikas, 2011). Instructors with constructivist beliefs recognize technology for its ability to promote higher-order thinking and utilize it more frequently in their instructional practices than instructors with more traditional beliefs (Ertmer, 2005; Ertmer & Ottenbreit-Leftwich, 2010; Ertmer, et al., 2012; Petko, 2012; Prestridge, 2012; Tondeur, van Braak, Ertmer & Ottenbreit-Leftwich, 2016). The pedagogical beliefs of these instructors guide their use of technology. They use technology to promote communication, collaboration, and problem solving, which are considered essential skills for the future (Ertmer et al., 2012; Sheninger, 2014; Smaldino, Lowther, & Russell, 2012; U.S. Department of Education, 2017). As emphasized by Ertmer (1999), successful technology integration is both curriculum-based and future-oriented; it prepares students for the future “they will inherit” (p. 49). Meaningful technology integration supports learners in developing these essential skills for the future in student-centered ways; when instructors believe in a student-centered approach to learning they are more likely to integrate technology in student-centered ways (Ottenbreit-Leftwich et al., 2010). The pedagogical beliefs of the teachers play a critical role in their productive use of technology in their teaching (Kim et al., 2011).

While pedagogical beliefs are a key factor in the effective use of technology in instructional practices, as discussed previously, computer self-efficacy also plays a role in the successful technology integration (Ertmer & Ottenbreit-Leftwich, 2010; Oliver & Townsend, 2013). When confidence associated with computer self-efficacy is high, it leads to increased uses of technology in teaching (Ertmer & Ottenbreit-Leftwich, 2010; Lowther, Inan, Strahl, & Ross, 2008; Mueller, Wood, Willoughby, Ross, & Specht, 2008; Wozney, Venkatesh, & Abrami, 2006). Mueller et al. (2008) identified variables between teachers who do and teachers who do not integrate technology in their teaching. The study categorized teachers as low-level versus high-level integrators and investigated numerous variables to determine which ones contributed to the levels of integration. They found that experience with computer technology and attitudes toward technology were the most significant variables in determining teachers' success with technology integration. Positive attitudes and experiences with technology lead to increased use (Mueller et al., 2008). In their study of 764 teachers, Wozney et al. (2006) found that confidence in using technology as an instructional tool was one of the two greatest predictors of successful technology integration. Ertmer and Ottenbreit-Leftwich (2010) also noted confidence in computer self-efficacy, as well as pedagogical beliefs, as key in the effective use of technology in teaching, but also found that knowledge/skills and school culture were factors contributing to successful technology integration.

The school culture and environment can also impact technology integration. Ertmer and Ottenbreit-Leftwich (2010) explain that levels of effective technology integration among teachers is greater when schools have the following: are well-equipped with technology; have cultures that focus on using technology to change learning;

provide opportunities for instructors to be supported in their use of technology and problem solve with peers and other facilitators. Inan and Lowther (2010) also found the school environment to be a critical factor in determining technology integration levels. They noted that the school environment influences teachers' computer proficiency, readiness, and beliefs and that the support from peers, administrators, and the community plays a major role in technology integration. In addition to the school environment and culture fostering technology integration, it is important for teachers to have knowledge of the technology, content, and pedagogy in order to effectively utilize technology in teaching and learning (Ertmer & Ottenbreit-Leftwich, 2010). The components of technology, content, and pedagogy are central to the TPACK framework described above.

Using the TPACK framework, which focuses on the intersection of knowledge in the areas of content, pedagogy and technology, is associated with effective technology integration (Cubeles & Riu, 2018; Mishra & Koehler, 2006; Polly et al., 2011; Stover, 2013). Instructors need knowledge and skills in each of these areas, as well as an understanding of how these areas are interdependent, when thinking about effective technology integration (Harris et al., 2009). While an understanding of the TPACK framework, pedagogical beliefs, computer self-efficacy, and school culture can lead to successful technology integration, some of these areas can also present barriers in the effective use of technology for teaching and learning.

**Barriers.** Many of the same factors that enable effective technology integration also present barriers. Barriers commonly referred to in the research include resources, school environment, as well as instructors' knowledge and skills, and attitudes and beliefs



(Ertmer, 1999; Hew & Brush, 2007; Lowther et al., 2008). Regarding barriers to technology integration, they are commonly referred to and categorized as first order and second order barriers (Ertmer 1999; Ertmer et al., 2012). Ertmer (1999) classifies first order barriers as those that are external to teachers, such as resources, time, and support, and second order barriers as the fundamental beliefs that teachers have about teaching and learning. These barriers are discussed throughout the research.

Different barriers such as time, support, resources, knowledge and skills, as well as attitudes and beliefs can prevent effective technology integration. Polly et al. (2011) recognize that time and institutional support present barriers to successful technology integration; in addition, they note that weak technology skills in instructors poses a barrier. Mueller et al. (2008) discuss environmental factors such as access to resources and/or technical difficulties as barriers to technology integration, as well as new technologies. They suggest that learning new technologies can be an obstacle for teachers in effective technology integration. Hew and Brush (2007) discuss the relationship between four key variables regarding technology integration: 1) teachers' attitudes and beliefs toward technology 2) teachers' skills and knowledge 3) the institution and 4) the available resources. Regarding the relationship between these barriers, they found that teachers' attitudes and beliefs toward utilizing technology are affected by their knowledge and skills, and vice-versa. Hew and Brush (2007) also found that the institution directly affects the availability and quality of resources, the competency of teachers' knowledge and skills, and teachers' attitudes. They noted that the institute could affect teachers' knowledge and skills through providing PD.

First order barriers related to access, time, and support are easier to overcome than second order barriers, which require a fundamental change in teachers' attitudes and beliefs (Ertmer, 1999; Mueller et al., 2008). Throughout the research, PD in various forms is recommended as a way to overcome these second order barriers. The following section discusses overcoming barriers to technology integration with a focus on second order barriers of attitudes and beliefs.

### **Overcoming Barriers to Technology Integration**

Teachers' attitudes and beliefs regarding both their pedagogical preferences and their self-efficacy with technology are barriers that can prevent them from integrating technology for instructional purposes. However, PD can aid in overcoming these barriers (Brinkerhoff, 2006; Ertmer et al., 2012; Kim et al., 2013; Kopcha, 2012; Oliver & Townsend, 2013; Ottenbreit-Leftwich et al., 2010). Research suggests aligning PD with the needs and beliefs of instructors in order to increase technology integration practices. This section begins with a discussion of overcoming barriers related to attitudes and beliefs, where PD is a recurring theme. What follows is a discussion of PD with subsections related to PD in CALL and within ESOL community college programs. The final subsection addresses the importance of identifying instructor needs when determining the direction of PD.

**Overcoming barriers related to attitudes and beliefs.** In their study of the value beliefs of eight award winning teachers for technology integration, Ottenbreit-Leftwich et al. (2010) found that the teachers were using technology to address professional and student needs that aligned with their value beliefs. The professional needs that the teachers used technology to address seemed to be associated with ways to improve their

efficiency and effectiveness. Teachers also used technology to address student needs, specifically to engage and motivate students, to enhance comprehension and higher order thinking skills, and to increase students' technological skills. At the core of these beliefs was how best to facilitate learning to improve student achievement, thus the teachers' pedagogical beliefs influence their uses of technology. Ottenbreit-Leftwich et al. (2010) suggest that PD for technology should focus on a specific purpose that corresponds with value beliefs regarding teaching and learning. In doing this, PD might more successfully lead to changes in the classroom.

Changing teachers' beliefs about technology for learning can lead to increased levels of technology integration. Parajes (1992) discusses Guskey's findings that when teachers can be convinced to use a procedure and discover that it is useful in improving student learning, huge changes in attitude occur, and changes in beliefs follow. PD should provide opportunities that build on each other, in order to challenge teachers' current beliefs, but ultimately display the positive effects for student learning (Kim et al., 2013). If teachers are shown how technologies can increase student achievement, especially through their own uses of them, they are more likely to change their behaviors to include them in their teaching. In order to achieve this, Kim et al. (2013) suggest collaboration through networking; networking both internally with the same school and externally outside of the school can facilitate collaboration that allows teachers to share information and discuss challenges, and steer and influence new beliefs.

Ertmer (2005) emphasizes the importance of PD incorporating opportunities for teachers to express their beliefs and for those beliefs to be challenged, for teachers to express shared goals, and to explore technologies that will be beneficial to their learners.

Ertmer suggests three strategies for changing beliefs, and in turn practices, of teachers regarding their technology use: give the teachers personal experiences with the technologies; provide them with vicarious experiences through observations of other teachers; and create opportunities for socio-cultural influences through professional learning communities and communities of practice. In changing the beliefs of teachers in such a way that influences their practices, PD offers promise. In addition to the ways PD can address barriers presented by pedagogical and self-efficacy beliefs, research also suggests PD opportunities being situated within the context of the teaching and learning.

Based on the findings of their study, Ottenbreit-Leftwich et al. (2010) suggest that in developing PD, best practices within the context the teachers work should be understood. This sentiment is reoccurring in the research. Ertmer and Ottenbreit-Leftwich (2010) discuss the importance of being situated; situated PD is an approach that addresses the needs of the teachers that are specific to their environment.

Kopcha (2012) also emphasizes the value of situating PD to overcome barriers such as vision, beliefs, and PD, when it is not effectively designed and delivered. For his study, interviews and surveys were conducted to evaluate changes in teachers' perceptions of these barriers over a two-year time period. The first year employed mentoring. The mentoring activities focused on active learning through coaching, modeling, and observing. The second year utilized teacher-led communities of practice. Kopcha conducted a needs assessment to understand the needs of the teachers within the context of the study before implementing these two forms of PD. They found success in implementing these forms of situated and sustained PD. After a year of being mentored, teachers were using technology in student-centered ways, supporting students in learning

the content; this was thought to be a result of the community of practice as a sustained form of support for technology integration. Kopcha concludes that the situated learning activities that were centered on principles of effective PD were the key to supporting teachers in increasing their technology integration levels.

Oliver and Townsend (2013) shared Kopcha's (2012) view that a needs assessment was important in developing PD opportunities that cater to the needs of a specific teacher population and their context. A needs assessment is an effective way of determining the internal/personal factors, such as beliefs, that teachers hold prior to beginning technology integration training (Kopcha, 2010, 2012; Oliver & Townsend, 2013).

**Professional development.** PD provides the opportunity for teachers to acquire new perspectives, knowledge, and skills through both formal and informal experiences; these experiences come in a variety of formats including structured in-service trainings, peer teaching, mentoring, books clubs, and informal discussions (Coldwell, 2017; Desimone, 2009; Gaines et al., 2019; Richter, Kunter, Klusmann, Ludtke, & Baumert, 2010). PD is considered effective when teacher practices are improved and student achievement increases as a result (Avalos, 2011; Coldwell, 2017; Desimone, 2009; Evens, Elan, Larmuseau, & Depaepe, 2018; Gaines et al., 2019; Twining, et al., 2013). PD is centered on improving teaching practices for the betterment of student learning. In regard to the proposed research, PD is focused on increasing instructors' knowledge and skills in utilizing technology for ESOL students in the community college context. A discussion of PD in CALL and within the community college ESOL context follows.

***Professional development in computer assisted language learning.*** One key finding in the literature regarding CALL is that although technology plays an important role in language education, teachers need more PD and opportunities to learn how to successfully utilize technology in the classroom (Center for Applied Linguistics, 2010; Healey et al., 2011; Hubbard, 2008; Lathram, Schnieder, & Ark, 2016; McClanahan, 2014; Nami, Marandi, & Sotoudehnama, 2016). The research for PD in CALL echoes the literature on effective technology integration within other educational contexts.

Research regarding CALL training recognizes the value of professional learning communities and communities of practice in providing instructors with opportunities for collaboration and reflection (Healey et al., 2011; Shin & Kang, 2017). Healey et al. (2011) and Shin and Kang (2017) discuss professional learning communities and communities of practice as being successful for PD in CALL. These are not the only commonalities between PD in technology integration and PD in CALL. Another similar form of PD for CALL training is peer coaching and mentoring. Mentorship/peer coaching have contributed to increased levels of technology integration in the language classroom (Arnold & Ducate, 2015; O'Hara, Pritchard, Huang, & Pella, 2013; Pritchard et al., 2013).

One aspect of CALL training that is emphasized, in addition to those previously highlighted, is the importance of the contextualized nature of the CALL training. CALL training should be contextualized; and PD should focus on technologies that are applicable to the context of focus (Almuhammadi, 2017; DelliCarpini, 2012; El Shaban & Egbert, 2018). In order for training in CALL to be successful, the context that the CALL training will take place in, and the technologies that support the teachers and

learners in that context, must shape the training. The context of the proposed research is within a community college ESOL department. Successful PD for educators in that context is discussed below.

***Professional Development in community college English to Speakers of Other Languages.*** Like the literature regarding CALL training, research emphasizes the needs of teachers in adult community college programs to expand their professional knowledge through PD opportunities. PD for practitioners working with adult English language learners has become important as the immigrant population has grown in the last twenty years (Center for Applied Linguistics, 2010; Chisman & Crandall, 2007; Getting Smart, 2016; Ye, Prater, & Steed, 2011). As a result, The Center for Applied Linguistics (2010) developed a framework for quality PD for practitioners working with this population. In this publication it is stated that, “a strong workforce of trained and knowledgeable practitioners is needed that can work effectively with adults learning English and facilitate their transitions through adult education programs and into postsecondary education and employment” (p. 1). The framework identified the following essential elements for PD in adult education:

1. Occurs over time and is not a one-shot activity,
2. Is built on activities that help instructors advance their own understanding of the subject matter and the ways adults learn this subject matter,
3. Helps instructors connect content and materials to real-world situations,
4. Reflects the research on how adults learn,
5. Reflects national or state standards,
6. Is designed for instructors in adult education programs,

7. Contains materials whose subject matter accommodates different learner backgrounds,
8. Includes an evaluation component to appraise change in the knowledge and practices of instructors,
9. Incorporates affective factor intervention (e.g., study skills, time management, reduction in anxiety),
10. Uses appropriate technology to prepare and support participants before, during, and after intervention. (p. 2)

This framework, in addition to considerations regarding effective approaches to both technology integration in general and in CALL, are important considerations regarding the proposed research. One important aspect of this is the contextualized nature of the PD; it should be designed specifically for instructors working with adults and focused on the activities, content, and real-world skills the learners within this context need. Effective PD in CALL also emphasized contextualizing the PD (Almuhammadi, 2017; DelliCarpini, 2012; El Shaban & Egbert, 2018). This echoes Kopcha (2010, 2012) and Oliver and Townsends (2013) sentiments regarding situating PD opportunities within the context and aligning them with principles of effective PD. In order to achieve this a needs assessment is recommended (Kopcha, 2010, 2012; Oliver & Townsend, 2013). The following section briefly discusses identifying and focusing on the needs of the faculty within a context when designing PD.

***Needs Analysis in identify directions for professional development in technology integration.*** Research has determined that successful PD caters to the needs of the instructors within the context of their instruction (Ertmer, 1999; Hew & Brush,



2007; Hixon & Bruckemeyer, 2009; Kopcha, 2010, 2012; Oliver & Townsend, 2013).

Because of the importance of identifying teachers' needs and developing PD around these needs, several researchers utilized a needs analysis in determining how to develop PD opportunities in technology integration for specific instructor populations (Ireh, 2016; Kopcha, 2010; Vatanartiran & Karadeniz, 2015). Ireh (2016) used a needs analysis to determine topics for workshops that would best meet the needs of middle school ESL teachers. Kopcha (2010) used a system-based approach to develop mentoring and communities of practice as forms of PD in technology integration in which the first step was a needs assessment. Based on the premise that PD that directly addresses the needs of teachers was more appealing, he performed an analysis to assess teachers' skill levels with technology, as well as both their pedagogical approaches with technology and beliefs about technology as a tool for learning. Vatanartiran and Karadeniz (2015) used a needs analysis to make recommendations for a technology integration plan. Similar to Vatanartiran and Karadeniz, this research also acted as a needs analysis in order to make suggestions and recommendations for increasing technology integration practices. Using a needs analysis, focusing on the felt, normative, and anticipated/future needs as defined by Morrison et al. (2013), and taking into consideration the attitudes toward technology and current technology integration practices of the instructors, aided in making recommendations for technology specific PD to meet the needs of the instructors within the context of the research.

This section has defined and discussed technology integration with a focus on three models for successful technology integration: TPACK, TAM, and the Diffusion of Innovations theory. While TPACK offers guidance for technology integration and a focus

for PD, TAM and the Diffusion of Innovations theory aids in understanding factors associated with technology adoption. Among these factors was teachers' attitudes and beliefs toward technology, which was discussed, as was how these factors and others can be both enablers and barriers to technology integration. A discussion of overcoming these barriers with effective PD was provided, as well as approaches to developing successful PD in CALL and within community college ESOL, which emphasized the importance of understanding instructor needs.

The following section highlights research regarding the context of the proposed research, which is within community college ESOL. While the proposed study acted as a needs analysis, providing a deeper understanding of the needs of instructors within the institute of study, in order to determine if and what type of PD is appropriate for them, the following section will provide an overview of this context based on previous research.

### **English to Speakers of Other Languages and the Community College Context**

The context of the proposed research is within community college ESOL. This section briefly discusses characteristics of both teaching in community college ESOL programs and of the learners in this context. There is also discussion of the strategies, topics, and technologies that are appropriate for this population.

### **Teaching in Community College English to Speakers of Other Languages Programs**

Teachers in community college ESOL programs are teaching immigrants, refugees, and international students within diverse instructional environments (Dobransky, 2015; Santos, Charbonnet, & Bailey, 2009). For community college ESOL instructors to be effective, they must cater what and how they deliver their instruction to

the varying needs of their learners, not only within a course, but potentially within each class session. This requires a combination of professional knowledge, teaching expertise, relevant experience, as well as other personal qualities (Chisman & Crandall, 2007). The professional knowledge is expected to come with a high degree of education. Instructors teaching in community college ESOL programs are expected to have a Master's degree and to understand and apply theories and methodologies related to ESL (Chisman & Crandall, 2007; Sun 2010). Of particular importance is understanding theories of second language acquisition (Chisman & Crandall, 2007; McKay & Schaetzel, 2008; Rodriguez, Burt, Peyton, & Ueland, 2009). Regarding personal qualities that correspond well in community college ESOL are the ability to respond, cultural awareness and sensitivity, as well as, flexibility and compassion (Eyring, 2014). Teachers who possess these qualities may be better able to respond to the needs of learners within this context, which is considered essential to instructional success. Approaches to effective instruction in community college ESOL emphasize understanding learners needs (Burt, Peyton, & Schaetzel, 2008; Chisman, 2008; Chisman & Crandall, 2007; Kim & Diaz 2013; Rodriguez et al., 2009; Van Duzer & Florez, 2003). Characteristics of community college ESOL learners are further discussed below.

### **Characteristics of English to Speakers of Other Language Students**

Learners in the ESOL community college context are considered to have limited English proficiency, and community colleges play a key role in providing English language instruction for these individuals (Chisman, 2008; Chisman & Crandall, 2007; Eyring, 2014; Kim & Diaz, 2013; Spurling, 2008; Van Duzer & Florez, 2003). These learners possess varying proficiency levels, have different goals for learning English, and

may come from limited educational backgrounds (Burt, Peyton, & Schaetzel, 2008; Chisman, 2008; Chisman & Crandall, 2007; Kim & Diaz, 2013). Though these differences exist, they need to learn English to survive and potentially thrive in their U.S. communities and as life-long learners (Van Duzer & Florez, 2003). Therefore, the goals of ESOL community college learners reflect their real-life goals; they need language they can use in real world situations (Huang, Tindall, & Nisbet, 2011; Van Duzer & Florez, 2003). ESOL learners in community colleges have unique characteristics that influence the type of activities, topics, teaching strategies, and technologies that are appropriate for them.

**Activities, topics, teaching strategies, and technologies to support English Language Learners in community college context.** Included below is a discussion of the activities, topics, teaching strategies and technologies that have shown to be effective in aiding English language learners in ESOL community college contexts in meeting their needs and goals. There is a focus on technologies that are appropriate for these learners in support of the activities, topics, and teaching strategies that most benefit them.

***Activities, topics, and tasks.*** Learners should be engaged in authentic tasks in the classroom that they can use in the real world (Burt, Peyton, & Schaetzel, 2008; Chisman, 2008; Cunningham, 2015; Huang, Tindall, & Nisbet, 2009; McClanahan, 2014). In other words, classroom activities should reflect life outside of the classroom (Burt, Peyton, & Schaetzel, 2008; Cunningham, 2015). When ESOL learners in community colleges are given authentic opportunities to use the language in class, they are better prepared for the situations they may encounter outside of the classroom (Chisman, 2008; Cunningham, 2015; Huang, Tindall, & Nisbet, 2009; Schwarzer, 2009; Warriner, 2010). Authentic

activities can be achieved through the use of authentic materials, such as employment ads, podcasts/videos, restaurant menus, news related material etc., focused on authentic situations that give students an opportunity to interact and use the language (Cunningham, 2015; Huang, Tindall, & Nisbet, 2009) This focus on interaction is central to communicative language teaching (Huang, Tindall, & Nisbet, 2009). Providing opportunities for students to use the language in communicative ways with their peers in the classroom benefits their language use outside of the classroom (Burt, Peyton, & Schaetzel, 2008; McKay & Schaetzel, 2008; Moncada Linares, & Díaz Romero, 2016).

Interaction in the language classroom includes teacher-to-student(s) interaction and/or interaction between students themselves, known as peer-peer interaction (Cunningham, 2015). Different activities that involve peer interaction in the class include: discussions, peer interviews, presentation activities; problem based learning and task based learning; and evaluation and feedback activities (Cunningham 2015; McKay & Schaetzel, 2008). Using authentic spoken and written text can give learners exposure to real language and act as a springboard for these interactive activities (Cunningham, 2015).

Interactive activities that are founded on authentic situations and using authentic spoken and written language should be centered on topics that are relevant to the learners (Huang et al., 2009; McKay & Schaetzel, 2008). In their study of the types of authentic materials and activities that are most useful for adult ESOL students, Huang et al. (2009) found that topics related to the themes of employment, technology, consumer-related goods, consumer related services and citizenship/civic participation were most useful for these learners. A plethora of authentic spoken and written language to support these

topics can be accessed through the internet and other technologies. What follows is a discussion of these technologies

*Appropriate technologies to support these activities, topics, and strategies.* The internet is a rich resource for language learning as it offers an abundance of spoken and written text, as well as video. Healey et al. (2011) name internet resources for language learning as the web, email, podcasts, and related technologies; they emphasize the importance of these types of technologies being incorporated into instructional practices so that students are supported in developing language skills and computer literacy skills. Friedman (2009) and Mayora (2009) both conducted studies with adult English language learners using the web for these dual purposes. Friedman (2009) used authentic texts from the web to support peer interaction; students worked together to build a communal dictionary with complete definitions and example sentences. Friedman's study offers an example of students interacting to create a dictionary, which required their use of the internet, while also developing their language skills. Mayora (2009) used the comment function on YouTube to provide students with an opportunity to write for authentic purposes, as well as develop listening skills. Students in this example interacted with others on the internet using the comment function, while developing both their reading and listening skills. These examples only graze the surface of how the internet can be used in the language classroom.

In addition to using the internet in the described ways, many websites and apps are available that can support English language teaching/learning and be incorporated into instruction (Bradley, 2013; Healey, et al., 2011; Lineras & Romano, 2016; McClanahan, 2014). McClanahan (2014) mentions the following websites to support

English language teaching/learning: elsgamesworld.com, manythings.org, esl-lounge.com, and elspartyland.com. The internet is a valuable resource for language teaching and learning, but there are other technologies to support language development.

Web 2.0 tools, such as blogs, wikis, and social media sites, are types of technology that support the development of language skills (Bradley, 2013; Craig, 2013; McClanahan, 2014; Nakaramu, 2011; Parmaxi, & Zaphiris, 2017; Warschauer & Liaw, 2010). Craig (2013) and Parmaxi and Zaphiris (2017) focused on research pertaining to the use of Web 2.0 tools in English language learning. Both studies found that the use of blogs and wikis fostered communication and collaboration, in turn developing language skills. Barrot (2018) conducted a critical review of literature from 2010-2017 regarding Facebook as an environment for language instruction. The review analyzed 41 studies. Among the findings was that Facebook was predominantly used in higher education for developing language proficiencies, such as vocabulary and grammar, as well as increasing productive skills, specifically writing. Barrot (2018) concluded that Facebook is a viable option for language pedagogy. These studies offer insight into the ways Web 2.0 tools can be used to foster communication, collaboration, and the development of language skills.

Mobile Assisted Language Learning (MALL) has also gained popularity because it offers advantages to English language teaching/learning (Ally, Schafer, Cheung, & Mcgreal, 2007; Brown, 2014; Chen, 2013; McClanahan, 2014; Saidouni & Bahloul, 2016; Stockwell & Hubbard, 2013; Yukselir, 2017). Brown (2014) investigated how higher education language instructors design MALL environments for communicative language teaching and what influences their instructional design decisions to integrate

MALL for communicative language teaching. Four higher education language instructors participated in the study. Semi-structured interviews, document reviews and observations provided the data for the study. The study found that these instructors were systematic in their approach to using these devices; they determined goals and created learning experiences via communication to achieve them. The participating instructors had strong beliefs about communicative language teaching and felt that using mobile devices aligned with their beliefs, which placed emphasis on the importance of communication in developing language (Brown, 2014). Since teaching activities for community college ESOL students should be focused on communication and interaction, MALL could be a useful tool in this context.

Another technology to support language instruction is Microsoft PowerPoint (PPT). PPT is an effective presentation tool that can be utilized to engage students and assist them in increasing language proficiency (Corbeil, 2007; Lari, 2014; Oommen, 2012; Taylor, 2012; Wang, 2011). Taylor (2012) discusses the following ways to effectively use PowerPoint in the ESL classroom: reviewing previous class topics with question prompts; introducing new topics with images and pictures; presenting and drilling warm-up questions focused on language; using embedded video clips to model language; and eliciting vocabulary on the topic with pictures. Oommen (2012) investigated student perceptions about using PPT to enhance English classroom instruction through integrated instruction of the four language skills: reading, writing, speaking, and listening. The study found that learners preferred lessons with PPT over traditional delivery and had positive attitudes towards it. Wang (2011) conducted a study where students worked in small groups to create a PPT about a book they had read. After



creating the PPT, the groups shared their presentation in an online discussion forum, where they provided feedback to peers. This activity allowed for students to work collaboratively with the presentation software, while developing their language skills; thus, computer and language development occurred. These studies suggest that PPT can be used to aid in language development, to engage learners, and to potentially increase their technology skills.

In determining the potential direction of PD, it is important to consider the context in which it will take place. The above section offers a glimpse into teaching in the community college ESOL context, as well as the characteristics of the learners. These learner characteristics drive the types of activities, topics, tasks, and technologies that are appropriate for learners in this context. These activities, topics, and technologies should be taken into consideration when designing potential PD opportunities for the ESOL instructors at PNWCC.

### **Chapter Summary**

In order to explore and describe the technology integration practices and attitudes toward technology of the ESOL instructors at PNWCC and recommend how to design and develop technology integration training to meet their needs, several variables were identified and discussed in this chapter. These include technology integration, teachers' attitudes and beliefs toward technology, PD, as well as the community college ESOL context. To understand how technology integration should be included in classroom practices, as well as the factors that contribute to successfully adopting it, following a model, such as TPACK, TAM, and/or the Diffusion of Innovations theory is recommended. Research regarding these models agree that PD in technology integration

can lead to more successful technology integration in the classroom. Research also suggests that ongoing PD is necessary for teachers to increase technology integration practices. Approaches that have shown to be effective for technology integration PD include coaching and mentoring, as well as professional learning communities and communities of practice. The development of PD for technology should also take into consideration the values and beliefs of the teachers involved, especially their pedagogical beliefs and self-efficacy regarding technology use. When PD takes these into consideration, it aids in overcoming common barriers found in the adoption of new technologies. Further, research suggests that PD be contextualized and focused on the needs of the teachers it involves. Therefore, understanding the environment in which the participants teach, and the characteristics of their learners and their resulting needs, is crucial to determining how PD should be designed to meet their needs. The methods that were used in order to understand and describe these needs are further highlighted in the following chapter.

## CHAPTER 3: METHODOLOGY

The purpose of this AR was to explore and describe the needs, technology integration practices, and attitudes toward technology of the ESOL instructors at PNWCC in order to recommend and plan for PD opportunities in technology integration to meet their needs.

The following research questions guided the study:

1. What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration?
2. What are the current technology integration practices of the ESOL instructors at PNWCC?
3. What are the current attitudes toward technology of the ESOL instructors at PNWCC?

### **Research Design**

AR is an approach to research focusing on positive change and the improvement of educational practice (Johnson & Christensen, 2017; Mertler, 2017; Mills, 2018). As established by Mills (2018), AR is largely focused on the PD of teachers and encouraging them to be lifelong learners. The goal of this AR was to recommend how to design PD or create other opportunities in technology integration to best meet the needs of ESOL instructors at PNWCC and ultimately to increase technology integration practices in their courses.

Through a survey, classroom observations, one-on-one interviews, and a focus group interview, participants illustrated their experiences with technology in their teaching, as well as the barriers they face in using it more. With this information, recommendations have been made (see Chapter 5) regarding how to aid instructors in increasing their technology integration practices. AR was the most appropriate form of research for this inquiry; it seeks to understand a problem and make a change (Herr & Anderson, 2005; Manfra & Bullock, 2014).

AR is different than traditional research, which is usually done by researchers who are not necessarily connected to the environment they are studying (Merriam & Tisdell, 2016; Mertler, 2017). By contrast, AR is systematic inquiry conducted by teachers, administrators, or others with vested interest within the context of the research (Mertler, 2017). Further, traditional research generally employs a procedure for collecting and analyzing data in order to explain or understand an existing phenomenon in an objective way (Creswell, 2014; Mertler, 2017). The procedures utilized in traditional research are dependent on two research methods: quantitative and qualitative (Creswell, 2014; Mertler, 2017). Quantitative research examines the relationship among variables; the variables are measured, typically on instruments, and then numbered data is analyzed using statistics (Creswell, 2014). Qualitative research seeks to understand a phenomenon by exploring the meaning individuals involved in the phenomenon associate with it; this research method uses inductive reasoning (Agee, 2009; Creswell, 2014; Mertler, 2017).

AR may use these traditional approaches, but the goal is not to understand a phenomenon in an objective way, but to solve problems and implement change (Johnson & Christensen, 2017; Manfra & Bullock, 2014; Mertler, 2017; Mills, 2018; Reeves & Oh, 2017; Zambo, 2010).

My research explored the needs, practices, and attitudes toward technology in order to make recommendations for designing PD that leads to improved and increased technology integration practices. Because of the exploratory nature of the study, a qualitative design was used. Qualitative designs are focused on understanding how individuals perceive their experiences and construct their realities (Merriam & Tisdell, 2016). For this study, the type of qualitative design used was an interpretive-descriptive qualitative design.

My study closely followed what Elliot and Timaluk (2005) describe as interpretive-descriptive qualitative research, which strives to answer research questions that are generally open ended, as well as exploratory, and commonly utilizes interviews and observations to provide a verbal account of the researched phenomenon. While not as common, interpretive-descriptive qualitative research can also use self-report questionnaires (Elliot & Timaluk, 2005), which my research used in the form of a survey. This type of qualitative design was established in the 1970s and 1980s and has become mainstream in education, as well as other fields (Elliot & Timaluk, 2005). As described by Thorne (2016), interpretive-descriptive qualitative research was brought into existence through observation of the features and characteristics that make for valuable qualitative studies for real world application.

Thorne explains that interpretive-descriptive qualitative research requires an honest purpose acquired through the following:

- 1) an actual real-world question,
- 2) an understanding of what we do and don't know on the basis of all available empirical evidence,
- 3) an appreciation for the conceptual and contextual realm within which a target audience is positioned to receive the answer we generate (p. 40).

Interpretive-descriptive qualitative research “suggests that there is inherent value in careful and systematic analysis of a phenomenon and an equally pressing need for putting that analysis back into the context of the practice field” (Thorne, 2016, p. 57). My interpretive-descriptive qualitative research systematically explored and analyzed a phenomenon that allowed for recommendations for future action. In exploring the needs, technology integration practices, and attitudes toward technology of the ESOL instructors at PNWCC, I began to develop ideas and recommendations for PD in technology integration for them based on their current experiences, expressed needs, and barriers; therefore, my study acted as a needs analysis for a type of instruction.

As emphasized by the National Oceanic and Atmospheric Center (NOAA) (2009), a needs assessment is essential when designing educational projects. It identifies gaps in existing services through a systematic exploration of the difference between a current situation and a desired situation. The data collected during a needs assessment can better serve the intended audience, as data collected can uncover unknown needs, as well as develop the criteria for setting priorities. A well-designed needs assessment involves a high level of participation by stakeholders, which helps to build an alliance; there must be

a welcoming of ideas and not an established course of action (NOAA, 2009). My needs assessment was designed to be collaborative. The data collected through all forms, but especially the interviews, and particularly the focus group interview, guided me in making recommendations for future action, as instructors expressed specific ideas that would be beneficial for them based on their specific circumstances.

Conducting a needs assessment, in the process of determining and developing PD opportunities, is not uncommon. Vatanartrain and Karadeniz (2015) conducted a large-scale needs analysis to aid in designing a technology integration plan for K-12 educators. The study examined the perceived challenges and needs of teachers regarding technology integration in their classes. Based on the premise that it is important for technology-focused PD to be connected to the immediate needs of the teachers, Ireh (2006) implemented the product-based PD model. This model was designed based on a needs analysis of the teachers prior to starting the project. Lee (2005) described the development of the Teacher Needs-Based PD program as an initiative to improve PD by fulfilling teachers' needs. Interviews and surveys were used to identify teacher knowledge and pedagogical deficiencies, as well as student needs.

Similar to Lee (2005), through the use of interviews and a survey, my study investigated a deeper understanding of how to improve teaching practices through PD that resulted in sustained learning outcomes for the teachers through conducting a needs assessment that identified knowledge and pedagogical deficiencies. My study identified the felt and normative needs of the instructors, as well as their anticipated and future needs. Felt needs are expressed feelings to improve performance; they determine a gap between performance and skill level and a desired performance and skill level (Morrison,

et al., 2013). Morrison et al. (2013) determine interviews and questionnaires as the best way to identify felt needs, both of which my study utilized, the survey instrument acting as a form of questionnaire. One-on-one instructor interviews, a focus group interview, and a survey were all used to identify felt needs. These forms of data also aided in determining if participants met the normative needs as established within the local and national context's performance standards (Morrison et al., 2013). Though my study did not have a strong focus on anticipated and future needs, they were explored in the one-on-one instructor interviews. Anticipated or future needs are potential changes that may occur in time (Morrison et al., 2013).

Through the process of conducting my study, I endeavored to determine how to increase the technology integration practices of the instructors. In identifying the need for further training/instruction and recommending avenues for future action, I followed the needs assessment and goal analysis steps in the instructional design process as presented by Morrison et al. (2013). Data from the needs assessment determined the recommendations for PD, which could be considered goals for potential instruction. The instructional design process, like action research, is focused on identifying a problem and systematically finding a solution (Morrison et al., 2013).

### **Setting and Participants**

#### **Setting**

The setting for the AR took place within the ESOL department at PNWCC, which comprises five faculty, serving approximately 125 students. Students in this program receive English language instruction in the four major language skill areas of reading, writing, speaking, and listening. There is not an established curriculum in place for this



program. There are, however, learning standards and benchmarks, with sub benchmarks, all related to language skills needed in real life situations. These learning standards, benchmarks and sub benchmarks establish the normative standard within the local context. Instructors in the program are allowed to choose what standards and benchmarks they want to include in their courses.

The standards are organized into three documents, referred to as frameworks: Read with Understanding Framework; Write to Express Meaning Framework; Listen Actively and Speak So Others Can Understand Framework. The titles of these documents reflect the meaning of these standards. Within each framework, specific benchmarks and sub benchmarks are listed that can act as objectives for instructors. The benchmarks are organized into eight proficiency levels. The levels are as follows: 1) Beginning ESL Literacy 2) Low Beginning ESL 3) High Beginning ESL/Beginning Adult Basic Education (ABE) Literacy 4) Low Intermediate ESL/Beginning ABE 5) High Intermediate ESL/Low Intermediate ABE 6) Advanced ESL/High Intermediate ABE 7) Beginning Transition/ Low ABE 8) Transition/High ABE (Oregon Office of Community College and Workforce Development, 2017). It should be noted that, while the frameworks related to reading and writing include Adult basic education (ABE), the framework related to speaking and listening does not, it is solely focused on ESL. For the purpose of the proposed research, benchmarks and sub benchmarks within levels 1-6 will be listed (see Appendix A). Levels 7 and 8 are focused on transitioning to academic based programs, which are not applicable to the setting of this research.

Benchmarks and sub benchmarks are the focus because they are intended to act as objectives, containing information about the instructional focus, and identifying skills students will need to practice (Oregon Office of Community College and Workforce Development, 2017).

Embedded within a large portion of these benchmarks and sub benchmarks are expectations for students to utilize technology to support the development of their language and computer literacy skills. As provided within the frameworks, the benchmarks and sub benchmarks that include a technology component are listed, as they were the most pertinent to this study. The benchmark is stated first with the corresponding sub benchmarks following. These are organized with the benchmarks and sub benchmarks found in the Read with Understanding Framework first (Appendix A, Table A.1), followed by Write to Express Meaning Framework (Appendix A, Table A.2), and finally the Listen Actively and Speak so Others can Understand Framework (Appendix A, Table A.3) (Oregon Office of Community College and Workforce Development, 2017).

As previously stated, instructors in the ESOL program at PNWCC are able to choose and incorporate the benchmarks and sub benchmarks they determine as most appropriate for their students. Courses are provided for students of four different proficiency levels: (A) Beginning Literacy/Low Beginning, (B) High Beginning, (C) Low Intermediate, (D) High Intermediate/Advanced. Depending on student enrollment, classes may be combined so that students in levels A and B study together and/or students from levels C and D study together. Classes are offered either in the morning from 8:00 to 11:00 a.m., or in the evening from 6:00 to 9:00 p.m. Each course meets twice a week for

three hours, for a total of six instructional hours a week. The ESOL program at PNWCC consists of non-credit classes and students are able to stay in the program for as long as they like. Classes are taught in modern classrooms equipped with a podium that has a computer, internet access, sound system, projector, and document camera. Some classrooms have circular tables for students and some have longer tables, where students sit side by side. No classroom has individual desks. For one hour a week, each course is expected to meet in a computer lab on campus, where all students have access to their own computers.

### **Participants**

The ESOL department has five instructors, but only four agreed to participate in this study. ESOL instructors at PNWCC range in age from 40-60. Three of the instructors have Master's in TESOL. One instructor has a Master's in Education. The technology integration practices of the instructors at PNWCC vary, but it is an area of weakness for the department and one that needs improvement, according to the department chair (personal communication, January 25, 2018). A more detailed description of each participant is included in Chapter 4.

### **Data Collection**

The following highlights the data collection methods that were utilized to answer the research questions of my study. Within this interpretive-descriptive qualitative design, data was collected using a survey, one-on-one instructor interviews, classroom observations, a focus group interview, as well as an action researcher journal. Survey data provided awareness of the participants' needs, current technology integration practices, and attitudes toward technology. The survey instrument also explored experiences with

and interest in PD. Interview questions offered a deeper understanding of the participants' technology integration practices and attitudes toward technology, as well as their needs and the barriers they face. Classroom observations added to the conceptualization of the technology integration practices of the instructors. After completion of the survey, one-on-one instructor interviews, and observations, a focus group interview took place, which further exposed the needs and attitudes toward technology, as well as the challenges. The focus group interview also provided suggestions and ideas from the instructors about how to overcome these challenges and increase their technology integration practices. An action researcher journal was kept during the entire data collection process to document and recap interviews and observations. Table 3.1. provides an overview of the research questions, including the sub questions and the data collection methods that were used to answer each. The paragraphs following discuss these sources of data collection in more detail.

### **Survey**

The self-designed survey, created using Google forms (see Appendix B), addressed three areas concerning technology integration: the needs of the instructors regarding a technology integration training, the technology integration practices of the instructors from their perspective, and the instructors' attitudes toward technology integration in their classes, including PD to increase it. It included five sections addressing these areas: (a) demographic and background information, (b) technology skills, (c) technology integration, (d) attitudes and beliefs, and (e) PD. Instructors provided ratings for different statements within these sections.

Table 3.1. *Research Questions and Data Sources*

Research questions	Data sources
1. What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration?	<ul style="list-style-type: none"> <li>• Survey</li> <li>• Instructor Interviews</li> <li>• Focus group interview</li> <li>• Action researcher journal</li> </ul>
2. What are the current technology integration practices of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>• Survey</li> <li>• Instructor interviews</li> <li>• Classroom observations</li> <li>• Focus Group Interview</li> <li>• Action researcher journal</li> </ul>
3. What are the current attitudes toward technology of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>• Survey</li> <li>• Instructor interviews</li> <li>• Focus Group Interview</li> <li>• Action researcher journal</li> </ul>

As emphasized by Mertler (2017), rating scales can effectively evaluate attitudes and perceptions. Further, Jansen (2010) asserts that surveys have been conducted for ages as a way to observe the members of study, specifically their characteristics. The qualitative survey is not interested in determining frequencies, but in establishing “relevant dimensions and values” in the population of study (Jansen, 2010, p. 3). The purpose of my survey instrument was to understand characteristics of my participants, as identified within the pre-determined attributes found within the survey, including their skills and values surrounding technology integration.

The first section of the survey requested demographic and background information to gain an understanding of the age, educational level, and prior technology integration training of the instructors. Two established surveys, the Technology Integration Survey (Woods, 2015) and Teacher Technology Integration Survey (Vannatta and Banister, 2009), aided in the development of the other four sections in the survey designed for my study.

**Technology skills.** Woods (2015) created the Technology Integration Survey, a Likert-style survey, to investigate teacher effectiveness in technology integration in their classrooms. This survey was based on two large scale surveys one by Barron, Kemper, Harms, and Kalaydjian (2003) and the other by Hogarty, Lang, and Kromrey (2003). Barron et al. (2003) conducted a study with over 1,000 schools, including 2,019 teachers to determine which teachers were using technology in their classrooms. This survey received a reliability estimate (Cronbach's alpha) of .87 for the web-based version administered and .89 for the paper version. Hogarty et al. (2003) developed a survey to measure teacher's reported use of technology in the classroom. Hogarty et al. (2003) administered the survey to 2,000 practicing teachers and found a reliability coefficient ranging from .74 to .92 for the different sections in their survey. Using these two surveys, helped increase the reliability of Wood's (2015) survey. To further increase internal validity, Woods (2015) had his survey reviewed by a technology specialist and peer-tested by five other researchers, so that they could find errors and ensure clarity. The feedback provided from these reviewers helped to revise the instrument.

The survey administered for my study was also guided by Vannatta and Banister (2009), who validated the use of the Teacher Technology Integration Survey (TTIS), which measures teacher technology integration recognizing that behaviors, comfortability, perceived benefits, and support play a role in technology integration. The TTIS was administered to 457 participants, 257 which completed the survey. The survey contained eight subscales or sections that addressed technology integration in some educational capacity. Of those eight, three subscales informed questions and items incorporated in my survey instrument. Each of these subscales received a reliability score of .85 or higher. The description of my survey instrument is described in detail below.

After the first section of my survey, which collected the demographic information described above, the second section focused on technology skills and was broken into two subsections. Items 2-15, in the first subsection, were taken or modified from the Technology Integration Survey (Woods, 2015). I included two additional items which focused on creating and sharing Word and Google Docs, to reflect skills that are important within the context of this research. Examples of other technology skills included in this subsection were creating slide presentations, analyzing and using apps, finding lessons on the web, and creating a blog or wiki. In this first subsection, instructors rated their technology skills according to their perception. The skill categories included learner, basic, proficient, and advanced (Woods, 2015). Descriptors of these categories were provided. In the second subsection, instructors rated their level of agreement on a Likert-style scale including the following: strongly disagree, disagree, neutral, agree, strongly agree. Items 1-7 in this subsection were taken or modified from the TTIS (Vannatta & Banister, 2009) as well as Item 8 from the Technology Integration Survey

(Woods, 2015). Understanding more about the technology skills of the instructors aided in determining what tasks they are comfortable doing with technology and where further training may be needed.

**Technology integration.** The third section of my survey focused on technology integration and was divided into two subsections. The first subsection inventoried the technologies the instructors currently use. The participants rated their frequency of using specific technology listed as: rarely, seldom, occasionally, frequently, and regularly (Woods, 2015). The specific technologies included ones that are available within the PNWCC ESOL department context: CD player, DVD player, LCD projector, computer, internet, and document camera. The second subsection used the same frequency scale to determine how often instructors integrate technologies into their instruction and materials. I created the first two items in this section, which asked instructors to rate how often they include the internet in their lessons and how often they use PPT to support their lessons. Items 3-11 were taken or modified from the Technology Integration Survey (Woods, 2015) and Items 12-14 were taken or modified from the TTIS (Vannatta & Banister, 2009). Examples of integrating technology into instruction and materials that are found in this subsection include having students access and use a webpage created for the class, having students use content specific apps to teach/reinforce skills, and modeling effective technology use for students.

**Attitudes and beliefs.** The fourth section of my survey focused on attitudes and beliefs of instructors regarding technology. In this section, instructors rated their level of agreement on a Likert-style scale including the following: strongly disagree, disagree, neutral, agree, strongly agree. Items 1-8 of this section were taken or modified from the



TTIS (Vannatta & Banister, 2009) and Items 9-11 were taken or modified from the Technology Integration Survey (Woods, 2015). Examples of statements in this section included: computer technology allows me to create lessons that enhance my teaching; using technology in the classroom is a priority; and the amount of time needed to prepare technology-based lessons deters me from creating them.

**Professional development.** The final section of the survey focused on PD in technology integration. This section included statements to which instructors rated their level of agreement on a Likert-style scale including the following: strongly disagree, disagree, neutral, agree, strongly agree. Items 1-4 of this section were taken or modified from the Technology Integration Survey (Woods, 2015). I created Item 5 that stated: “I would benefit from an online learning community.” This was included because research suggested that an online community could act as a form of PD (Bostancioglu, 2018). Examples of other statements in this section include: “I want to use technology but have not been trained on how to use it”; “I enjoy attending technology-based professional development”; and “Most of my technology learning has been self- taught and on my own time”. Table 3.2. shows alignment between the different sections of the survey and the research questions.

The survey was the first form of data collection administered and acted as a point of reference throughout the analysis in further understanding the needs, technology skills, current technology integration practices, and attitudes toward technology of my participants. The survey instrument also provided details regarding the technologies that the participants are comfortable with and at what level.

Table 3.2. *Research Questions and Survey Prompts Alignment*

Research Questions	Survey Sections
1. What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration?	<ul style="list-style-type: none"> <li>● Professional Development <ul style="list-style-type: none"> <li>○ Items 1-2</li> </ul> </li> <li>● Technology Skills <ul style="list-style-type: none"> <li>○ All Items</li> </ul> </li> </ul>
2. What are the current technology integration practices of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>● Technology Integration <ul style="list-style-type: none"> <li>○ All items</li> </ul> </li> </ul>
3. What are the current attitudes toward technology of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>● Attitudes and Beliefs <ul style="list-style-type: none"> <li>○ All items</li> </ul> </li> <li>● Professional Development <ul style="list-style-type: none"> <li>○ Items 1-5</li> </ul> </li> </ul>

The observations revealed technologies the participants used, and the interviews identified other tools that participants frequently used, but the survey instrument gave a broader view of the range of technology they use and how proficient they perceived themselves to be in using it. The reliability ratings found in the surveys used to create my survey and review and approval from my dissertation chair ensure the validity of this instrument.

### **Instructor Interviews**

Instructor interviews (see Appendix C) were conducted to answer all research questions of this study. These interviews were one-on-one, face-to-face, semi-structured, and lasted approximately 20-30 minutes. They took place after all instructors had completed the survey. Base questions for the interview were in place, but follow-up questions were asked as needed (Mertler, 2017).

Interviews were important to this study because they allowed for first-hand data regarding technology integration needs, attitudes toward technology, and current technology integration practices from the instructors' viewpoint. Interviews are a form of inquiry data that are typical in AR (Manfra & Bullock, 2013; Mertler, 2017). They provided a perspective from the interviewee's point of view (Altrichter, Posch, & Somekh, 2008; Mack, Woodson, Macqueen, Guest, & Namey, 2005), which was crucial for the purpose of my study. The questions were designed to gather a greater understanding of the teachers' experiences with technology, as well as their needs and attitudes. This information was important to gather in order to determine how to design and implement an effective PD that may result in increased technology integration practices. Table 3.3. shows how each interview question aligned with the research questions of my study.

Table 3.3. *Research Questions and Instructor Interview Question Alignment*

Research Questions	Interview questions
1. What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration?	<ul style="list-style-type: none"> <li>● In what ways do you feel you could improve your use of technology in your teaching?</li> <li>● Can you explain ways you have tried to improve your use of technology in your classes? <ul style="list-style-type: none"> <li>○ Have you attended professional development for technology integration, special training in technology, or have you researched or self-taught yourself</li> </ul> </li> </ul>

Research Questions	Interview questions
2. What are the current technology integration practices of the ESOL instructors at PNWCC?	<p>about technology in ESOL?</p> <ul style="list-style-type: none"> <li>● Explain any changes you anticipate within PNWCC in the future that will require more use of technology within your teaching or your overall job duties?</li> <li>● Describe how you currently use technology in your ESOL classes at PNWCC. <ul style="list-style-type: none"> <li>○ What technologies do you use and how?</li> <li>○ Why do you use these technologies?</li> </ul> </li> <li>● Tell me about a time when you successfully utilized technology in a lesson. <ul style="list-style-type: none"> <li>○ Why do you consider this successful use of technology?</li> </ul> </li> <li>● Tell me about a time you were challenged by using technology in your classes.</li> </ul>
3. What are the current attitudes toward technology of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>● Can you explain what you believe the role of the teacher to be in student learning? <ul style="list-style-type: none"> <li>● Can technology support teachers in this role?</li> </ul> </li> <li>● Can you tell me what you think the benefits of using technology with the ESOL learners at PNWCC are? <ul style="list-style-type: none"> <li>● In what ways do you think using technology helps our learners?</li> </ul> </li> <li>● Explain the benefits of using technology to support your teaching.</li> </ul>

Research Questions	Interview questions
	<ul style="list-style-type: none"> <li>• Explain any barriers that prevent you from using technology.</li> </ul>

## Classroom Observations

Classroom observations were also utilized to further understand the current technology integration practices of the instructors. Observations helped clarify information that participants had provided in surveys and interviews and acted as a check against what they believe they do and what they actually do (Kawulich, 2005; Mack et al., 2005). My experience validated this, as the observations brought to life instructors' uses of technology, which they had provided in the survey and some had explained in their interview. Each instructor, who participated in the study, was observed once for 45-50 minutes of a three-hour class. It was requested that the instructors use technology in some capacity during the portion of the lesson I observed. Qualitative data from the observations was collected using a modified version of the Looking for Technology Integration (LoFTI) instrument (William & Ida Friday Institute for Educational Innovation, 2010). The purpose of this tool, as stated on the instrument, is as follows:

LoFTI is a tool to aid in the observation of technology integration into teaching and learning. The data gathered through the use of this instrument should be helpful in building-level staff members as they plan and/or provide professional development in instructional technology. (William & Ida Friday Institute for Educational Innovation, 2010)

According to this definition, this tool was appropriate for the purpose of my study. The LoFTI instrument can be found in Appendix D.

The form of observation utilized for this study is considered structured (Mertler, 2017). As previously stated, no aspect of the instructors teaching was noted except for their technology integration practices. As included in the LoFTI tool, teacher activities with technology were observed, such as the use of technology to activate prior knowledge, differentiate instruction, lecture, and summarize. The use of technology for assessment was also observed. Examples of different forms of assessment with technology included oral response, written response, and performance. The use of technology as a tool by either the teacher or students is included on the LoFTI instrument, but only teachers used technology in the lessons I observed. Examples of these included technology used for problem solving, computer-assisted instruction, and summarizing and note-taking. The use of specific hardware was observed, such as audio, imaging, display, and desktop computers. The use of specific technology software was also observed such as presentation software, web browsers, and web applications. Based on information obtained through the LoFTI tool, detailed observation write-ups were written in the action researcher journal after the observation took place.

Areas of this tool that were eliminated included specification of grade level, track, instructional collaborators, and core subject, which are intended for the K-12 setting. Other areas were eliminated that did not solely focus on technology integration of the instructors, such as student engagement. Also, the North Carolina web resources found in the software category were excluded.

## **Focus Group Interview**

A focus group interview (see Appendix E) took place to answer all research questions of the study. The focus group interview occurred after the survey, instructor interviews, and classroom observations were conducted. The focus group interview included open-ended interview questions regarding technology practices, benefits, needs, as well as questions focused on how the instructors think PD should be designed and implemented, the types of content they want included, and other ways PD can be developed to best meet their needs. Instructors were urged to share their thoughts and insights about the design and delivery of the PD. As emphasized by Krueger (2012), questions get the participants involved by having them reflect and provide examples, and should be sequenced from general to more specific, which mine were.

The focus group interview provided a more in depth understanding of the barriers and challenges the instructors face in their technology integration practices. It is common in group interviews for participants to feed off of each other and react to the comments of their peers (Mack et al., 2005; Mertler, 2017), which aligned with my experiences in conducting the focus group interview for this study. The instructors shared great insight in the focus group interview about their technology specific needs, which were taken into strong consideration in the recommendations for PD opportunities for these instructors. Table 3.4. shows alignment between the research questions of this study and the focus group interview questions.

Table 3.4. *Research Question and Focus Group Interview Question Alignment*

Research questions	Focus group interview questions
1. What are the needs (i.e., felt, normative, anticipated) regarding technology integration of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>• What knowledge or skills do we need in order to better utilize technology for teaching and learning?</li> <li>• If we designed a technology training, what would our goals be?</li> <li>• In what ways can we utilize technology to support our teaching and our students' learning?</li> <li>• Describe an ideal model for professional development in technology integration, something that you would attend and that would benefit you. This could be a one-time workshop, a series of workshops, an online course, a hybrid model, and/or peer coaching and mentoring.</li> </ul>
2. What are the current technology integration practices of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>• How are you currently using technology? <ul style="list-style-type: none"> <li>• Is it working?</li> <li>• What more could be done?</li> </ul> </li> </ul>
3. What are the current attitudes toward technology of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>• Why is it important for us to use technology in our teaching and with our students?</li> <li>• What barriers do you face in utilizing technology in your teaching? <ul style="list-style-type: none"> <li>• How can you overcome these barriers?</li> </ul> </li> </ul>



## **Action Researcher Journal**

To aid in answering the research questions, an action researcher journal was kept for the duration of the study that was updated each step along the way. An action researcher journal was a way to develop the research and provided a space to reflect, which is a major component of the AR cycle (Altrichter, et al., 2008; Johnson & Christensen, 2017; Manfra & Bullock, 2013; Mertler, 2017). In this journal, I documented and reflected on what actually occurred during the events of my AR cycle (Mertler, 2017). These events included interviews, observations, as well as email exchanges that took place after the survey was administered and at various other points during the data collection process. The journal provided a place for me to write about what happened immediately following the event, as opposed to relying on memory. It enhanced the other data collection methods, by providing my own reflective perspective. The journal is housed in a reflective blog that can be accessed by the ESOL instructors at PNWCC. The interactive nature of this blog allowed the instructors to make comments and provide feedback, though no one did. In creating the blog as an interactive space, my hope was to form a professional learning community, where the instructors began to collaborate and support each other for the betterment of their teaching and their students' learning (Mertler, 2017).

## **Data Analysis**

In this AR study, the five forms of data were qualitative. Table 3.5. highlights the research questions, data sources, and data analysis methods that were utilized followed by a brief discussion of the analysis process.

Table 3.5. *Research Questions, Data Sources, and Data Analysis Methods Alignment*

Research questions	Data sources	Data analysis
1. What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration?	<ul style="list-style-type: none"> <li>● Instructor interviews</li> <li>● Focus group interview</li> <li>● Action researcher journal</li> </ul>	<ul style="list-style-type: none"> <li>● Inductive analysis</li> </ul>
2. What are the current technology integration practices of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>● Survey</li> <li>● Classroom Observations</li> <li>● Instructor interviews</li> <li>● Focus group interview</li> <li>● Action researcher journal</li> </ul>	<ul style="list-style-type: none"> <li>● Pre-structured descriptive analysis</li> <li>● Inductive analysis</li> </ul>
3. What are the current attitudes toward technology of the ESOL instructors at PNWCC?	<ul style="list-style-type: none"> <li>● Survey</li> <li>● Instructor interview</li> <li>● Focus group interview</li> <li>● Action researcher journal</li> </ul>	<ul style="list-style-type: none"> <li>● Pre-structured descriptive analysis</li> <li>● Inductive analysis</li> </ul>

The five sources of qualitative data included the survey, one-on-one instructor interviews, a focus group interview, classroom observations, and an action researcher journal. To analyze the survey instrument, descriptive analysis was used. As established by Jansen (2010), pre-structured descriptive analysis aims to understand what predefined characteristics the population of a study possess. This type of analysis searches for “empirical diversity in the properties of the members” (Jansen, 2010, p. 4). My survey

included topics and categories that were determined beforehand, and the interpretive-descriptive analysis revealed what diversities existed among the participants. This analysis approach discovers meaning through linguistic data, where unlimited, description options emerge from predetermined choices or rating scales (Elliot & Timulak, 2005).

The other data forms underwent inductive analysis, where codes were applied, leading to categories, themes, and an assertion. Saldana (2016) describes the process of coding as heuristic, where through several cycles of coding, patterns begin to emerge, codes can be categorized, and themes and assertions made. All forms of data were digitized, so analysis could be conducted more efficiently. The instructor interviews and the focus group interview were transcribed. The detailed descriptions of the observations written with the guidance of the LoFTI instrument and housed in the action researcher journal were copy and pasted into documents, as were the reflections written after all interviews and observations. The transcriptions, observations write-ups, and reflections were all copy and pasted into Delve (<https://delvetool.com/>), an online software tool for analyzing qualitative data, and coded. The raw data was inductively analyzed using codes. These codes were moved into categories that ultimately resulted in the emergence of one assertion and three themes.

### **Integration of Findings**

The data sources and forms of data analysis specified above aided in answering the research questions of this study. The findings were integrated as a whole to provide the reader with a thorough understanding of the needs, attitudes toward technology, and current technology integration practices of the instructors within the ESOL department at

PNWCC. Participant quotes, descriptions and examples of technology use as witnessed in the observations, and information found in the survey are included throughout the report through thick, rich descriptions. This triangulation of data and use of thick, rich descriptions contributes to the study's credibility (Merriam & Tisdell, 2016), as further detailed in the section that follows.

### **Rigor and Trustworthiness**

When designing and implementing an AR design that incorporates qualitative data, it is essential to employ strategies of rigor and trustworthiness to ensure the quality of the data. For qualitative data, ensuring quality is accomplished by applying strategies for rigor and trustworthiness during the research process (Morrow, 2002). These strategies require the research-practitioner to continuously check their perceptions of their data to assure that what they think they are seeing and hearing aligns with what they are actually seeing and hearing (Mertler, 2017). Reliability and validity are strategies common to quantitative research, and these have been reported earlier where appropriate with specific data sources. Qualitative research has different ways of ensuring rigor and trustworthiness, such as credibility, trustworthiness, and authenticity (Amankwaa, 2016; Carlson, 2010; Creswell, 2013; Golafshani, 2003; Krefting, 1991; Morrow, 2002; Shenton, 2004; Winter, 2000).

The AR of this study utilized an interpretive-descriptive qualitative approach. As recommended by Creswell (2013), several strategies were utilized to assure the quality and accuracy of the qualitative data. The following highlights the strategies of rigor and trustworthiness that were employed, which include: 1) triangulation; 2) member checking; 3) thick, rich descriptions; 4) peer debriefing; and 5) an external auditor.

## **Triangulation**

Triangulation is achieved by using multiple sources of data to answer the research questions, contributing to a study's credibility, validity, and trustworthiness (Anney, 2014; Creswell, 2013; Golafshani, 2003; Krefting, 1991; Mertler, 2017; Shenton, 2004; Tracey, 2010). My research employed the following qualitative data sources: a survey, classroom observations, instructor interviews, a focus group interview, and an action researcher journal. By utilizing these various forms of data collection, the limitations of each was minimized, contributing to their accuracy (Creswell, 2013; Krefting, 1991; Shenton, 2004). All sources of data were included in my data corpus. They all went through the same cycles of coding, with the exception of the survey, and were analyzed together for categories, themes, and assertions using inductive analysis (Saldana, 2016). Merriam and Tisdell (2016) assert that whether using several forms of qualitative data collection or multiple sources of data, triangulation is a powerful tactic for ensuring credibility.

## **Member Checking**

Member checking involves sharing the findings of the research with the participants of the study to ensure accuracy (Anney, 2014; Doyle, 2007; Krefting, 1991; Shenton, 2004). Member checking provides the study participants the opportunity to confirm or clarify interpretations of the data and/or provide further information if they desire, lessening the likelihood of future misunderstanding regarding the representation of the data and findings (Dolye, 2007). Creswell (2013) recommends not providing raw data to the participants, but rather a "polished or semi-polished product" (p. 342) that conveys the major themes.

For my study, I shared and communicated my findings in individual emails to the participants. I sent each participant their individual interview transcripts, the focus group interview transcript, an image containing the categories, themes, and assertion that emerged through the analysis, as well as a link to the action researcher journal. This provided the opportunity to solicit feedback from participants regarding the themes that emerged through findings and to ask them to confirm whether my interpretations were true for them and represented their experience (Merriam & Tisdell, 2016). All responded back confirming my findings to be accurate representations of their experiences. While conducting the interviews, I also did member checks by asking follow-up questions to ensure I understood my participants' meanings (Krefting, 1991; Shenton, 2004).

### **Thick, Rich Descriptions**

Providing thick, rich descriptions of the research findings found in qualitative data can ensure rigor (Anney, 2014; Creswell & Miller, 2000; Krefting, 1991; Shenton, 2004; Tracy, 2010;). This was achieved by thorough and vivid explanation of the research processes including the context, participants, data collection, analysis, and findings (Anney, 2014; Creswell & Miller, 2000). Dense detail regarding the exact methods, data analysis, and interpretation are provided to increase the dependability of the study (Krefting, 1991). I have concluded, that by providing enough detail, the readers can come to their own conclusions about the research “scene” (Tracy, 2010, p. 843), and in doing such, they can replicate the study, if they desire. Regarding the findings of the data, a descriptive narrative, tables and figures, as well as verbatim quotations from the participants are included.

## **Peer Debriefing**

Peer debriefing, or peer review, is accomplished by using professionals to review and critique the research process (Creswell, 2013; Creswell & Mills, 2000; Krefting, 1991). I achieved this in my research through consultation with my dissertation chair and committee. My dissertation chair(s) and I engaged in peer briefing through ongoing weekly meetings. My chair played a major role in checking categories and themes discovered in my data (Krefting, 1991), through listening to verbal accounts of my analytical memos, asking me questions, answering my questions, and guiding the articulation of my ideas. I considered the proposal defense as a form of peer debriefing with my committee members, as it challenged me and resulted in the refining of my study. My dissertation chair and committee members answered my questions, provided support, as well as challenged my research or played devil's advocate (Creswell & Miller, 2000).

## **Critical Friend**

A critical friend is a form of external support for the researcher (Gurr & Huerta, 2013). The critical friend aids the researcher in developing professionally by supporting their reflections and learning capacity in a collaborative manner (Kember et al., 1997). Gurr and Huerta (2013) explain that the role of the critical friend is a dynamic one that requires “a high level of skill, flexibility and professional judgement” (p. 3085). The critical friend can offer a variety of actions to the research and can be introduced into the process at any point in time (Gurr & Huerta, 2013). My critical friend acted predominantly as an external auditor. Creswell (2013) and Mertler (2017), recommended locating and finding an external auditor to review the work of the researcher. An external

auditor involves an individual outside of the research, who can provide an objective evaluation of the research project (Creswell, 2013) as well as provide peer scrutiny (Shenton, 2004). Such an individual can offer challenges to the assumptions made by the researcher, which can help the researcher to improve the methods, develop a deeper explanation of the research design and/or strengthen conclusions (Shenton, 2004).

I contacted a former colleague and mentor to act as a critical friend and assist with the external audit. This person is highly accomplished and respected in the field of TESOL, recently serving as the international association's president. I provided the external auditor access to my action researcher journal, in which I documented all the steps of the research process, as well as articulated my biases. I also provided the external auditor with drafts of each chapter of my dissertation for review and feedback before finalizing the document.

### **Plan for Sharing and Communicating Findings**

As emphasized by Mertler (2017), reflection is an essential aspect of AR and should be strongly incorporated throughout the process. In order to ensure that I continually reflected on the happenings of my action research, I kept a reflective blog for the duration of my study that was updated each step along the way; this acted as an action researcher journal. The reflective blog was shared with the ESOL instructors at PNWCC; the interactive nature of this blog allowed the instructors to make comments and provide feedback. While not accessed by my participants, the blog held me accountable to maintaining an active action researcher journal.



The findings of this study will also be shared with the ESOL department at PNWCC in an informal presentation and discussion, where they will be urged to share their thoughts and insights about the next directions; the department chair, instructors, and any other interested parties will be invited to attend. A major focus of this presentation and discussion will be to introduce and discuss the recommended plan of action based on my research, which Mertler (2017) has provided as an important aspect of presenting findings; recommendations from instructors and the department chair will play a major role in the direction of this plan.

In addition to sharing the findings within my institute, I plan to submit proposals to present at the state and national TESOL conferences. The Oregon affiliate of TESOL known as ORTESOL has conferences in the fall and spring each year. Additionally, TESOL International Association has an annual convention and English language expo that is held each year in March. I will submit a proposal for an academic presentation at both conferences. I will also submit my research as a journal article and plan to start by submitting it to the ORTESOL journal, which is a peer-reviewed publication.

In order to keep the people and place of my action research confidential and protect the participants of my study, I have used pseudonyms in all of my sharing contexts, which increases my credibility as an action researcher (Mertler, 2017). As recommended by Morse and Coulehan (2015), demographic information was presented as group data and only the data that is pertinent to my study was reported. I informed my participants about the challenges regarding maintaining confidentiality because of the small community within which the study takes place (Damianakis & Woodford, 2012). I communicated with them regarding their consent for including certain aspects of my

study in the research findings (Damianakis & Woodford, 2012; Kaiser, 2009). This was done through the process of member checking (Damianakis & Woodford, 2012). Through these strategies, I protected both the identity of the participants and the institute in the sharing and communicating of my findings.

### **Procedures and Timeline**

The AR consisted of four phases. The first three phases took place over approximately 6 weeks. The fourth phase took place over approximately four weeks. These phases and their timelines are further described in the following paragraphs. Table 3.6. highlights the specific activities that took place during each phase, as well as the timeframe in which occurred.

Table 3.6. *Data Collection Procedures and Timeline*

<b>Phase and Timeframe</b>	<b>Researcher Activities</b>	<b>Participant Activities</b>
Phase I	<ul style="list-style-type: none"> <li>• Obtain permission from PNWCC to conduct research (Appendix F)</li> <li>• Obtain University of South Carolina (USC) IRB approval (Appendix G)</li> <li>• Distribute and collect informed consent forms (Appendix H) and survey</li> </ul>	<ul style="list-style-type: none"> <li>• Complete and return informed consent form and survey</li> </ul>
Phase II	<ul style="list-style-type: none"> <li>• Review survey data</li> <li>• Schedule interviews and observations</li> </ul>	<ul style="list-style-type: none"> <li>• Ask and answer questions as needed</li> </ul>

<b>Phase and Timeframe</b>	<b>Researcher Activities</b>	<b>Participant Activities</b>
Phase III	<ul style="list-style-type: none"> <li>• Conduct one-on-one instructor interviews</li> <li>• Conduct classroom observations</li> <li>• Conduct focus group interview</li> <li>• Utilize member checking as needed</li> </ul>	<ul style="list-style-type: none"> <li>• Participate in one-on-one instructor interview</li> <li>• Be observed</li> <li>• Participate in focus group interview</li> <li>• Ask and answer questions as needed</li> <li>• Provide member checking as need</li> </ul>
Phase IV	<ul style="list-style-type: none"> <li>• Analyze all data</li> <li>• Conduct member checking</li> <li>• Organize presentation with findings</li> <li>• Seek feedback from my critical friend</li> <li>• Submit proposals for conference presentations.</li> </ul>	<ul style="list-style-type: none"> <li>• Receive emails with findings and provide member checking including feedback for accuracy, as well as recommendations based on findings</li> </ul>

## **Phase I**

During Phase I, three activities occurred: (a) obtain permission for PNWCC to conduct research (see Appendix F), (b) obtain IRB approval from USC (see Appendix G) (c) distribute and collect informed consent forms (see Appendix H) and completed survey (see Appendix B) from participants. After obtaining permission from PNWCC to conduct the study and IRB approval from USC, informed consent was obtained from the participants, as well as distribution of the survey for participants to complete. The survey instrument was sent to the participants via email, which included the informed consent form. This email detailed the purpose of the study, the methods of data collection that

would be utilized, any risks that were posed upon participation, as well as their level of involvement in the study (Drew, Hardman, & Hosp, 2007). In the informed consent form, participants were informed that their participation was voluntary and that they could withdraw from the study at any time (Banister, 2007; Mertler, 2013). Additionally, the informed consent form articulated the potential benefits of the study to the participants, as well as invited the participants to be as actively involved as they would like; for example, they were welcome to review transcripts, ask questions, and provide insight at any time (Bannister, 2007). Informed consent from participants was gained through their participation in the survey instrument. After all informed consent forms and surveys were collected, Phase I of the study was complete.

## **Phase II**

During Phase II, surveys were reviewed to give a preliminary view of integration practices, attitudes toward, and needs regarding technology. After survey data was reviewed, instructors were contacted to schedule interviews and observations.

## **Phase III**

Phase III consisted of three activities: (a) one-on-one instructor interviews, (b) classroom observations, and (c) a focus group interview. Classroom observations and one-on-one instructor interviews took place simultaneously during Phase III and were dependent on both the researcher and participants' schedules. Finally, the focus group interview took place. The focus group interviews took place after all observations and one-on-one instructor interviews were completed.

## **Phase IV**

Phase IV was the final phase of the study. In this phase, three data analysis activities occurred: all data was inductively analyzed; thick, rich descriptions were provided representing the instructors' experience; and recommendations for further action were determined. My presentation of the findings was made to my dissertation committee. To complete Phase IV of this study, I will be submitting proposals about my research to local, national, and international conferences in hopes of disseminating the content further.

## CHAPTER 4: ANALYSIS AND FINDINGS

### **Introduction**

The purpose of this AR was to explore and describe the needs, technology integration practices, and attitudes toward technology of the ESOL instructors at PNWCC in order to recommend and plan for PD opportunities in technology integration to meet their needs.

Qualitative data was collected to answer the following research questions:

1. What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors regarding technology integration?
2. What are the current technology integration practices of the ESOL instructors?
3. What are the current attitudes toward technology of the ESOL instructors?

This chapter details the interpretive-descriptive qualitative analysis process and findings. Additionally, it includes participant descriptions to provide an understanding of their situations and experiences in using technology with their learners and in support of their teaching practices.

### **Qualitative Analysis**

This study used five sources of qualitative data: a survey, one-on-one instructor interviews, classroom observations, a focus group interview, and an action researcher journal. The survey was the first piece of data collected. My survey acted as a starting point in exploring participants needs, attitudes, and practices with technology. It provided a preliminary understanding of participant experiences based on predetermined topics and

categories. It was revisited throughout the analysis process to confirm and/or contribute to a deeper understanding of these experiences, and a broader idea of the technology knowledge and skills participants possessed. In an exploratory survey of this nature, much of the analysis can take place during the data collection process with little need for analysis afterwards (Jensen, 2010), which was the case with my survey. This ongoing pre-structured descriptive analysis was concerned with searching for diversity of characteristics among participants, as oppose to determining numerical data (Jensen, 2010).

The other four forms of data were uploaded into Delve Tool (2019), an online software tool to analyze qualitative data, to conduct an inductive analysis. These included the one-on-one instructor interviews, the classroom observations, the focus group interview, and entries from the action researcher journal. Table 4.1. describes this data set in regard to the number of codes generated in Delve Tool for each data source.

Table 4.1. *Summary of Qualitative Data Sources than Underwent Inductive Analysis*

<b>Types of Qualitative Data and Sources</b>	<b>Number</b>	<b>Total Number of Codes Applied*</b>
One-on-One Instructor Interviews	4	556
Observations	4	348
Focus Group Interview	1	397
Action Researcher Journal Entries	4	70
<b>Total</b>	<b>13</b>	<b>1,371</b>

\* *Note.* Of the 1,371 applied codes, some codes were used for multiple sources. Total of unduplicated codes generated was 748.

As seen in Table 4.1., the same codes were used across multiple sources of data, so while there are 1,371 codes in the table, there were 748 unique codes applied across the qualitative data for this inductive analysis. The sources of data and the process of inductive analysis are detailed in the paragraphs that follow.

To begin the process of inductive analysis, all data had to be digitized, so that it could be uploaded into Delve, the online software tool that was used on the data corpus. The one-on-one instructor interviews and the focus group interview were transcribed by Rev (<https://www.rev.com/>), an online transcription company. After the individual interviews and focus group transcripts were completed by Rev, I listened to the audio recorded interviews while reading the transcript to identify and correct any mistakes made by the online software. Errors encountered were minor or included words that may have been misunderstood because of regional accents.

The LoFTI instrument was used to collect the observation data. Upon completing each observation, using the LoFTI instrument as a guide, I recorded my reflective thinking about the observation session in my AR journal, which was housed on a blog platform. These detailed observation reflections were copied and pasted from the blog into Delve for coding. All digitized data was copied and pasted into Delve as a transcript. The total number of digitized data sources uploaded to Delve for coding was 13. Figure 4.1. provides an image of my Delve project, with the 13 transcripts on the left-hand side, the focus group interview transcript in the center, and codes generated along the right-hand side.



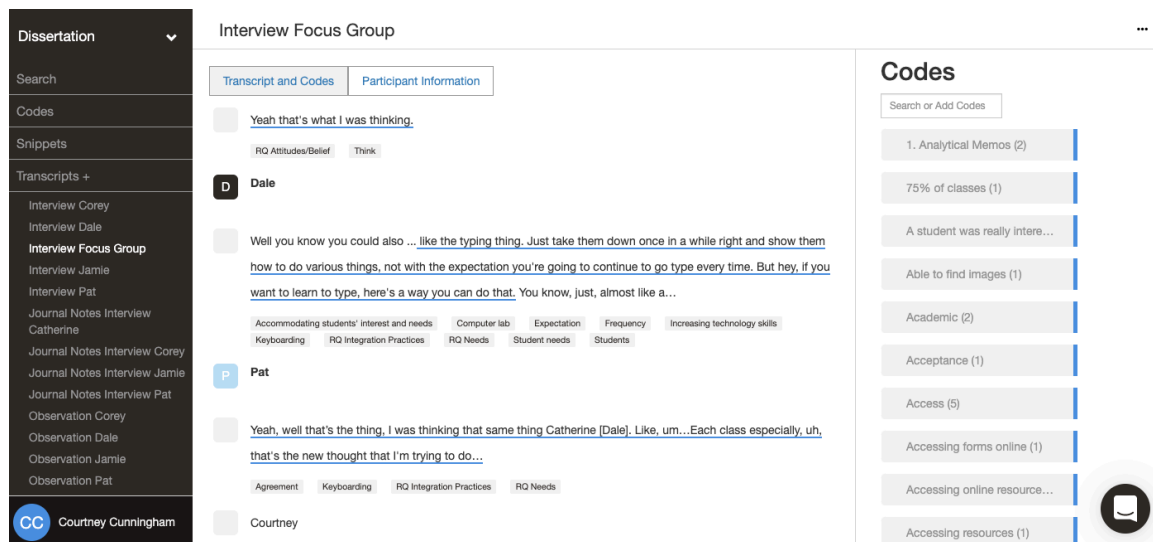


Figure 4.1. Dissertation project in Delve.

## First Cycle Coding

Once all data was uploaded into Delve, the process of coding the data began, which included different methods applied through four coding cycle lenses. In the first cycle of coding, four *Elemental Methods* were utilized. Saldana (2016) refers to *Elemental Coding* methods as primary to qualitative data analysis, as they have focused filters for building a foundation for future coding cycles. These *Elemental Coding* methods included *Structural Coding*, *Descriptive Coding*, *Process Coding*, and *In Vivo Coding*. For *Structural Coding*, data was analyzed according to chunks or segments of data, as only three codes were used. For each of the other methods, a line-by-line unit of analysis was used. Charmaz (2008) suggests that line-by-line coding goes deeper into the phenomenon, giving the researcher more directions to consider through the forced interaction with the data.

*Structural Coding* was the first method used for this inductive analysis. Applying *Structural Coding* provided the opportunity to further familiarize myself with the data.

As emphasized by Saldana (2016), *Structural Coding* was used as a categorization technique for further qualitative data analysis. With *Structural Coding*, a question-based code is generated that acts as a labelling or index device, allowing researchers to quickly access data likely to be relevant from a larger data set (Saldana, 2016). This method of coding applied a code that directly related to the research questions of the study (Saldana, 2016). For this study, there were three research questions, so three *Structural Codes* were created, *RQ Attitudes/Beliefs*, *RQ Integration Practices*, and *RQ Needs*.

*Descriptive Coding* was the second first cycle coding method applied to the data corpus. This method is considered a straightforward method of coding recommended for the novice researcher, as it identifies a topic and applies a word or short phrase in the form of nouns, to index the data corpus (Saldana, 2016). For this coding cycle, I focused on the who, what, when, where, and how of my data. Code examples involving who included the following: *instructors*, *students*, *institute* (college), *IT*, *family* (as in the students'), and *community*. Code examples involving what included the following: *technology tools*, *technology hardware*, *activities*, *lesson plans*, *lessons*, *jobs*, the *internet*, *URLs*, *handouts/worksheets*, *language*, *verbs*, *grammar*, *input*, *output*, *comprehension*, *visual*, *pictures*, *images*, *levels*, and *experience*. Regarding the codes of *input* and *output*, these are commonly referred to in English language teaching/learning; receptive skills such as listening and reading are considered input, while productive skills such as speaking and writing are considered output (Gass, 1997). There was one code generated involving when, which was *time*. I used *time* as a code to indicate anything in the data that referred to time. These included the length of time instructors have been in the teaching field, the time that they are in class teaching students, the time they invest in

helping students, the time it takes to prepare lessons with technology, etc. Code examples involving where included the following: *computer lab*, the *classroom*, *home*, and the *library*. Finally, code examples involving how included the following: *organization*, *simplicity*, *frequency*, *ease of use*, *acceptance*, *adjustments*, *challenges*, *advantages*, *change*, *collaboration*, *confusion*, and *confidence*. The process of *Descriptive Coding* was time consuming and tedious, but the most helpful in identifying the key elements within my data and beginning to see emerging connections and relationships. As emphasized by Saldana (2016), this method provided me with an organizational grasp of my study data corpus. Upon the completion of *Descriptive Coding*, 415 codes were generated.

*Process Coding* was the third first cycle coding method applied to this data corpus. *Process Coding* applied gerunds to represent action, in order to reveal “routines and rituals of human life” (Saldana, 2016, p. 111). This method of coding allowed me to see my data from a new lens where I was able to look at the ways in which the entities discovered during *Descriptive Coding* interacted with each other in what they do. For my study, *Process Coding* enabled me to realize the ways technology were being used in the classroom, and other participant actions that I may not have previously considered. Charmaz (2008) notes that this method of coding allows the researcher to see connections between codes while keeping their analysis “active and emergent” (p. 164). I felt this was true for me during *Process Coding*. Code examples for *Process Coding* included the following: *accommodating student needs and interests*, *analyzing value*, *appearing comfortable using technology*, *celebrating mistakes*, *checking comprehension*, *creating a safe environment*, *demonstrating*, *displaying handouts*, *facilitating discussions*, *finding resources*, *grabbing students attention*, *listening to a variety of resources*, *moving*

*between technologies, practicing language skills, pursuing professional development, supporting students, transforming, and using videos.* These examples represented the interface of actions between the instructor participants, their students, and the technologies used, both collectively as well as separately. Upon the completion of *Process Coding*, 241 codes were generated.

After the heuristic journey of applying *Structural Coding*, *Descriptive Coding*, and *Process Coding*, I felt a stronger sense of cognizance regarding my data. I had a greater understanding of who and what it represented, and how those pieces were connected to each other. I wrote the following analytical memo after completing these three methods of coding:

I just got finished with my Process Coding, which was much easier than descriptive. At this point, I feel like the different methods of coding I'm using are complimenting each other well. The Structural Coding was directly related to my research questions and only contained three codes. The Descriptive Coding was a detail-oriented approach to discovering the who, what, when, where, and how of my data. This resulted in LOTS of codes. I imagine many of those will be omitted or combined. The Process Coding, from my perspective, was a deeper look at the how because it identified the ways in which things were happening with technology in the classroom. These codes identify what both instructors and students are doing with technology and in classroom activities in general. I'm starting to see patterns.

This analytical memo captured the evolution of my coding at that point and revealed the progress that was being made in my inductive analysis.

The final method of coding applied during first cycle coding was *In Vivo Coding*, where codes are created from the actual language found in the qualitative data sources (Saldana, 2016). These codes were generated through statements made by the participants and could be used to discern participants' meaning in describing their actions (Charmaz, 2008). For my research, the sources of data in which *In Vivo Coding* was applied were the one-on-one instructor interviews and the focus group interview as these were the only sources of data that included the participants' responses. Through *In Vivo Coding*, I began to recognize the why behind the actions of the participants and more deeply understood how their thoughts, feelings, and ideas drove their actions. Code examples for *In Vivo Coding* include the following: *A student was really interested in typing; All the hyperlinks could be there; Endless, endless, endless problems with tech; I think students like it; I would like to have technology for every lesson I introduce; It brings other humans into the classroom; Once you've identified something, there are a million resources; People are doing great things with technology; and To dig in and figure out what really makes sense and be beneficial to the students.* As recommended by Saldana (2016), as I read the transcripts, I paid attention to phrases that seemed to stand out, especially in regard to the patterns I had noticed emerging. As evidenced in the codes, participants' ideas and opinions were brought to life with these codes. Upon the completion of *In Vivo Coding*, 89 codes were generated.

After applying these four methods of first cycle coding, my qualitative data accounted for 748 unique codes. In order to manage this magnitude of codes, I exported the codes from Delve into a Word document and then sorted the codes into five broad groups so that I could review the codes more efficiently. I named these groups Actions,

Barriers, Qualities, Student Interest and Needs, and Technology and created a separate Word document for each group. After having copied and pasted the 748 codes into one of the five Word documents, there were only 75-301 codes per document to analyze and manage moving forward in the inductive analysis process. I crafted the below analytical memo that detailed this process:

Due to the large number of codes I have, I've been using a coding management strategy of organizing codes into topics. This strategy basically groups codes into more manageable numbers. As oppose to trying to analyze 748 codes at one time, I'll be looking at smaller chunks of codes organized by topic. The topics don't necessarily carry a lot of meaning, but they're a first effort at trying to determine patterns in the data. Right now, I have three topics: Students' Interests and Needs, Actions, and Technology. Any code related to student interests and needs is in the first topic. This can be codes related to things instructors said that show how focused they are on student needs, things instructors teach related to the language knowledge and skills that students need, as well as things instructors use because they think students will respond well to it. Actions include codes that represent instructor actions, student actions, or actions done through and with technology. The topic technology includes codes related to technology tools. The next two topics will be Qualities and Barriers.

The process of moving codes into groups allowed me to be less overwhelmed and become more focused so that I could proceed into second cycle coding.

## Second Cycle Coding

For second cycle coding, *Pattern Coding* was used. As described by Saldana (2016), *Pattern Coding* brings a lot of material from first cycle coding together into smaller and more significant units of analysis. The move into *Pattern Coding* was achieved with the assistance of my dissertation chair and my analytical memos. My chair requested that I read the series of analytical memos to her that I had written after my first cycle coding and when moving the massive amounts of codes into smaller groups. This dialogue helped me to realize emerging categories. The following analytical memo is one that I shared with Dr. Kolski, in which the first category from my codes emerged:

Instructors are identifying student needs and interests, developing curriculum, planning lessons, creating material, and delivering lessons. They frequently use technology to support these activities. Instructors seem to believe that students need language skills, such as knowledge of grammar, as well as reading, writing, speaking, and listening skills. They use technology to help students develop these skills. They also use technology to meet students interests and to engage students. They use videos, local resources, websites, and PowerPoints to capture students' attention and to aid them in developing language skills. Instructors are using technology a lot, but students aren't using technology that much. Instructors seem to believe that students need to increase their comfortability with technology and their technology skills, but students aren't using technology as much as the

instructors are. There are barriers to this. These barriers seem to be related to the students themselves, the institute, and the instructors' attitudes. I'm not drawing any major conclusions here, just getting some thoughts out as the data begins to speak to me.

When Dr. Kolski summarized our interaction combined with the analytical memo, the category of Planning and delivering instruction became apparent. This gave me the direction I needed to see how the groups of codes could be authored into the categories. I created a new Word document for the category Planning and delivering instruction and went through each of my five group documents to include any codes related to planning and delivering instruction. Reviewing the codes as I was moving them into this first category also helped me realize shared attributes as I was again revisiting all of my codes (Saldana, 2016). I continued to use my analytical memos and discussions with my dissertation chair to catalyze categories. As I realized potential categories, I created a new Word document and began moving codes into the appropriate category. During this process, 17 categories were created.

After the 17 categories were created, I transferred the codes for each category into an Excel spreadsheet. Each category was given a column and all corresponding codes were placed beneath it. To better visualize how the categories could be developed into themes, I used Creately (<https://creately.com/>), an online program that creates graphic organizers. This form of *Operational Diagram Modeling* allowed me to map the categories in a more sophisticated and synthesized manner to further the inductive analysis of the data (Saldana, 2016).



Figure 4.2. features my graphic organizer, which contains the 17 categories established during second cycle coding. The blue rectangular boxes represent broader categories. The categories inside the yellow ovals showed their connection to one or more broader categories.

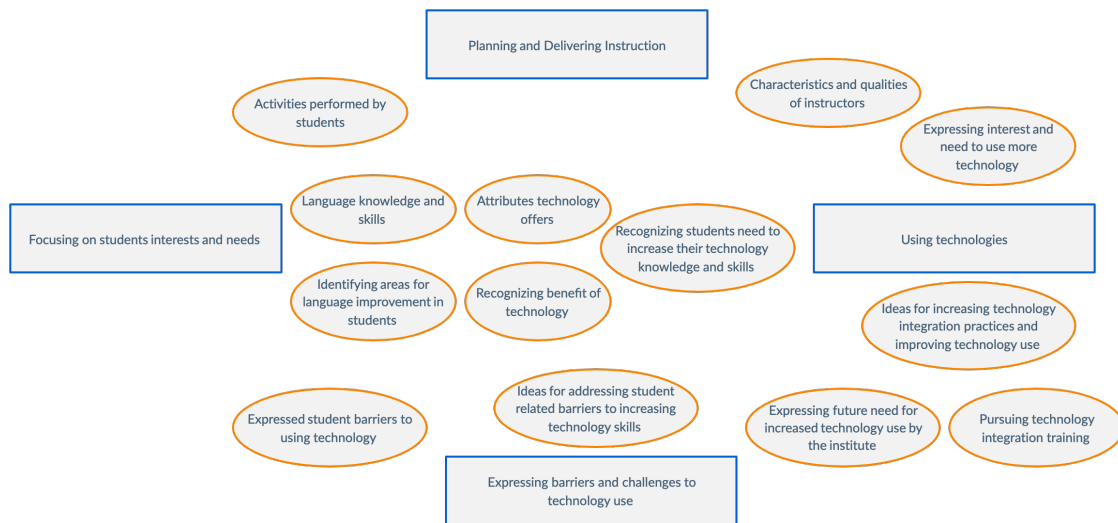


Figure 4.2. Categories established in second cycle coding.

What follows is the analytical memo I wrote that detailed the process of *Operational Diagram Modeling*. As emphasized by Saldana (2016), creating this visual representation increased my ability to analyze my data and illuminate my thoughts, which led to a written representation of the data.

At the top and in the middle of the visual is Planning and delivering instruction. Codes in this category include all the ways that teachers plan for and deliver lessons. On the left-hand side of the visual and under Planning and delivering instruction is Focusing on students interests and needs, as this plays a major factor in what and how instructors plan and deliver instruction. On the right-hand side of

the visual, directly across from Focusing on students interests and needs, is Technologies in use. The codes in this category represent all the technologies that instructors use when they plan and deliver instruction, which is driven by Focusing on students interests and needs. At the bottom and in the middle of the visual is Experiencing barriers and challenges to technology use, which includes codes that express the reasons instructors aren't using technology more. All other categories are arranged in the visual to represent their connection to these four larger categories.

Creating this visual graphic organizer and crafting a written explanation of it felt like a monumental moment in my process of inductive analysis. In my next peer debriefing meeting with Dr. Kolski, she asked me a series of questions about the evolution of my thinking from codes to categories generated. Peer debriefing adds validity to the account, as the interpretation of my data from a person outside of my research helps it better resonate with others (Creswell, 2014). This dialogue helped me further clarify my thoughts and solidify the categories that had emerged from the data. From this peer debriefing discussion, the development of three themes and one potential assertion also materialized.

Dr. Kolski recommended that before moving further with my analysis I consolidate some of my categories. Figure 4.3. shows the 7 categories (in yellow ovals) that were subsumed into the final 10 categories (in blue rectangular boxes). Some of the category's names underwent minor revisions in this process.



Figure 4.3. Development of final 10 categories.

Table 4.2. features the 10 final categories that were established in this inductive analysis and the corresponding number of codes that fell within each.

Table 4.2. *Final Categories and Number of Codes with Each*

<b>Category</b>	<b>Number of Codes*</b>
Attributes and benefits technology offers English language teaching and learning	99
Characteristics and qualities of instructors	40
Expressing barriers and challenges to technology use	99
Expressing future need for increased technology use by the institute	10
Focusing on students interests and needs	79
Planning and Delivering Instruction	222
Ideas for addressing student related barriers to increasing technology skills	29
Ideas for increasing technology integration practices and improving technology use	29
Recognizing students need to increase their technology knowledge and skills	20
Using Technologies	82
<b>Total</b>	<b>709</b>

*\*Note.* The total number of original, unduplicated codes was 748. In the process of second cycle coding, codes that were similar were combined. Additionally, some codes were not pertinent enough to the study to continue past first cycle coding, so they became obsolete.

## Summary of Inductive Analysis Using First and Second Cycle Coding Methods

From these 10 categories, three themes and one assertion emerged. Figure 4.4. features the progression from codes to categories, from categories to themes, and from themes to the assertion. The sections that follow detail the assertion and themes that surfaced, as well as explain how the categories fit within each theme. Examples of codes and participant responses are included, as well as existing research supporting the assertion, themes, and categories.

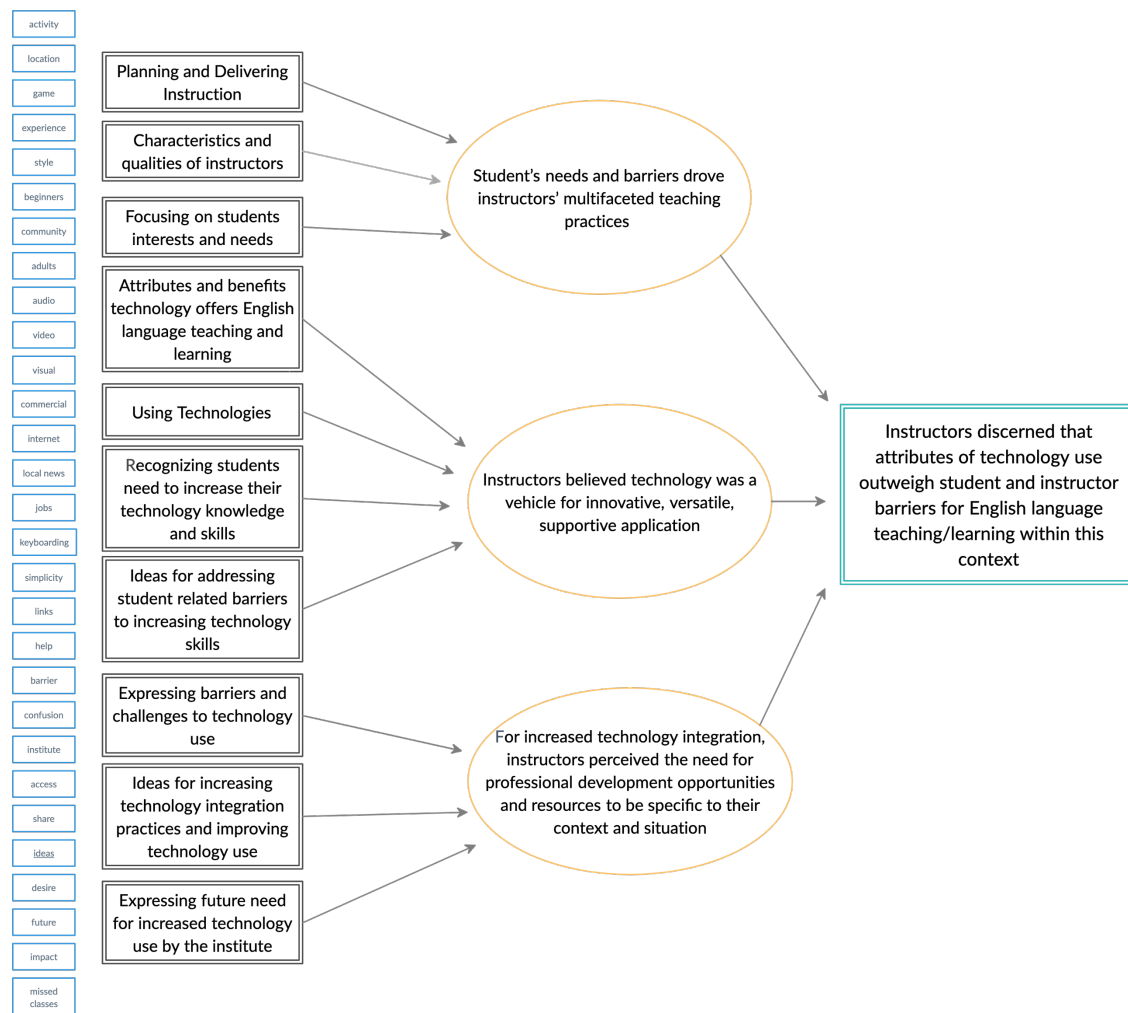


Figure 4.4. Codes to categories to themes to assertion.

## **Findings**

The findings of this inductive analysis are presented in the sections below. They are organized with the participant descriptions presented first. This approach is modeled after Grant, Tamin, Sweeney, and Ferguson (2015) and is utilized to provide a deeper understanding of who the participants are and so that when quotes are included, there is reference for who said them. The assertion followed by the themes are then presented, integrating in how the existing research, categories and codes support each. Participant responses and results from the survey instrument further support the findings of the inductive analysis.

### **Participant Descriptions**

The following features the descriptions of the four participants of this study. Descriptions were created based on demographic information provided in the survey instrument, approximations made of the participants during classroom observations, and information provided in an email. The email asked participants to provide a brief explanation of their connection to the ESL community including how long have they have been in the field and how and why they entered the profession. All participants have been assigned a gender-neutral pseudonym to protect their identities.

Corey is between 40-45 years of age and has an M.A. in Linguistics with a Language Teaching Specialization. Corey has been teaching ESOL for 7 years. They began teaching in the University of Oregon's Intensive English Program and are now teaching at PNWCC. Corey has taught beginner to advanced ESOL students. When asked to explain the role of the teacher in student learning, Corey responded that the role of the teacher is to educate students on information the student did not know before and Corey

believes that technology can assist teachers in this role. Corey's teaching style is formal. They remain at the front of the classroom for the majority of class either at the podium or at the whiteboard; there is a strong sense of the role of the teacher and the students. Even though Corey teaches in a more traditional style, they have clearly established a safe learning environment for the students, as students appear comfortable asking questions and interacting with Corey. Corey speaks slowly, clearly, and with confidence when teaching. Corey stays on topic and moves forward without delay. In the classroom observation of Corey, they moved from a lesson focused on asking/answering questions in the past tense to a pronunciation focused lesson in an effective and productive manner.

Dale is 56 years or older and has an M.A. in Education or closely related field. Dale has been teaching ESOL for over 35 years. Dale started teaching English after a trip to Latin America, where Dale spoke Spanish. They first taught bilingual fourth grade and then moved into ESOL. Dale has taught kindergarten through adult ESOL learners in countries all over the world throughout the course of their ESOL career. When asked to explain the role of the teacher in student learning within the context of ESOL, Dale said that it is to create a safe environment for students to improve their language skills. It involves finding out students' interests and needs and bringing that into the curriculum. Dale said the curriculum should work on developing grammar and vocabulary through meaningful activities that allow learners to practice all language skills. Dale's teaching style is energetic and interactive. They move around the classroom, utilizing all of the resources it has to offer including the podium and technologies at the front of the room, the whiteboard at the back of the room, various posters, and other classroom resources. Dale uses body language to help convey meaning. Dale speaks slowly and clearly to help

students with their understanding. Dale has created a safe, comfortable, and engaging classroom environment, which is evident in students' behaviors. Students ask questions and make comments without raising their hands, they appear welcoming and friendly with their fellow classmates, and they seemed to be actively involved in the learning process. It should be noted that at the time of the data collection, Dale had only been working in the ESOL department at this institute for approximately 8 weeks.

Jamie is 56 years or older and has an M.A. in TESOL. They began teaching ESOL 13 years ago. Jamie has taught ESL to students from kindergarten through senior citizens. Jamie's main professional interest with ESOL is in helping community members be better equipped to manage their lives by improving their language and literacy skills. Jamie's teaching is friendly and enthusiastic. They lightheartedly interact with students as they teach, finding opportunities to share a laugh. Jamie appears excited about the content being taught as they deliver it with an energetic smile. When asked what Jamie believes the role of the teacher to be in student learning, they said that the role of the teacher is to act as a guide and witness to the students. Jamie said the job is not to bestow knowledge to students. The goal is to find ways to celebrate mistakes, since these help teachers identify areas where the students need work.

Pat is 56 years or older and has an M.A. in Education with an ESOL teaching license. Pat has been in the ESOL field for over 30 years. After volunteering for the Peace Corps in Burkina Faso and Fanta, Pat came to believe that the only way out of poverty was through education. Upon returning to the U.S., Pat attended college to become a teacher. They chose to enter ESOL because of their love for interacting with other cultures. Pat feels a strong connection to the ESOL community. When asked to



explain the role of the teacher in student learning within the context of ESOL, Pat said that it is to make everyone feel comfortable using the language in a safe environment. Pat's teaching style is interactive and relaxed. Pat continually asks students if they have questions, engages in small talk with the students, and elicits their opinion on the direction of the lesson. In the specific lesson I observed, Pat used a commercial, and checked in frequently with students to see if they needed the commercial to be played again or if they had any questions about what the speakers were saying. Pat can be described as gentle. Their voice is calm. Their facial expressions are warm and welcoming. Pat usually has a smile. Pat genuinely listens to students, giving them time to process and deliver their thoughts before interjecting.

The following sections feature the assertion, themes, and categories that emerged from the inductive analysis, as seen in Figure 4.5. The assertion of this study is supported by the themes and the categories which are subsumed within each theme. The sections are organized with the assertion presented first followed by the themes, including a discussion of the categories found within each.

**Assertion: Attributes of Technology Use Outweigh Student and Instructor Barriers for English Language Learning within This Context.**

From the inductive analysis, 10 categories, three themes, and one assertion emerged. The categories and themes support the assertion, which was discovered through the process of analytical memo writing and peer debriefing. As emphasized by Saldana (2016) analytic memos reflect and document your coding process, how the inquiry is evolving, and any patterns that are becoming visible.

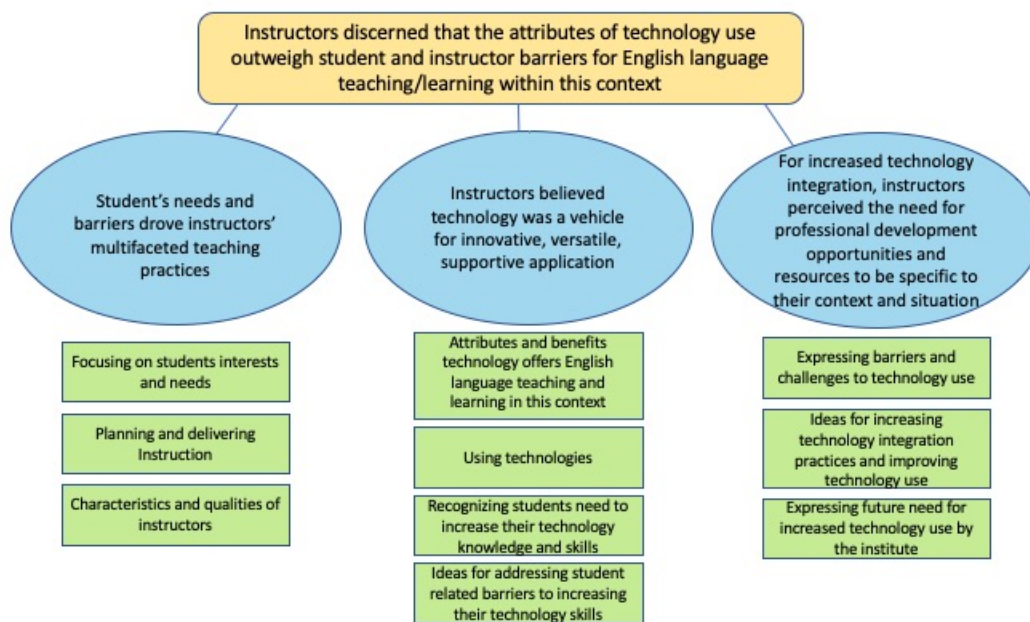


Figure 4.5. Assertion with supporting themes and categories.

From these, larger ideas come into view. The bullet points below were part of an analytical memo that aided in the realization of the assertion.

- Instructors primary job is to plan and deliver instruction. How they do this depends on their personal qualities and characteristics, as well as the students' interest and needs, which drives their decisions about the activities, the languages skills, and the technologies that they incorporate into their lessons.
- Instructors are focused on determining areas that students need to improve their skills, particularly their language knowledge and skills, so that students can integrate into their communities. Instructors recognize that technology can help them identify student needs and that technology can

aid students in increasing their language knowledge and skills. Instructors also recognize that students need to increase their technology skills.

- Instructors use a variety of technologies in both planning and delivering instruction and seem comfortable doing so, though they are habitual in what they use and how. They have interest increasing their technology use, but face barriers.

- Among those barriers are ones presented because of their own attitudes and beliefs, as well as ones presented by the institution. Students themselves also present a barrier in increasing the use of technology.

There is a particular issue with having students use technology, so that they can increase their skills. Instructors should be taking students to the computer lab for an hour each week, but most are not doing this. They recognize this as a problem, but think it is challenging for many reasons to take students to the lab. They have ideas to overcome that barrier and they also have ideas for increasing and improving their own uses of technology. There is a chance that they and their students will need to use technology more in the future per an institutional policy, but the real reason for wanting to increase technology integration practices is for the benefits it has in planning and delivering instruction for English language learning, as well as aiding students in becoming more autonomous learners and increasing their computer literacy skills, which could result in stronger integration into the community and better jobs.

From this analytical memo and the discussion that took place with my dissertation chair during peer debriefing, it became apparent that participants of my study discerned that the attributes of technology use outweigh student and instructor barriers for English language teaching/learning. This assertion is supported throughout the data collected and analyzed for this study, as evidenced in the themes and categories subsumed by it. The assertion also aligns with existing research pertaining to the variables in this study.

As established in Chapter 1 and based on extensive research, technology offers a variety of characteristics that aid English language learners in becoming more proficient with the language, as well as becoming more autonomous in their learning (Adair-Hauck et al., 2013; Center for Applied Linguistics, 2010; Chapelle, 2008; Coryel & Chlup, 2007; Healey et al., 2011; Warschauer & Liaw, 2010). The use of technology in language teaching and learning has been established as beneficial enough to have a dedicated subfield, CALL, within the larger field of language learning. The international TESOL organization has developed themes within its framework for best practices of technology integration in the language classroom because of the positive impact it has on English language teaching/learning (Healey et al., 2011). Several large-scale bodies of research support the importance of using technology with adult English language learners in the U.S. (Chisman & Crandall, 2007; Crandall, 2007; Healey et al., 2011; Center for Applied Linguistics 2010). Chisman and Crandall's (2007) study, which examined five exemplary ESL community college programs for two years, found that a common factor contributing to the success of these institutes was the extensive use of technology; all institutes had computer labs available for students and/or integrated technology into class time. The benefits technology has for teaching adult English language learners in the U.S.

include increasing motivation, engaging students in learning, providing authentic language use, accommodating diverse learners, among others (McClanahan, 2014). Eyring (2014) suggests that technology can be transformational in increasing literacy, as well as 21<sup>st</sup> century skills in learners within adult ESOL programs in the U.S. The research suggests that technology is a valuable tool for adult English language learners, as it engages students, increases proficiency, and exposes them to skills needed in the modern world (Eyring, 2014). These benefits were echoed throughout the findings of my data and will be discussed in further detail in the narrative regarding the themes and categories in which they were included. While it is recognized that there are challenges and barriers to using technology within adult ESOL programs (McClanahan, 2014), the benefits are too great not to overcome the barriers.

The participants of my study expressed barriers to using technology, but the overall attitude was that it is beneficial and should be utilized with the learners in the ESOL program. The following quotes from the one-on-one instructor interviews revealed the views from the participants that increased technology integration is important.

Corey: I like to use technology. I would like to use more technology in my classes. Yeah, I think it's helpful for the instructor and it's helpful for the students.

Jamie: Well, I think, I think, we don't want to pretend it's the dark ages and that they're [the learners] not going to ever have to access technology in this country, in any country.... So I think it's not going to go away, it's something we should definitely pursue, and make it as easy for them to access as we can. So yeah, I think it's definitely worthwhile.

Pat: So just more exposure to that [technology]. I think it would be helpful to the students. It's just that I feel like we could make more independent learners if we did it... [in reference to using more technology]

The survey instrument further supported that the instructors believed technology can be an effective learning tool for students. Details regarding the effectiveness of using technology with their students were expanded upon in the one-on-one instructor interviews, where details of the benefits of technology within this context were discussed with each instructor.

The following paragraphs feature themes that support the assertion, as well as the categories that are subsumed within each. The themes are presented as follows: Students needs and barriers drove instructors multifaceted teaching practices; Instructors believed technology was a vehicle for innovative, versatile, supportive application; For increased technology integration, instructors perceived the need for PD opportunities and resources to be specific to their context and situation.

**Theme: Student's needs and barriers drive instructors' multifaceted teaching practices.** Serving student needs within adult ESOL programs in the U.S. is both a challenge and a priority (Eyring, 2014; Fernandez et al., 2017; Huang et al., 2011; Kim & Diaz, 2013; McClanahan, 2014; Spurling et al., 2008). Adult ESOL learners in the U.S. have diverse needs (Eyring, 2014; Fernandez et al., 2017; Kim & Diaz, 2013; Spurling et al., 2008), making it difficult for instructors to cater to the variety of background and skills they encounter in their learners, but it is important for instructors to deliver lessons and activities that connect to their learners' needs (Eyring, 2014; Huang et al., 2011; McClanahan, 2014). The data analyzed for this study aligned with this concept, as the

participants revealed through interviews and observations that meeting students' needs drives their teaching practices, but also limits them. The following participant quotes, stated in one-on-one instructor interviews, captured the focus on student needs:

Dale: The needs are really different and they're regional and they're geographic, and this is completely different than the language learners I had in New Delhi in the American Embassy School who were so different.

Dale: It involves finding out students' interests and needs and bringing that into the curriculum.

Dale: I think it's more student-led barriers like I was mentioning, in terms of what their needs are and what their abilities are.

Pat: And so it made me stop and recognize who is my audience and then create tailored lessons more. I'm just trying to meet the needs of the students. I follow their lead.

Jamie: And that's how learning is accomplished, by meeting the student right where they are in their progression, in their work.

These quotes feature explicit statements made by the participants regarding the importance of meeting their students' needs. The categories that are subsumed within this theme detail what these needs are, how planning and delivering of instruction is centered on these needs, including characteristics and qualities of the participants as related to their dedication to meeting these needs. The discussion of categories subsumed within this theme are as follow: Focusing on students interests and needs; Characteristics and qualities of instructors; Planning and delivering instruction.

***Category: Focusing on students interests and needs.*** Huang et al. (2011)

emphasize that instructors of adult ESOL students should give prominence to the needs and goals of their learners. As the above quotes revealed, learners' needs are important to the participants of this study. Codes originally generated to create this category include the following examples: *accommodating student needs and interests, creating a safe environment, furthering career goals, integrating into the community, student needs, checking comprehension, identifying mistakes, building vocabulary, conversation, language, pronunciation, input, output, questions, and, vocabulary.* These codes focus on students interests and needs related to language learning, technology, integrating into community, and improving their jobs. The following *In Vivo Codes* expand on these concepts: *It's to create a safe environment for students to improve their language skills; The goal is to get them integrated into the community; To dig in and figure out what really makes sense and be beneficial to the students; They're just trying to understand what the person said at their packing house; That's local, local stuff, local interest.*

The sentiment expressed in the first *In Vivo Code* shows the intent of the participant to create a safe space in the classroom, where students feel comfortable producing the language. This concept was deemed important by several participants as shown in the quotes that follow. In response to the role of the instructor in student learning, the following was stated in one-on-one instructor interviews:

Dale: I think that it is to create a safe environment for students to improve their language skills. With beginners, it's a mix of finding out what they're interested in and what they need, what their needs are, and then also of course to bring curriculum. Within that curriculum, you're working on



developing vocabulary and grammar within meaningful activities that allow them to practice all four domains.

Pat: I think the role of the teacher, my goal in the class is to make everybody comfortable and you create a comfortable, safe environment. Where the students just want to talk and they aren't thinking about the language that they're using.

In the focus group interview, the following was said regarding the goals of learners within this context:

Jamie: Just that with our students, the goal was to kind of get them integrated into their community where they're living and you can do things on the computer like, here's how you go to [A local online classifieds similar to Craigslist].

The interest and needs of the learners determined how participants plan and deliver their instruction. The discussion of the next category elaborates on the interests and needs of ESOL learners within this context and provides substantial evidence of how participants cater to the interests and needs of their learners through their instructional practices.

***Category: Planning and delivering instruction.*** Participants of this study planned and delivered instruction based on the interest, needs, and goals of their learners. The needs and goals of adult ESOL learners have been identified as closely related to the real-world in which they live, providing language and skills related to the communities in which they reside and to the jobs in which they work (Huang et al., 2011; McClanahan, 2014). For this reason, research stresses the importance of using authentic materials in lessons and classroom activities (Chisman, 2008; Cunningham 2015; Eyring, 2014;

Huang et al., 2011; McClanahan, 2014; Spurling, Seymore, & Chisman, 2008). Further, Huang, Tisdell, and Nisbet (2011) recommend a communicative language teaching approach (CLT) approach, with its focus on authenticity, for this population. CLT focuses on the interactive and collaborative nature of language; in the communicative classroom students use the language productively and receptively with their teacher and peers in unrehearsed situations (Brown, 2007; Celce-Murcia, 2001). The participants of this study incorporated authentic materials into their instructional practices, as well as utilized a communicative approach to language teaching.

The focus on language and skills necessary for integration in the community was evidenced through the interviews and classroom observations analyzed for this study. In classroom observations, all participants facilitated lessons to help learners increase communication skills and/or language specific to functioning within society. In the lesson observed of Corey, students practiced asking and answering questions in the past tense. As a class, they worked to form questions. Students then worked with their partners to use these questions as a basis for conversation. This provided the opportunity for the type of authentic interaction that is representative of CLT (Huang, et al., 2011). Corey also integrated pronunciation into this lesson. Practicing and perfecting speaking skills in the classroom can aid learners in becoming more comfortable producing the language outside of the classroom. According to Warriner (2007), these types of interactive activities in the classroom allow learners the opportunity to acquire and practice skills that can prevent communication breakdowns with other speakers. The other participants also integrated communicative activities into their observed lessons.

In the lesson observed of Jamie, the focus was on answering and asking wh-questions: who, what, when, where, why, and how. Jamie guided students in forming questions and they then asked their peers the questions as a basis for conversation. In the one-on-one instructor interview, Jamie stated the following:

Jamie: Well and I feel like, I think especially if you're doing low-level ESL, you really want to get as much real language back and forth between you and the students, or the students with each other.

This focus on interaction, as highlighted by Jamie, aligns with McKay and Schaetzel (2008), who discuss the benefits of both teacher to learner and peer to peer interaction in the adult ESOL classroom. Both types of interaction provide learners with the opportunity to receive comprehensible input and feedback, language output as a source for language learning, feedback through making mistakes, as well as learner gains (McKay & Schaetzel, 2008). Corey and Jamie both integrated communicative activities, centered on interaction, in their observed lessons. Pat and Dale did as well, but they also used authentic resources to foster these activities.

In the observed lesson delivered by Pat, students began by having conversations with their peers about a provided topic. As evidenced in the quote below, provided in Pat's one-on-one instructor interview, students indicated that they wanted to practice speaking.

Pat: Because for our classes, when I survey at the beginning, almost always they say speaking, is what I want to practice most because that's where more students have fears. And so my job as a teacher, I see my primary job is to create that kind of environment in the classroom where everybody

feels as though they want to come in and communicate and form a community and learn and talk and not worry about what they're saying. But just talk and not have that be the focus of grammatically correct grammatical correctness or anything.

In the lesson observed of Pat, students began by conversing about the provided topic and then the class watched a commercial together as the basis for the next activity. This is typical of Pat's lessons, as specified in the one-on-one interview.

Pat: Yeah, so usually almost every class for a warmup, I use technology. So, a lot of times it will be... recently, and I did commercial clips or I'll take a question from one of the really great listening sites like ELLLO the one we did today was. "What are the environmental problems facing your country?"

The lesson that I observed began with the discussion about the environment and then the commercial, accessed through YouTube, was used. Pat's use of commercial clips and topics from listening sites provided learners with authentic listening materials in which to form the basis for language instruction. The use of the English Listening Lessons Library website (<http://elllo.org/>), provided learners with exposure to native speakers discussing a variety of topics. The use of YouTube to access commercials also provided learners with exposure to native speakers, as well as American culture. These resources were authentic and used as a vehicle for communicative activities. For the benefit of the learner, Schwarzer (2009) recommends bringing authentic materials that contain the language that students will encounter in their everyday lives into the adult ESOL classroom.

In the lesson observed of Dale, a video accessed through YouTube was also used. Dale used a Mr. Bean video. Mr. Bean is the representation of a child in a man's body, who doesn't speak very often. Because of this lack of language, it provided the opportunity to focus on the actions and vocabulary presented in the video. This video was used as an extension to a previous activity, in which the focus was on different job titles. The lesson was focused on reviewing and learning about different job titles. The class looked at pictures together and repeated basic sentences after Dale about the different job titles. When they got to the job hairdresser, they stopped and that is when the video was used, which features Mr. Bean in a barber shop. The focus of the lesson then switched from vocabulary centered on job titles to verbs. With each action in the video i.e. brushing hair, cutting hair, chatting, sitting, walking in, paying etc., Dale would identify the verb to describe the action and write the verb in the present, past, present progressive, and future tenses on the whiteboard in the back of the room. This aspect of the lesson was interactive. Dale asked the students what had happened and using their limited language, they did their best to explain. Dale helped them by filling in gaps in vocabulary with a focus on verbs. In this lesson, Dale was using authentic materials as a springboard for an interactive activity. Dale was also covering vocabulary and grammar that students may encounter in the real-world.

As the classroom observations and excerpts from interviews revealed, the participants planned and delivered instruction according to the interest and needs of their learners. They strived to provide language that learners would encounter in the real-world, as well as authentic materials that acted as a channel for interaction. These authentic materials also gave learners exposure to native speakers and American culture,

which could in turn help them more successfully acclimate to their communities. In short, authentic materials provided a link to the real-world. These authentic materials were accessed through technology, discussed further in the narrative regarding the category, Attributes and benefits technology offers English language teaching. The following discussion features the category, Qualities and characteristics of instructors, which also tied into the ways in which the participants planned and delivered instruction that met learner interests and needs and ultimately supported the theme of student's needs and barriers driving instructors' multifaceted teaching practices.

***Category: Characteristics and qualities of instructors.*** In order for teaching to be effective in adult ESOL programs, instructors must possess certain knowledge, skills, experience, and qualities that are acquired over many years and result in the ability to customize teaching to the unique needs of their learners (Chisman & Crandall, 2007). As highlighted in Chapter 2, among these characteristics is having a Master's degree and understanding theories and methodologies related to English language teaching/learning (Chisman & Crandall, 2007; Sun, 2010), as well as personal qualities such as cultural awareness and sensitivity, flexibility, and compassion (Eyring, 2014). Additionally, understanding and responding to student needs is essential for effective instruction within this context (Burt, Peyton, & Schaetzel, 2008; Chisman, 2008; Chisman & Crandall, 2007; Kim & Diaz, 2013; Rodriguez et al., 2009; Van Duzer & Florez, 2003). In order to maintain the high level of expertise needed to teach adult ESOL learners, interest in and pursuit of PD opportunities is also imperative (Chisman, 2008; Chisman & Crandall, 2007; Eyring, 2014; Sun, 2010).

Within this category, codes were generated from the participant descriptions, as well as qualities expressed in instructor interviews and witnessed in the classroom observations. Codes in this category included instructor characteristics such as *age*, *experience*, *teaching style*, *comfortability with technology*, etc. As explained in the participant descriptions, all participants had a Master's degree and extensive experience teaching in various contexts contributing to their cultural awareness and sensitivity. Chisman (2008) refers to having a Master's degree in TESOL, linguistics, or some related field with certifications in TESOL, along with practical experience in the field as the "gold standard" (p. 9) for skilled teaching within this context. This combination of education and experience results in an understanding of theories and methods of English language teaching. The participants of this study possessed these qualities as was evidenced in the discussion of the previous two categories, which also demonstrated their understanding and ability to respond to the needs of their learners. Participants of this study also expressed interest and enthusiasm for pursuing PD, which was indicated in the results of the survey instrument, as well as the inductive analysis of qualitative data. Continuing PD is viewed as essential to maintaining a high quality of instruction for learners within this context (Burt et al., 2008; Center for Applied Linguistics, 2010; Chisman, 2008; Chisman & Crandall, 2007; Rodriguez & McKay, 2010). Regarding their PD pursuits, the participants said the following in one-on-one instructor interviews:

Dale: Oh no, I mean, I've been in this field for a long time, so I've been to a lot of conferences and things like that.

Jamie: There are sessions I've gone to at TESOL or ORTESOL meetings, that are inspiring...

Pat: There's a guy that I listened to a lot from England. Who has his own, he's a teacher trainer and I watch him a lot. I watch him, I tried to do fairly regularly and... And yeah, he has a teacher channel and stuff. So I watch him a lot because I found that I learn a lot from him.

Corey: And then I've seen things, professional development, how to line up technology use with your lesson planning and building objectives, things like that.

As the participant descriptions revealed, these instructors possessed the characteristics and qualities that lead to effective instruction for adult ESOL learners. They have the knowledge, experience, and skills to cater to the needs of these learners, which is a priority in their planning and delivering of instruction. They also have interest in continuing to develop their teaching practices through PD endeavors. In the instances shared above, the pursuit of PD that the participants were referring to were all related to technology integration, as this was the focus of the proposed research. The following features a discussion of the next theme, which further expands upon the uses of technology by the participants to support teaching and learning within this context.

**Theme: Instructors believe technology to be a vehicle for innovative, versatile, supportive application.** Technology offers a variety of characteristics that aid English language learners in becoming more proficient with the language, as well as becoming more autonomous in their learning endeavors. Riasati, Allahyar, and Tan (2012) listed the following benefits of technology for adult English language teaching/learning: engagement; improvement in academic ability; a paradigm shift in teaching and learning; an assessment shift; collaborative learning enhancement; and



lowering student anxiety levels. Many of these characteristics were expressed in the sentiments provided by the participants of this study regarding the benefits of technology for their learners. Below are quotes from one-on-one instructor interviews, where participants expressed some of these benefits.

Corey: It certainly feels like it grabs their attention and it... [pause] I don't know, it makes us seem a little bit more professional when we're using it rather than just standing up there with a marker and writing things down as they come along. And I think that adds to, I don't know, them feeling more like it's a privilege to come up to the college and take classes and yeah. I mean it's great to have information projected onto a large screen.

Jamie: I mean all of the online quizzes and everything is going to give you lots of information about what... If you're looking at grammar, what issues do students have? Where does it break down? Where are they in their progress? So I think technology is great for identifying current levels of students, and also helping the teacher figure out what to focus on, um, what subjects or what skills to do their lesson planning around.

Pat: I think we're just drawn to video. Just the visual...Yeah. And, they're often. I mean I like to find funny ones. They're all funny and so it just like, it helps people um lose inhibitions. Cause language is very intimidating.

Dale: I think as I mentioned, it brings other humans into the classroom, hearing other accents there. You can repeat the dialogue over and over again so you can hear it over and over again. You can use songs, right? So there are different ways to work with the learning that way.

As these quotes revealed, the participants of this study believed technology was advantageous for the ways specified by Riasati et al. (2012). Corey discussed technology's ability to engage learners, as well as transform the classroom. Jamie mentioned technology's ability to help with assessment. Pat expressed both the ability of technology to engage learners and to lower anxiety levels or lessen student inhibitions. Dale discussed bringing other humans into the classroom, repeating dialogue, and using songs suggesting technology provides a paradigm shift from traditional teaching. More specific details regarding these benefits and other benefits are discussed within the category, Attributes and benefits technology offers English language teaching and learning.

Technology's ability to aid learners in their acquisition of the language through the benefits highlighted above, is dependent on their instructor's ability to choose and implement appropriate technologies. In the Technology Standards for Language Teachers, Healey et al. (2011) provide four goals, including three to four standards for each, to guide and improve English language educators use of technology for teaching/learning purposes. The first goal states that language teachers should "acquire and maintain foundational knowledge and skills in technology for professional purposes" (Healey et al., 2011, p.73). Instructors should be able to find and create materials through technology, as well as integrate a variety of technologies to support in class teaching. In recognition of the abundance of technological resources available to aid English language teachers, Lineras and Romero (2016) created a checklist for English language educators to use for locating, evaluating, and selecting the most appropriate resources to support a communicative approach to language teaching. Because the benefits of technology are so

great, goals, standards, and recommendations for choosing and implementing appropriate technologies have been developed to aid in utilizing appropriate technologies within a given context.

Chapter 2 of this document discussed the use of the Internet, websites and apps, Web 2.0 tools, mobile devices, and PPTs/presentation software to support and enhance English language teaching and learning within this context. The survey instrument, interviews, and observations revealed that participants used these technologies, and why and how they believed these technologies supported their learners. The use of technology by the participants of this study was connected to what they believed the needs and interests of their learner to be, which was developing their language skills in order to more successfully integrate into their communities. Classroom activities for ESOL learners in community colleges should reflect life outside of the classroom (Burt et al., 2008; Cunningham, 2015). Using authentic spoken and written language, interactive in-class activities should be created and centered on topics that are relevant to the learners and that are founded on authentic situations (McKay & Schaezel, 2008; Huang et al., 2011). The participants of this study used technology to help support their learners in authentic uses of the language in preparation for situations they may encounter in the real world. Examples of such activities were provided in the discussion of the category, Planning and delivering instruction. The narrative regarding the category, Using technologies, featured later in this section, further elaborates on the use of technology to foster these activities.

Though the participants used technology to support the needs and interests of their learners, they do not have students themselves using technology as much as they believe they should. Another category that emerged within this theme was Recognizing students need to increase their technology knowledge and skills. The quote below captures this recognition that was echoed by other participants and is detailed further in the discussion of that category.

Jamie: So it's just part of their education to be more familiar with what learning sources are available online, to just, again, teach them a little bit of keyboarding, making them know how to find information on the internet, how to find learning resources. I think it's all to the good. Because our classes, even though maybe it's six hours a week, there's a lot more time in the week than that. They can be learning, using technology way more than they are, in a traditional classroom, if they're using it.

According to Healey et al. (2011), the development of computer literacy skills is deemed important for English language learners. The following standard is included in the TESOL technology standards: “Technology should be incorporated into teaching pedagogy so that students will not only effectively acquire a second language but will also develop electronic literacy skills” (Healey et al., 2011, p. 9). The development of computer literacy skills for learners in adult ESOL programs is particularly important because it can not only enhance language learning opportunities, but also develop skills that may lead to better jobs (Chisman, 2008; McCain, 2009). As evidenced in the quote provided above by Jamie, the same sentiments were expressed by the participants of this study and are further discussed in the narrative regarding that category.

The participants of this study recognized the need to increase the technology skills of their learners, but also felt that the learners themselves pose barriers to using the technology.

Among the barriers presented by students are the differences in their educational background and therefore, difference in their abilities. Chisman and Crandall (2007) note that a major barrier for community college ESOL programs is the discrepancy among the educational backgrounds and differences of learners; some have a high level of education from their home countries, while others are illiterate in their native languages. These discrepancies are evident in computer skills, as well as language ability. The participants of this study experienced this, as is evidenced in the quotes below from the one-on-one instructor interviews:

Pat: Yeah, well I find that we have, I basically think we have like two groups. Those that are very good at technology, get out much better than I am and really savvy and they're using it or those that use very little technology are and are not engaged in using it.

Dale: This particular group of students that we have, many of them, you know, some of them have barely been through elementary school or less in their native country, they may or may not be used to using technology.

In the focus group interview, where a large segment of the interview was focused on ideas to overcome student barriers to increased technology use, the following was stated:

Jamie: It'd be nice to get some feedback from our students to do some kind of a survey and sort of be more aware because I think we have an idea of how many students have no computer skills and how many I mean of course

can spot the ones that are secretaries. They were secretaries. So there's such a range.

From the inductive analysis of qualitative data, the theme Instructors believe technology to be a vehicle for innovative, versatile, supportive application emerged. This theme is supported through the following categories: Attributes and benefits technology offers English language teaching and learning; Using technologies; Recognizing students need to increase their technology knowledge and skills; and Ideas for addressing student related barriers to increasing their technology skills. The following sections discuss these categories in greater detail and occur according to the sequence listed above.

***Category: Attributes and benefits technology offers English language teaching and learning in this context.*** The benefits technology has on English language teaching/learning have been established in Chapters 1 and 2, as well as in the discussion of the assertion. In short, the use of technology increases English language proficiency and skills, as well as learner autonomy (Adair-Hauck et al., 2013; Center for Applied Linguistics, 2010; Chapelle, 2008; Coryel & Chlup, 2007; Healey et al., 2011; Warschauer & Liaw, 2010). Per Riasati et al. (2012), technology has the ability to engage adult English language learners, improve their academic ability, transform teaching, provide assessment options, enhance collaborative learning, and ease student stress. Similar benefits were discussed by McClanahan (2014), who highlighted technology's ability to increase motivation, learning, and engagement in students, as well as enhance authentic language learning opportunities, accommodate diverse learners, and promote educational equity. The participants of this study recognized comparable attributes, especially regarding engagement, transformed learning, assessment, comfort, authentic

language learning opportunities, and accommodating diverse learners. The following is a discussion of the attributes that technology offers English language instruction within the context of this study, as expressed by participants in interviews and witnessed in observations.

Regarding engagement, the majority of participants mentioned ways that technology engages their learners. The following quotes demonstrated how the participants believe students are more engaged through the use of technology:

Corey: Think everybody's just drawn to that a little bit more, more clearly written letters, information, things like that.

Corey: It certainly be it can be used to help you deliver instruction on activities. It can be helpful to lead into discussions and just to keep students focused on the task that they're doing.

Jamie: ...it makes the class a lot more interesting for the students, and it's really easy to do, just using your classroom computers.

Pat: ... I mean just captures attention.  
Because the visual is so great.

These examples showed how the instructors believed that lessons with technology captured students' attention and made the lessons more interesting for them. The visual aspect that technology offers appeared to be of specific benefit to learners within this context. The participants focused on this quality of technology as evidenced in the quotes below from the one-on-one instructor interviews:

Corey: Well certainly having the big visual that they were all building their sentences off of, something new and was able to have them use

vocabulary that they wouldn't really think about. Like when they're looking at a family and they're drinking orange juice, they know it's a little easier to have big picture than to try to explain that and tell them to write it in a few different tenses. So yeah, just provided kind of a link to a different world. It makes it, so that I don't have to do quite as much explaining...When there's a big picture of a tall guy next to a short guy, they can be like, "Oh, that's clear, that's tall, that's short."

Jamie: And I was able to find images of what Baltimore looked like and put them on the overhead, and just kind of try and get the students to have a feeling for what they've experienced reading the book. And I think it did have an impact that... They were enjoying the book, but that just made it more fully dimensional, just to have that visual or auditory support.

Pat: Just the visual. Because the VISUAL is so great.

In Pat's quote, visual was capitalized, suggesting that the visual component that technology offers to be significant within this context. Regarding the use of technology as a visual component to lessons, according to the survey responses, instructor interviews, and observations, the participants used the LCD projector to display worksheets and resources through the document camera, PPTs, as well as videos accessed from the internet through the classroom computer. The use of these technologies is further discussed within the category, Using technology. These technologies were advantageous because they provided organization, visual and auditory support, as well transformed the learning environment. In the one-on-one instructor interviews, participants stated the



following quotes regarding the use of these technologies. Regarding the use of PPT, the following was stated by Corey.

Corey: I just feel like they're really effective and it just, they really help keep things organized. I feel like sometimes I get up there to teach and I'm just kind of going with it and I have an idea of what I want to do. With the PowerPoint, when you got that thing and you start pushing those arrows to go forward, it's, you're kind of on a track. You're on this path. And I think that's really helpful. And the students like it.

Regarding Dale's use of the Mr. Bean video that was explained in the category Planning and delivering instruction, Dale stated:

Dale: ...sometimes I use silent videos like Mr. Bean, because there is no assumption on the part of the video that any of the meaning is held within the context of language. So everything that's happening on the screen is fair game for you to work with. So I think that that's really helpful. Then you can use that sometimes to watch once, sometimes to watch more than once.

Regarding the use of videos, Pat stated the following in the one-on-one instructor interview:

Pat: I use it all the time. Especially because I like to bring in things that are funny or an interest, just topics that are interesting. And so technologies, they can, YouTube is a great place to find a lot of that.

Pat: I like to use videos in different ways and one way I think... One example that was really fun was a listening exercise. We were watching this really,

really silly short video that's about a minute and a half. And they had partners and one of them has their back to the screen and the other looks at it, and then they have to tell what's happening and the voices off and it's always something silly and fun.

Additionally, in this quote by Pat, they indicated the use of technology, especially funny videos, helped students lose inhibitions, which supports the use of technology as a way to increase comfortability among students.

Regarding the use of videos to support the lesson, Jamie stated the following in the one-on-one instructor interview:

Jamie: Um, a... I'm finding things on the internet that correspond with what we're doing. If we're reading a little novel and it makes a reference, I know last year it made a reference to a Korean pop singer. And so I just went, and instead of just, it's boring to just read this, I mean it's not that interesting. But if you just for a minute show this Korean pop music, it makes the class a lot more interesting for the students...

The quote provided by Jamie, as well as the uses of technologies provided by the other participants, showed how technology can transform learning through the use of authentic materials that bring the outside world into the classroom. This benefit was mentioned several times in one-on-one instructor interviews, as found in the following quotes regarding the use of videos and other auditory materials:

Corey: Well, certainly with the Randall's Cyber Listening Lab, them listening to a short story and answering questions builds their listening comprehension

and also gets them to listen to a variety of English voices as opposed to just mine.

Dale: I think that um [short pause] for the students at the beginner level, that I am teaching, primarily I use it for input of information, so that it's bringing other people into the classroom, so that they can listen to other accents and they can work with it.

Jamie: I'm pulling up the CDs that go with our textbook occasionally, so that they can listen to some other voices besides mine.

In the focus group interview, Jamie expanded on the concept of students hearing other voices being of benefit.

Jamie: Well and also, I didn't say this before but I think if you just have one teacher in a classroom full of students, if they're listening to videos or dialogues or whatever with other speakers, that helps them with their listening comprehension.

The participants used technology to provide visual and auditory support for their learners, in turn, this aided students in their language development. The use of these technologies can be transformational to lessons because of their ability to provide a link to the real world. Technology also offers this benefit through the use of authentic materials, which has been established as important for learners within this context (Chisman & Crandall, 2007; Cunningham, 2015; Huang et al., 2009; McClanahan, 2014).

The following quotes from the focus group interviews revealed participants' use of authentic materials to support learners in language development and integration into their communities:

Jamie: I've also done with more advanced classes, like OPB some of the shows on OPB you can go to the show and they have the subtitles running across so they can see what they're listening to, which helps a ton. And that's local, it's local stuff, local interest.

Regarding introducing students to online community classified advertisements, the following conversation took place in the focus group interview:

Jamie: And here's the community ad access to find out if there's classes you know that you're interested in taking, if you don't have paper copies of stuff so that's another-

Dale: It's a great idea.

Jamie: Looking for jobs.

Corey: Yeah, I've used it. Surprising that they don't know about [local online classifieds similar to Craigslist]. I've pulled it up in front of classes-

Jamie: Yeah or Craig's List.

Corey: But that can lead into full time, part time benefits, what are benefits, all kind of discussions you can have based on that.

The above account described the attributes that technology offered the study participants and their learners. Technology engaged the learners through an enhanced learning environment, where audio and visual support was offered through authentic

materials. Videos, images, PPTs, and online resources were all included in the participants' lessons. While they used these technologies to transform learning, engage students, and enhance language development, learners became more successfully integrated into their communities. The participants also identified using technology for assessment purposes and for fostering communicative activities. In the narrative regarding the assertion, a quote was provided by Jamie, where it was shared that using online quizzes and other resources were great for identifying students' current level. In the quote below, Corey mentioned how a technology supported lesson, where images included in a PPT, allowed for free form writing that led to a greater sense of gaps in understanding among students. Below is Corey's description of the activity.

Corey: I thought the lesson went really well because of the use of technology.

Students were writing sentences in present tense, past tense and present continuous based on a picture. I think they were able to really see the difference and the uses of those three different verb tenses. And then the very end they had led into very free activity where they saw a picture and used those different verb tenses to write about the picture, the new picture.

When asked why the activity was successful, Corey responded:

Corey: Ah. It just showed little gaps in understanding I didn't realize that they had. Some of them were trying to use some of the rules from present continuous and present tense or leaving out parts of the grammar in the present continuous.

In each classroom observation of participants, technology was used to foster communicative activities. Jamie used the document camera to model forming wh-questions. This led to students writing wh-questions that they then asked their peers as a basis for conversation. Corey did a similar activity using the document camera but focused on questions in the past tense. Pat used both a listening excerpt from ELLLO about the environment and a commercial as the basis for discussion and peer review work. Dale used the Mr. Bean video as a way to facilitate interaction among classmates with a focus on verbs and verb tenses.

Technology offered many attributes to learning within this context. The participants used a variety of technologies to benefit their learners. Based on the classroom observations and according to the definitions provided in the LoFTI tool, the participants' uses of technology, could be described as either amplifying instruction or transforming instruction. Corey and Jamie used technology to amplify their lesson, while Dale and Pat used technology to transform their lesson. The explanation of the use of technology according to the definitions provided on the LoFTI tool are featured below.

The explanation of technology used to amplify teaching/learning is as follows:

Technology was used to amplify current instructional practices, student learning, or content goals, often times resulting in increased efficiency and productivity. The focus is effectiveness or streamlining, not fundamental change.

The explanation of technology used to transform teaching/learning is as follows:

Technology used to transform the instructional method, the students' learning process, and/or the actual subject matter. Technology is not

merely a tool, but rather an instrument of mentality. The focus is fundamental change, redefining the possibilities of education. Most technology uses represent learning activities that could not otherwise be easily done.

The classroom observations were considered focused, where participants were asked to use technology during the portion of the observed lesson, but the uses of technology that were witnessed were not uncommon. As indicated in the survey responses and during the one-on-one instruction and focus group interviews, participants indicated frequently using technology and do so because of the attributes discussed.

***Category: Using technologies.*** This category was established through codes that included technology tools instructors currently use, which corresponded with tools that have been established as valuable for adult English language learners. A variety of technologies have shown to be beneficial for adult English language including the internet (Healey et al., 2011), websites and apps (Bradley, 2013; Healey et al., 2011; Lineras & Romano, 2016; McClanahan, 2014), PPT (Corbeil, 2007; Lari, 2014; Oommen, 2012; Taylor, 2012; Wang, 2011), web 2.0 tools (Bradley, 2013; Craig, 2013; McClanahan, 2014; Nakaramu, 2011; Parmaxi & Zaphiris, 2017; Warschauer & Liaw, 2010), as well as mobile devices (Ally et al., 2007; Brown, 2014; Chen, 2013; McClanahan, 2014; Saidouni & Bahloul, 2016; Stockwell & Hubbard, 2013; Yukselir, 2017). As highlighted in the above narrative about the attributes that technology offers teaching/learning within this context, the participants frequently utilized many of these listed technologies. The survey responses, one-on-one instructor interviews, and observations provided further evidence of the participants' uses of technologies.

As indicated on the survey, instructors possessed the following skills: create and share a Word or Google document; take digital pictures and download them to the computer; create slide presentations; include images in presentations; locate appropriate videos to support class instruction; and find lessons on the web. The observations provided the opportunity to see some of these skills in action. In the observations of both Corey and Jamie, they used the document camera to display worksheets they had created using either Word or Google docs. In the observations of both Dale and Pat, appropriate videos were used to support instruction. Further technology skills and uses were revealed in the one-on-one instructor interviews. In the one-on-one instructor interview, participants stated using the following technologies.

Corey: I certainly use the document camera and then I use, and that's usually just for when I'm doing worksheets to show to the class, use PowerPoints to help introduce new material typically. Sometimes I use PowerPoints for just in class activities. They would maybe see a picture and write some sentences about it. I use videos um typically to introduce new material, but I did recently use a video and had a sentence writing activity based on it. Um. Let's see. Oh also I use the internet to look up translations between words in Spanish and English.

Jamie: The document camera. I have the screen up. I'm pulling up the CDs that go with our textbook occasionally, so that they can listen to some other voices besides mine. Um, a... I'm finding things on the internet that correspond with what we're doing.



Pat: Yeah, so usually almost every class for a warmup, I use technology. So, a lot of times it will be recently, and I did commercial clips or I'll take a question from one of the really great listening sites like ELLLO, the one we did today was. "What are the environmental problems facing your country?" And so first we'll listen to it. And without reading it, and then we'll all talk about what did we get from it. And then the second time the students will be allowed to read it. And then that serves as their journal prompt, for writing that. So we use it all the time at the beginning and then we played games with it. Kahoot. We play frequently. And then we also have our textbook has, um, you know, um, audio and-

Dale: I have primarily used it for showing them ... sometimes I use silent videos like Mr. Bean... You can also have videos that are specifically made for developing language and then where the language is slowed down and there is dialogue and they're listening for particular things. Sometimes, you know, based upon that, you might be pausing it or using it or reviewing it or they might have a worksheet that goes along with it, or any number of things... But then I use apps sometimes too. I don't know. I use various things.

Using technology to support teaching and learning was a frequent occurrence for the participants. It was evidenced throughout the data that they used it and believed in its ability to support teaching/learning within their context. The examples provided above demonstrated the skills and variety of technologies used by participants. The following codes, which created this category, revealed more specific websites and apps used by

participants: *Color Vowel Chart, Duolingo, ELLLO, Google Translate, Learning Chocolate, Learningtyping, Lyrics in Training, Newsela, Quizlet, Randall's Cyber Listening Lab, Sounds of Speech, This I Believe, TED Ed, USA Learns, and YouTube*. The codes represented apps and/or websites that have been created for English language learning and/or that support language development within the skills of reading, writing, speaking, listening, vocabulary development, and pronunciation.

The participants of this study understood the value of technology for their instructional practices and used a variety of technologies to support their pedagogy and their students. Though the participants were using technology to support their teaching and enhance student learning, they were not having students use technology as much as they believed they should. This belief was strong enough that a category emerged from the codes, which is featured in the discussion that follows.

***Category: Recognizing students need to increase their technology knowledge and skills.*** As noted in the narrative regarding the assertion, developing computer skills in adult ESOL learners not only helps increase their language development, but it helps them develop skills that could result in better job opportunities (Chisman, 2008; McCain, 2009). Chisman and Crandall (2007) note technology's ability to expand learning beyond the classroom walls, where students can learn at their own pace, choose technology applications that develop skills of their interest, and select from approaches that are suitable for them. In short, Chisman and Crandall (2007) describe using technology to help develop learner autonomy. McCain (2009) asserts that adult basic education, including ESOL programs, should not only provide access to technology and programs, but help learners develop "solid ICT skills" (p. 15), so that they can operate computers,

internet, and other devices. Ball (2011) highlights technology's ability to help adult ESOL students learn as they do, using the mouse and typing words as they improve their language and computer skills simultaneously.

From the inductive analysis of the qualitative data, codes were generated in support of instructors recognizing that their students needed to increase their technology skills for the reasons specified above, to expand learning outside the classroom resulting in increased learner autonomy, and for development of skills that could result in better jobs and/or acclimation into the community. The following are examples of codes included in this category: *increasing learner autonomy, increasing skills, increasing technology skills, jobs, keyboarding, and practicing at home*. The following In Vivo codes were also included: *I feel like we could make more independent learners; They need to start being more comfortable with it for their jobs; With all jobs, you're going to end up on a computer eventually*.

The following quotes, as stated in one-on-one instructor interviews, provided further evidence that study participants were aware that learners could benefit from using technology.

Corey: Technology can also assist students in learning if they're using the technology themselves.

Pat: I think it's good to have more familiarity with it. I think even when we learn one thing, it transfers to another... Learning just to cut and paste this and then put it in this document helps gets some so many forms and everything are online... So just more exposure to that. I think it would be helpful to the students.

Jamie: I also really try to get my students learning how to keyboard. Because most of our adult ESL students, most of them don't have those skills. And I think with what's happening with all jobs, even if you're working in a packing house, you're going to end up on a computer eventually, and you need to know where the letters are. So I do try to do that technology.

In the focus group interview, the participants collectively recognized the need to have students using technology, as evidenced in the following dialogue, which was in response to the prompt, “Why is it important to use technology in our teaching and with our students?”

Corey: The students ... Yeah I noticed that with one of my students the other day. I hadn't thought about introducing them to a typing program. I don't know, we kind of got in a routine where they go to the computer lab in the lower level, we're going to Learning Chocolate and building their vocabulary acquisition and the higher levels were going to Randall's Cyber Listening. And a student was really interested in typing, and I hadn't even thought about it. I know that he works at the orchards and you know, not to, not to stereotype, I just didn't think that he would really be interested in that but he is. He wants to get into that world of technology and possibly writing emails and finding jobs, so-

Jamie: I even heard that, and this was several years ago, that even to be a truck drive now-

Pat: It's online.

Jamie: ...They have computers where they're emailing back and forth with their employer and stuff. So it's like you can't really avoid it.

The participants recognized the need for their learners to increase their technology skills, but student barriers prevented them from doing so. As noted in the discussion of the assertion, the educational backgrounds and differences of learners within this context resulted in challenges from discrepancies in both language and skills (Chisman & Crandall, 2007; Eyring, 2014). This can result in different experiences and skill levels with technology, as well. Because of this challenge, participants have found that they are less inclined to take their students to the computer lab to practice using technology, as the following exchange from the focus group interview indicated:

Jamie: Don't you find that one of the big problems is, though, at least with low level students, is if you have a website, just typing in that website.

Pat: Yes, totally, Jamie.

Later in the interview, Dale stated:

Dale: I mean obviously we don't want them typing URLs, especially with beginners, which I work with.

The participants also expressed barriers when it came to some students remembering their email and password, which many websites require. In the one-on-one instructor interview, Jamie stated the following:

Jamie: The only problem was, again, usually one of the barriers is if students have to have their own usernames and passwords.

In the focus group interview, Jamie expressed this same sentiment:

Jamie: From the very beginning, if you get them on something, having them be responsible for remembering their username and their password because you don't want that responsibility but even setting up their Gmail or whatever, it's that awkward place where you need them to have this private account but you can't really be private because you have to help them.

The participants' felt deterred from taking students to the computer lab because of their low-level learners, who had a difficult time typing, among other skills, and because of the issue of students not remembering their username and passwords. The participants wanted to overcome these challenges as was evidenced within the following category that emerged from the inductive analysis, Ideas for addressing student related barriers to increasing their technology skills. Because study participants recognized the need to increase the computer literacy skills of their learners and have presented ideas for overcoming barriers from doing so, these categories have been included under this theme. These categories further supported the participants beliefs about technology being a vehicle for innovative, versatile, supportive applications.

***Category: Ideas for addressing student related barriers to increasing their technology skills.*** The participants of this study had specific ideas for addressing the student barriers to increasing technology skills that they experienced because of the varying levels of their learners. Adult ESOL learners in community college programs were seen to be incredibly diverse, posing challenges for their instructors; among these diversities are age, educational background, jobs, learning ability, literacy level, and

motivations for learning (Eyring, 2014). The participants identified that because of the varying levels and skills of their learners, it could be beneficial to have a separate computer class or to have their instructional assistant work individually or with groups of students on specific computer skills according to their needs. They also discussed having IT create icon(s) that appear on the computers in the computer lab that students can easily click on and be taken to an English language learning site. The participants also thought that having a simple URL with hyperlinks to a few great websites could be beneficial to their learners. They also suggested having a handout listing these great sites. Learners could use the handout as a model to help them type in the URLs independently and also bring this home, so they can access websites outside of class, if they have computer and internet access. Having an icon(s) and the simple list of websites or some combination of the two, seemed to be ideal solutions for the study participants in helping their low-level learners gain access to the computer and increase their skills. Ideas were shared in both the one-on-one instructor interviews and the focus group interview. A quote from Pat's one-on-one instructor interview included these ideas:

Pat: But I did think, the other day I thought what if we were to offer like a computer class with the two strands and like this one like just once a term, even like introducing like I just found a really cool website last night too called Speech Link where you can record your speech and listen to it. And I thought for that group this might be really fun. And then also I may be able to show them how to use the copy the text, put it into Google translate and make a Quizlet for THAT group. That might work like one night to have that. And then for the other maybe do basic keyboarding skills and

just a link to this site. Like two sites, this Duolingo and something else or something.

This idea presented by Pat was in response to the two different groups that have been identified according to their needs and interests with language and technology skills.

In the focus group interview, the following was stated regarding a computer class and/or a support from the instructional assistant:

Jamie: If we have someone who really wants to teach technology, we can arrange the classes so that they rotate around and they're doing technology with different people.

Pat: The instructional assistant [name has been omitted for anonymity] is really tech savvy, and for the students who don't know how to use a mouse and things, maybe we could even have a class like a half hour before. They could come in because she would be willing I think to rearrange her hours somehow to work with some students for a little bit one on one, I don't know.

Regarding having a simple URL that leads to a few great sites, the following was said:

Dale: Right so that to me would be the most helpful, if we could figure out how to make it so that if we just took them to the lab, and they log into whatever it is they need to log into and there was a something, and all the hyperlinks could be there.

Dale: ... it would be really nice to have a simple URL where I could easily put a couple or three links or whatever. And then we would go in there, they could get to the URL and quickly go to the links. That would be great.



This led to the dialogue among the focus group participants about having IT create an icon(s), where students could access different sites.

Jamie: Well and there is a possibility, I think we've done it in the past where the places that we go to often, they can put, the IT guys can put an icon. I mean they can put an icon on the computers in our labs so it's... ESL student thing so when they're on campus anyway, they can just-

Pat: Oh wow. That would be great Jamie.

Jamie: I think that's a possibility.

Pat: Oh...that would be amazing...

I wonder who the IT person that we could connect with, would be... Yeah, I think it needs to be not so many choices.

Dale: And then ideally maybe, if you do the thing with the- there on the...

Jamie: The icon.

Dale: Also, some kind of a printed page with those URLS. Like one printed page that's just beginners, that's got three or four URLs and not too many.

Pat: That they could take home and do.

Dale: And then those could be handed out right? So ideally they would be the same URLs that you're suggesting would go onto the computers in the lab. So that if they did like it, then they could go home and they're familiar with it and all they have to do is type in the little URL, and they only have three or four.

Pat: And then that could lead to the discussion in having the media specialist [name has been omitted for anonymity] from the library come with his

wifi hot spots and maybe he could come to the class and see if anyone wanted to check him out.

The ideas presented by the instructors were to aid in overcoming barriers presented by students in increasing their technology skills. Because the participants recognized that increasing computer skills was important, they shared these ideas to address the challenges presented by their students. This supports the theme, Instructors believe technology to be a vehicle for innovative, versatile, supportive application, as do the attributes technology offers teaching/learning in this context and the technologies that participants use because of these attributes.

The participants used a variety of technologies that offered benefits to their learners and recognized that their learners needed to be using technology more; collectively the participants determined ways to increase their students' use of technology. Participants also had ideas for increasing their own technology integration practices, which is discussed in the theme featured in the next section.

**Theme: For increased technology integration, instructors perceived the need for professional development opportunities and resources to be specific to their context and situation.** As emphasized by Ertmer and Ottenbreit-Leftwich (2010), successful technology integration PD “addresses teachers’ specific needs within their specific environments” (p. 273). Regarding the participants of this study, the PD opportunities and resources they expressed as necessary for increased technology integration were specific and, like their current uses of technology, were based on the needs of their learners, as well as the barriers they faced. The participants expressed believing in the value and use of technology to support their instructional practice but

faced barriers in utilizing it more. Kopcha (2012) assures that situated PD shows optimism for preparing teachers to subdue the barriers they experience in their use of technology. Barriers to technology integration are identified as first order barriers, such as access, time, and support, as well as second order barriers, such as beliefs about teaching and computers, classroom practices, and openness to change (Ertmer, 1999). First order barriers are easier to overcome, while second order barriers pose more of a challenge as they require changes to fundamental views of teaching and learning (Ertmer, 1999; Mueller et al., 2008). The institution can pose barriers regarding technology integration, as they directly impact the availability and quality of resources and the competency of teachers' knowledge and skills to use those resources (Hew & Brush, 2007). Technology itself can also be a barrier (Mueller et al., 2008).

Participants of this study expressed barriers related to time, support, the institution, technology itself, as well as barriers presented by the students, as highlighted in a previous section. The participants also identified having barriers related to their attitudes and beliefs. The quotes below, from one-on-one instructor interviews, provided a glimpse into some of these barriers.

Corey: Yeah, I'd use technology a lot more if it was less time consuming.

Jamie: But I don't know, I don't feel like there's a lot of support for the instructors to figure out how to do that.

Jamie: Sometimes the computers aren't working, it just isn't working.

Dale: I think it's more student-led barriers like I was mentioning, in terms of what their needs are and what their abilities are.

Pat: But my experience with our group has been that this is not really their need. That's not really what they're after even though I think this would be really helpful and really fun. I only have probably one or two students that would really take the time to learn it and benefit from it. So I think we could use technology more, but I, I, I don't. I'm just trying to meet the needs of the students.

The quotes from Corey, Jamie, and Dale revealed how time, institutional support, and students pose barriers in their increased use of technology. A second quote from Jamie indicated that technology itself was a challenge. Pat's quote suggested a conflicting belief that students would benefit from technology, but that it is not what they need.

Despite the barriers they faced, the participants expressed a desire to increase their technology integration practices. The category, Ideas for increasing technology integration practices and improving technology use, is discussed in further detail later in this section. Within this category, the ideas included identifying a technology lead, observing others, attending trainings, as well as having a venue to share ideas and resources. Example codes included in this category are as follows: *collaboration*, *identifying a technology lead*, *observing others*, *sharing materials and resources*, and *tailoring to teacher's needs*. These ideas aligned with the types of PD opportunities encouraged for increasing technology integration practices. Peer teaching, mentoring, in-service trainings, and informal discussion have all been identified as forms of PD that can increase technology integration (Coldwell, 2017; Desimone, 2009; Gaines et al., 2019; Richter et al., 2010). Regarding PD opportunities specific to technology integration in language learning, professional learning communities and communities of practices with

opportunities for collaboration and reflection have also shown value (Healey et al., 2011; Shin & Kang, 2017).

The participants identified several avenues of PD that were specific to their needs and situations within the context of this study. Situating PD has been recommended for increasing technology integration practices (Ertmer & Ottenbreit-Leftwich, 2010; Kopcha, 2012). Further, regarding experienced teachers of adult ESOL, which all of the participants are, Rodriguez and McKay (2010) suggest that PD opportunities should be designed to meet the needs and desires of the instructors. Aligning with the ideas regarding situated PD for the experienced teachers, the participants identified specific opportunities and resources that they believe would help them overcome barriers and/or increase their technology integration practices both in their pedagogy and with their learners. These are discussed in detail in the corresponding categories below.

The final category to support this theme is expressing future need for increased technology use by the institute. This category only contained 10 codes that were predominantly centered on using technology for instructional purposes when classes are missed due to weather or other circumstances. This theme included the discussion of this category as it identifies the potential for increased technology integration practices, which could result in needed training.

The theme, For increased technology integration, instructors perceived the need for PD opportunities and resources to be specific to their context and situation, was established from the following categories: Expressing barriers and challenges to technology use; Ideas for increasing technology integration practices and improving technology use; and Expressing future need for increased technology use by the institute,

as discussed above and elaborate on in the sections that follow. Though participants experienced barriers they recognized the importance of, and were willing to, overcome these barriers to increase their technology integration practices. Further, it may be necessary for them to increase these practices in the future as there could be requirements set in place by the institute. The following sections, related to the categories specified above, provide further details regarding these aspects of the findings.

***Category: Expressing barriers and challenges to technology use.*** Participants of this study experienced similar barriers identified in the research such as time, the institutional environment, and attitudes and beliefs (Ertmer, 1999; Hew & Brush, 2007; Lowther et al., 2008). They also encountered challenges from technology itself, as well as from their students. Mueller et al. (2008) discusses the continual and rapid changes in technology, as well as technology malfunctions as obstacles to technology integration. Participants expressed these challenges as well. The participants experienced more first order barriers, though second order barriers were present, as were student barriers. The following quotes from one-one-one instructor interviews, as well as the focus group interview, provided evidence of the first order barriers that participants experience.

Regarding technology not working properly, the following was expressed in one-on-one instructor interviews:

Corey: I mean the projector, lots of times it doesn't work correctly, so I plan something out that I'm going to use and the projector in this particular room likes to cut off either the top part of the image or the bottom part of the image. So I've planned a lesson based on the technology and then the

technology isn't really working that well. So it can be kind of frustrating if it doesn't work well.

Dale: There's always something new out there and then whoever's brain designed that particular piece of software, then you got to wrap your mind around what their brain is, and then you pull it up. Then there's a tech issue, where then the person who designed the app did something in the update and then you're getting ready to use it, and all of a sudden the button that you're used to isn't really there. Then, oh, endless, endless, endless problems with tech.

Pat: I've had challenging times where the technology did not work properly. Like you wanted to project something and then if it was the like document camera and for whatever reason the document camera's not working that day. And so you have to think quickly, okay now what are we going to do? I mean there's always alternatives.

It was also expressed that participants did not feel supported by the institute when they experienced issues with technology because no one is available in the IT department during the evening class hours of 6:00-9:00 p.m. The following quote affirmed this issue.

Jamie: And then it's just like your whole thing is planned around having access to that, and then it's not working and nobody from IT is available because it's after 5:00, and you're just kind of like having to wing it.

Other institutional challenges also surfaced. Jamie shared an experience of finding a new technology offered in the classroom, but never receiving notification or training regarding the new technology.

Jamie: We like we just got these new little cameras at the college, the new doc cams... Yeah the little lady bug thing. And no one... I hadn't been trained... Because it wasn't like the old system. You have to go to the computer to find the ladybug on the screen... No training...

In the one-one-one instructor interviews, but especially in the focus group interview, participants perceived that the institute's learning management system, Moodle, to be difficult for their students to navigate and they queried about the use of Google Classrooms instead. In the one-one-one instructor interview, Corey stated the following:

Corey: Because Moodle's a little bit difficult to navigate on its own for students who speak English as their first language...

In the focus group interview, similar sentiments about Moodle were expressed.

Pat: Well yeah if we could ever do I mean that whole Moodle with them but it's just really complicated, especially for the beginning students so-

In the focus group interview, there was also discussion of the benefits of using Google Classroom. The dialogue below features this issue.

Pat: Well the only advantage is that um that before um I heard that we aren't supposed to use it, you could use Google Classroom and then they could go to Google Classroom and then you could put so many things in.

Dale: We're not supposed to use Google Classroom?



Pat: Well that's what they told me not to use it for, FERPA reasons. So I stopped using it... Yeah that we needed to be using Moodle, but um I was thinking of talking to them about that. That we aren't doing grades because isn't it about grades?

The mention of FERPA ignited a digression to a discussion about this act, where participants seemed confused by the institution's implementation of it. The focus group interview discussion circled back to the use of Google Classrooms being expressed as a better option than Moodle for their learners. This dialogue is featured below.

Dale: How is Google Classroom a FERPA violation if all it is, is you've got stuff up there and it's literally go there and click, then they're not putting their information on there... They told you, you can't do that?

Pat: Yeah they told me not to use Google Classroom and I asked it at a meeting.

Jamie: They want us to use our... They want to use Moodle?

Pat: Moodle yeah.

Jamie: They want the students to be consistent

Dale: Well this seems to be the ridiculous word that they continue to perseverate on using is consistency... Yeah because I would guess that you need to understand your clientele and work within the confines presumably, which would be the conversation.

The participants expressed institutional barriers regarding support, training, and access to resources. In addition to these barriers, time also poses a challenge for these participants (regarding the time needed for creating materials or lessons with technology).

In the one-on-one instructor interview with Jamie, the following was stated in response to challenges to using technology:

Jamie: Well the only thing that comes to mind is just sometimes just the actual physical, trying to get to the right place on our Wiki page, or whatever it's called, on our Moodle page, to pull up the right lesson to... I mean it takes time, and sometimes the class is just sitting there, if you didn't get it set up ahead of time. You're just like, "Okay, it just will take me a minute" And you do this, and that's always awkward. And so I think just because that's happened enough times I kind of like, I'm just going to read it, forget it. I'm just not going to... because you just don't want to waste the time. So sometimes if you don't think ahead and have it totally set up and ready to go, it's easy to not do it. What is the value? Is it really worth the trade off?

In this quote, Jamie referred to the time it takes to access the technology while the lesson is taking place and also that it takes time to set technology up prior to implementing the lesson for a seamless delivery. This quote suggested that Jamie does not always think the use of technology is worth the time. Similar sentiments were expressed by Pat in the one-on-one instructor interview where Pat described the use of a technology application called Read, Write, and Think. Pat's description of this technology was as follows:

Pat: For example, I just learned a REALLY cool way to read a text. Um, So if you could, we could get a text and there's a website called Read, Write and Think and they have, it's leveled reading, listening and reading. And so students can read and if there's any part of it they don't understand, they

can open Google translate, highlight it and you know get this ah translation of what it was. And then at the end of this they can save it and then they can within like a minute transport it to Quizlet, create all their own flashcards and it's SUPER fun.

Pat was enthusiastic about this technology, but expressed reservations about introducing students to it, as is suggested below:

Pat: And I was just experimenting at home and it's SO cool and easy. And then they have their whole set of like studying all different ways, phrases, and I thought this is so fun. But my experience with our group has been that this is not really their need. That's not really what they're after even though I think this would be really helpful and really fun. I only have probably one or two students that would really take the time to learn it and benefit from it. So I think we could use technology more, but I, I, I don't. I'm just trying to meet the needs of the students.

Based on this quote, Pat recognized the benefit of technology and specified ways it could foster language development, but also believed that this was not what the students wanted or needed. In this example, Pat expressed time as a barrier, but her pedagogical beliefs were also a barrier. As explained by Prestrige (2012), pedagogical beliefs impact classroom practices with technology; teachers develop beliefs about the role of technology as a teaching tool, the value of it for improving student learning outcomes, as well as their own self-confidence and competency. In this example, Pat's

belief about student needs conflicted with the value of technology as a teaching tool. In the one-on-one instructor interview Jamie expressed this, as well.

Jamie: And so, even though I do use technology to even just to put up what we're working on, I do feel like, I guess, I guess, I'm not totally convinced that that's more valuable than just having more conversation, or just having more actual having the students ask me questions, or doing something that's just more wholly language, and not so much technology.

Though these participants showed doubt regarding the value of technology for their learners, they also indicated that technology supported their teaching practices for a variety of attributes. They also acknowledged that students needed and wanted to increase their technology knowledge and skills for community integration. In Pat's quote that follows, the sentiments shared by Corey about not realizing students were interested in typing, is shared.

Pat: Yeah I would say the same thing with Corey because I've had some, you know like we talked about before with a few of you, I've had some things that kind of turn me off to using technology because my natural inclination is wanting to use it but not so much with the students. But since we did this, I was thinking about it more and found the same thing. I said to the students, all of a sudden, "Do you want to do typing?" They're like, "I want to do typing." I was like, "Really?" I said, "Well I'm just here to do what you want to do. Let's go do typing."

While participants expressed barriers due to time, resources, the institute, and their pedagogical beliefs, they also expressed student barriers. In the interaction below, it was noted that discrepancies in students' educational backgrounds and skills posed a challenge for instructors in helping them increase technology use and skills, which is common within this context (Chisman & Crandall, 2007). The following simple statements made during the focus group interview, indicate the gamut of abilities of the participants' learners:

Jamie: So there's such a range.

Pat: There's such a range yeah. Yeah and the huge difference in abilities in students like you're saying.

Participants recognized that the range in student abilities was a barrier to technology use, but also recognized that technology could provide differentiation, as was evidenced as well in Corey's example of having students at different levels use different websites when they go to the computer lab, Dale said the following:

Dale: Well, and what I also heard you talk about Corey was differentiation because you were talking about how some students were using it one way and other students were using it, so that is a really big plus right?

Participants discussed several ideas for overcoming challenges presented from the varying abilities of their learners, so that they felt more inclined to take students to the computer lab, where students could become more familiar and comfortable using technology. They felt that a simple URL or app/icon making it easy for beginners to access helpful sites would be beneficial. There was emphasis on simplifying students'

options and uses of technology, as is indicated in the following dialogue from the focus group interview:

Dale: Well you know you could also ... like the typing thing. Just take them down once in a while right and show them how to do various things, not with the expectation you're going to continue to go type every time. But hey, if you want to learn to type, here's a way you can do that. You know, just, almost like a...

Pat: Yeah, well that's the thing, I was thinking that same thing Dale. Like, um... Each class especially, uh, that's the new thought that I'm trying to do... Introduce them to something different but I think part of my problem is the getting too complicated with it and trying to show them. Like, SO desperately wanted to get them on this Moodle shell and none of them could.

Corey: Oh it's so hard.

Pat: I mean like two could get on and we would do it again and still... Okay, let's remember what your password is. It's just like ah, and it was so nightmare-ish and so, it, we were it, I felt like we were wasting time, which seems so valuable. And, so, but I'm thinking like hone it down, and I was just watching someone who was talking about show it and then go do it, something super simple. And I thought I'll try that, like something really different like lyrics training. You know lyrics training? And I thought, and then go do that one for a short period of time, and then they can do it at home. And just introduce the short ones like that because you

know it's really easy for me to get really excited and try to throw too much stuff in there.

This dialogue reiterated student barriers related to usernames and passwords, as well as the challenges presented by Moodle, but ideas were presented for overcoming these barriers. This further suggested that participants recognized technology as a vehicle for innovative, versatile, supportive application and that the attributes of technology use outweighed student and instructor barriers for English language learning within this context

Participants of this study faced barriers in increasing their use of technology, particularly in having students use technology. Based on discussions in the focus group interview and sentiments expressed in the one-one-one instructor interviews, participants saw technology as valuable enough to overcome these barriers. This is evidenced in the category, Ideas for addressing student related barriers to increasing their technology skills, as well as the next category, Ideas for increasing technology integration practices and improving technology use. This category contains ideas about avenues for PD specific to the needs of the instructors within this specific context.

***Category: Ideas for increasing technology integration practices and improving technology use.*** As detailed in the discussion of the theme, the participants of this study identified specific PD opportunities and resources that they believed would increase their technology integration practices. Basing PD opportunities on the needs and desires of experienced adult ESOL instructors has been established as key to its success (Rodriguez & McKay, 2010; Young & Petyon, 2008), so it is important to take the ideas of the participants into consideration when determining which avenues to take regarding future

PD opportunities. In regard to training specific to CALL, the contextualized nature of the training is emphasized as important; it should be contextualized and PD should focus on technologies that are applicable to the context of focus (Almuhammadi, 2017; DelliCarpini, 2012; El Shaban & Egbert, 2018). Young and Peyton (2008) recommend a data driven plan for developing needs driven PD. Regarding the specific needs of the participants of this study, expressed throughout the qualitative data sources, but specifically during the focus group interview, the following PD for increased technology integration was identified:

1. A technology lead who:
  - a. Determines suitable websites for learners and creates a simple link or icon to these websites with an accompanying handout that lists these sites for learners to take home.
  - b. Creates and organizes an online space for instructors to share resources and experiences.
2. Collaboration in the online space, where resources, lesson plans, and experience are shared.
3. Collaborative meetings twice a year to share ideas and collectively share resources and organize the online space to ensure continuity in instruction and resources for students.

The following dialogue (in response to a question regarding how to overcome the challenges that were discussed and what an ideal PD opportunity in technology integration would look like) from the focus group interview supported these approaches.



Dale: Well I feel like since you really love tech, I mean if there's PD money will they pay her to ... If we were to decide okay here are two or three things that would be nice. And then give her X amount of special project time or whatever, pay her to get it together and then pay us for a PD thing. And we get together and do that once or twice a year. I mean that seems a lot better than bringing somebody in or whatever. And it would be very tailored and you really like this stuff, and you're into it. And it's a way for you to continue with what you're doing. That would be part two though right. It would be sort of like what we're doing now because we've already voiced various things that would be helpful, and then you would be paid in my world-

Corey: I think if everybody just came together with their laptops and like Jamie was saying, the shared space, which you've created. You already created the space and we were just talking, oh I've got this worksheet, I've got this. How could we organize it and then we start to put things on there and label them, and just have us all together, and get comfortable and familiar with it that could be really helpful.

Pat: It might be really helpful for students to have that continuity to you know because-

Dale: That's true.

Jamie: Yeah that's what I was thinking. If there was some little bit of funding or just dividing stuff up different so that we had somebody who was kind of the technology lead in the department. And so this person is creating kind

of a curriculum, kind of a these are the skills, the websites, the whatever.

As a group, we're going to try to cover so that it's not just sort of random.

In addition to what had been expressed regarding the simple URL or icon for learners' ease of access to websites, the participants expressed a need for a shared space, where ongoing collaboration and sharing of resources, lessons, and experiences could take place. They additionally expressed wanting to come together twice a year to develop this repository, as well as share ideas and experiences, similar to what was taking place in the focus group interview. The need for a shared space or forum was also identified in the one-on-one instructor interview with Jamie, where the following was stated:

Jamie: I think it's important that the instructors within departments or within the college share their knowledge with each other, really more than we're doing, because people are doing some great things with technology that we're not aware of, we're not benefiting from, we're not copying, just because teachers don't watch each other teach that much.

In this quote, Jamie was emphasizing the importance of sharing knowledge and also suggested that observing others would be beneficial, but this was not expressed by other participants.

The ideas expressed by the participants were specific to their needs within the situation of their context. Their ideas were similar to PD approaches that have shown beneficial within this context. The idea of identifying a technology lead person to vet effective websites, create and/or spearhead the creation of a simple URL or icon to these websites, as well as develop and maintain an online repository for sharing resources would be similar to having a technology mentor or coach. Oliver and Townsend (2013)

state that having a technology mentor or coach is a form of technology integration training, where those who are well-trained or experienced with technology support their less experienced colleagues. Having a shared space could be considered a type of professional learning community or community of practice, where there is a small group engaged in a common practice (Oliver & Townsend, 2013). The common practice for the participants of this study would be focused on sharing resources and lessons for their learners with continued communication in face-to-face meetings that were suggested to take place twice a year. These face-to-face meetings could be similar to how the focus group interview was structured, where sharing ideas and resources was a mechanism for overcoming challenges and increasing technology integration. This point was acknowledged by Dale above, when they stated:

Dale: It would be sort of like what we're doing now because we've already voiced various things that would be helpful.

Further, in the following quote from the one-on-one instructor interview, Pat expressed how taking part in this AR had resulted in new considerations regarding technology integration and use:

Pat: But since we did this, I was thinking about it more and found the same thing... So I thought, it made me think. Well I'm kind of revisiting it a little bit [referring to the use of technology], like how to use it in a way that feels good as an instructor and good as a student.

These two instances suggested that AR is also a viable avenue for PD for these participants, which has also been emphasized in the existing literature as appropriate for instructors in this context (Rodriguez & McKay, 2010; Young & Peyton, 2008).

The final category in this theme is discussed below and suggests that increased technology integration and comfortability may be necessary in the future, especially when supported by the institute.

***Category: Expressing future need for increased technology use by the institute.***

As discussed in the narrative regarding the theme this category is subsumed within, there is a possibility that the institute will require the increased use of technology within a missed class make-up policy. During the one-on-one interview, this potential need was shared by Corey, who served on the Instructional Council at the college, where the topic was discussed. Below Corey describes the potential policy that would result in the use of Zoom or Moodle to facilitate class, in the situation where a class had to be canceled.

Corey: Well, I was at an instructional council meeting just the other week and they were saying that we were going to make it a policy that missed classes because of snow days could be made up through Moodle. And I realized that some of the instructors were not comfortable with using Moodle and delivering classes that way. I think the ESL department is, well, last I heard they were not required to make up missed classes, but that could easily change. Um. Yeah. And if that were the case, they would either have to make up those classes face to face OR they could, students could have access to Moodle and theoretically they could. They could have to watch it, a recorded Zoom video of the instructor delivering a lesson and then have various activities that they would be doing on their own.

This topic was further discussed in the focus group interview, as evidenced in the dialogue below:

Pat: For winter that she [VP of Instruction] wants the graded courses to make up classes either through Zoom or Moodle, that have some type of protocol that you're going to follow. And so I had asked her, "Well what about our program?" And she said, "Well I think that you and pre-college are different. And I said, "Well last year what we did is, we did this on ... But I don't think this will work this year because some people are going to be gone."

As indicated by both Corey and Pat, this policy was not required of the ESOL department, but could be in the future. If this were the case, it would be important for both instructors and students to be comfortable using Moodle and Zoom, since these are the platforms specified for providing a make-up class. The dialog further suggested the importance of continued PD and training to help ensure instructors know how to use the technologies that the institute requires.

### **Chapter Summary**

From the inductive analysis of qualitative data, one assertion, three themes, and 10 categories emerged. The themes and categories supported the assertion that the participants discerned the attributes of technology use outweighed student and instructor barriers for English language learning within this context. The survey instrument used in this data analysis provided demographic data of the participants, insight into the technologies that they used and were comfortable with, as well as their attitudes toward technology and PD. The participants all indicated that they enjoyed pursuing PD in

technology integration, which was derived from the survey, one-on-one instructor interviews, and the focus group interview.

As has been established through the existing research and as evidenced in the findings, technology is a valuable tool for teaching and learning within this context. Participants recognized the benefits technology has for instructional purposes and utilized it frequently. Their uses of technology were largely driven by the needs and interests of their learners, as were the types of technological activities and resources used in their classes. These activities were centered on preparation for language use in the real world and supported through the use of authentic materials, which were identified having been found through the internet. Participants realized that they could be using technology more, especially with their learners, and presented ideas for increasing practices in that regard. They had also identified PD opportunities specific to their context and situations. These are discussed in further detail in Chapter 5, as are implications, limitations, conclusion, and closing thoughts.

## CHAPTER 5: DISCUSSION, IMPLICATIONS, AND LIMITATIONS

### **Introduction**

The purpose of this action research (AR) was to explore and describe the needs, technology integration practices, and attitudes toward technology of the ESOL instructors at PNWCC in order to recommend and plan for PD opportunities in technology integration to meet their needs. The research questions were designed to act as a needs analysis in order to determine the most effective direction for PD opportunities in technology integration for the participants. In this chapter, the findings of this AR study are situated within existing literature pertaining to PD opportunities that aid ESOL instructors in increasing their technology integration practices. This chapter is organized into four major sections: a) discussion, b) implications c) limitations and d) closing thoughts. The discussion section demonstrates how the data answered the research questions and connects the findings of this study with existing literature. The implications section includes personal implications, recommendations for the community college context of this study, as well as future implications. The limitations section features limitations presented from both the methods and findings of this study. The closing thoughts discuss my personal conclusions from conducting this AR.

### **Discussion**

The findings of this study align with existing literature regarding PD in technology integration for ESOL instructors within the community college context. The

existing literature on technology integration, barriers to technology integration, as well as effective approaches to PD specific to the context of adult ESOL are highlighted and corroborated with the findings of this study. The discussion is organized by the three research questions that guided this study.

**RQ1: What are the Needs (i.e., Felt, Normative, Anticipated) of the ESOL Instructors at PNWCC Regarding Technology Integration?**

Research suggests that successful PD caters to the needs of the instructors within the context of their instruction (Ertmer, 1999; Hew & Brush, 2007; Hixon & Bruckenmeyer, 2009; Kopcha, 2010, 2012; Oliver & Townsend, 2013). As such, this study aimed to explore the needs of the participants in order to make recommendations for PD. This study acted as a needs assessment, which is not an uncommon approach to determining how to develop PD opportunities in technology integration specific to a context (Ireh, 2016; Kopcha, 2010; Vatanartiran & Karadeniz, 2015). Following the needs assessment and goals analysis steps in the instructional design process (Morrison et al., 2013), I explored the needs of the instructors through a survey, one-on-one instructor interviews, and a focus group interview, where I focused on their felt, normative, and anticipated needs and developed aims and goals, referred to as recommendations, based on these needs. Morrison et al. (2013) identify felt needs as an individual's expressed desire to improve their performance in an given area, while normative needs are determined based on comparing the target audience with an established norm, and an anticipated needs are changes that could occur in the future that require training.



**Felt Needs.** Felt needs indicate a gap in current performance or skill, and the target performance and skill are best evaluated through interviews where the researcher can reduce potential stress and probe for details (Morrison et al., 2013). The participants of this study expressed the felt need to improve their technology integration practices in the one-on-one instructor interviews and the focus group interview. For this study, the following question asked in the one-on-one instructor interviews explored the felt needs of the participants:

- In what ways do you feel you could improve your use of technology in your teaching?

When asked what ways they could improve their use of technology in their pedagogy the participants responded:

Corey: I would like to have technology for like every lesson that I introduce...

Just a PowerPoint, I would think... Yeah, I think I could probably use a lot more of it. I could probably have some more listening activities that I use in class. I don't really do enough of those. Yeah. Both of those ways would be pretty good. More PowerPoints, more listening excerpts that I could use in class.

Dale: Yes, probably I could work that much harder to find a new and innovative way to do it somehow or something differently, or a new app or something, something.

Pat: I'm sure there could [improve use of technology], but I, it's, I don't know what it is, but, of course there is, but I [crosstalk 00:13:06] can't say what it is because it's out there, but I don't know. Yes, there could be a lot.

These responses suggest that the participants feel there is more they can do with technology to support their pedagogy. An additional question was asked with the intent of exploring if participant's felt need to increase technology integration was related to ways they have tried to improve their use of technology through different professional development avenues.

- Can you explain ways you have tried to improve your use of technology in your classes?
  - Have you attended professional development for technology integration, any special training in technology, or have you researched or self-taught yourself about technology in ESOL?

The following were participant responses:

Corey: I mean I had a class on using technology in graduate school and it was very helpful. I need to go back, look over some of that material and use some of that again. And then I've seen things, professional development, how to line up technology use with your lesson planning and building objectives, things like that.

Jamie: I've just, when I've gone to, when I've gone to the ORTESOL conference, I usually try to... I'm interested in the technology choices, the sessions, and I usually get inspired to try new things by doing that. But mostly it comes down to, if I'm planning a lesson and I'm just trying to find resources. I'm going to just search. I'm just going to get on the internet and see what's out there that will improve how I can present this material to the students.

Pat: I just kind of do it on my own. There's a guy that I listened to a lot from England. Who has his own, he's a teacher trainer and I watch him a lot. I watch him, I tried to do fairly regularly and- is teacher training. And so he has wonderful ideas and he takes you through, he's the one who I just got these two ideas from. He takes you through exactly how to do it and everything. And yeah, he has a teacher channel and stuff. So I watch him a lot because I found that I learn a lot from him. He has a whole thing about which again I would like to do but I haven't done because, the time commitment and then the lack of using it, the Moodle, how to do a flipped classroom and like specific ways to not just put a link to the video but the video right on it. So things like that making a difference. So he just raises your awareness of the of the use of technology, how that is more successful to just put the video right on it instead of a link and stuff like that.

These responses expressed the participants' interest in learning new technologies and improving their technology integration practices.

The focus group interview also had questions focused on the felt needs of the participants. These include the following:

- What knowledge or skills do we need in order to better utilize technology for teaching and learning?
- If we designed a technology training, what would our goals be?
- Describe an ideal model for professional development in technology integration, something that you would attend and that would benefit you. This could be a one-

time workshop, a series of workshops, an online course, a hybrid model, and/or peer coaching and mentoring.

While the focus group interview protocol was initially designed with these specific questions, the interview was semi-structured meaning that although the questions were determined ahead of time because of the desired information from the participants, the questions acted as a guide more than a highly structured format; as a result, the focus group interview flowed organically and both the participants and myself could respond to the situation at hand (Merriam & Tisdell, 2016). Because of this semi-structured nature of the focus group interview, the first question regarding knowledge and skills needed to better utilize technology for teaching and learning, was simply asked as “What more can we do?” In response to this question, the following dialogue, from the focus group interview, took place:

Jamie: Actually I think when we talked I think what would help, is if we were in the habit of if we do create things, being able to access it and share it.

We've always talked about-

Corey: That's true.

Jamie: Just because when you make something and you only use it once, it's such a waste. And then if you remember to use it again but that time that you put creating materials, if other people could use it too.

Me: So you think what we could be doing more is to, like how I created that space, do a better job of sharing resources in an online space that we can all access.

Dale: Well the other thing, it sounds like if there is a way to figure out how there could be hyperlinks if we did take them to the lab or whatever.

This dialogue is reflective of what was determined regarding PD opportunities for these participants. The findings suggested that the participants perceived needing a space to collaborate and share resources, as well as a simple URL or icon containing sites and/or apps that are effective for the learners in this context. This idea was presented as a way to overcome student barriers regarding proficiency gaps and varying abilities in learners. Elaborating on this concept of a simple URL or app, the following dialogue took place:

Dale: I don't mean to denigrate that but I'm still trying to get back to, it would be really nice to have a simple URL where I could easily put a couple or three lengths or whatever. And then we would go in there [the computer lab], they could get to the URL and quickly go to the links. That would be great. Also, some kind of a printed page with those URLs. Like one printed page that's just beginners, that's got three or four URLs and not too many.

Pat: That they could take home and do.

Dale: And then those could be handed out right? So ideally they would be the same URLs that you're suggesting would go onto the computers in the lab. So that if they did like it, then they could go home and they're familiar with it and all they have to do is type in the little URL, and they only have three or four.

This dialogue led into the question about further technology training and/or avenues of PD that would be effective. This particular dialogue among the participants aligns well

with the qualitative finding: For increased technology integration, instructors perceived the need for professional development opportunities and resources to be specific to their context and situation. Here, the participants identified needing a faculty member to act as a technology lead for vetting appropriate sites which spearheaded the creation of a simple URL or app for students to access these sites. An additional technology need identified was the creation and maintenance of a space for instructors to share resources and ideas and facilitate biannual collaborative meetings.

Collectively, these findings suggest that participants have a felt need to increase their technology integration practices regarding student uses of technology, as well as the use of technology to support their teaching practices through sharing and collaborating with each other. Additionally, increasing students' uses of technology aligns with the normative needs that were established through the findings.

**Normative Needs.** As explained by Morrison et al. (2013), normative needs compare the target audience with a national standard, or a norm related to a specific field. While a national standard was not used to identify a norm for these participants, the documents containing the frameworks with benchmarks and sub benchmarks (see Appendix A), in combination with the TESOL technology standards, and existing literature regarding appropriate uses of technology with the context of study, were used to determine if the participants were meeting the norm.

The Oregon Office of Community College and Workforce Development (2017), established the benchmarks and sub benchmarks to act as objectives for instructors of ESOL learners within the community college context, containing information about the instructional focus, and identifying skills students need to practice. These skills, as

highlighted in the portion of these documents contained in Appendix A, focused on the development of students' reading, writing, speaking, and listening skills and contained the use of technology to support this development. These uses of technology highlighted in these benchmarks and sub benchmarks are focused on student uses of technology (as oppose to the instructors).

The inclusion of students' uses of technology specified in the benchmarks and sub benchmarks align with the following TESOL technology standards, which establishes a precedent in the field: "Technology should be incorporated into teaching pedagogy so that students will not only effectively acquire a second language but will also develop electronic literacy skills" (Healey et al., 2011, p. 9). For learners within adult ESOL programs in the U.S., technology can be transformational in increasing literacy, as well as 21<sup>st</sup> century skills (Eyring, 2014), which can lead to better job opportunities (Chisman, 2008; McCain, 2009). The benchmarks and sub benchmarks provided by the Oregon Office of Community College and Workforce Development (2017) for adult ESOL learners, the TESOL technology standards, and existing literature establish a norm in the field for integrating technology into teaching to support language development and to aid learners in developing computer literacy skills. The findings of this study suggest that the participants are using technology to support language development but could increase their practices that involve student uses of technology.

On the survey, the participants indicated that they rarely (1-2 times a year) or seldom (every 3-4 months) have their students do the following with technology: access and use a class webpage; create PowerPoint presentations; type papers in Word, Google docs, or similar; take online assessment; or use content specific software to support their

learning. Additionally, as indicated on the survey instrument, the participants rarely or seldom consider state and national learning standards when planning instruction. While some participants have students use technology occasionally (monthly), such as, having students use personal devices and having students conduct searches on the internet, this is not a regular occurrence. As emerged from the inductive analysis of qualitative data, the participants recognized the need to increase their learners' uses of technology as well as recognized students need to increase their technology knowledge and skills. Specifically, through the emergence of the category - Ideas for addressing student related barriers to increasing their technology skills – the participants identified having a URL or icon, that does not require a username and password, and that can be easily typed by all students, would increase their likelihood of taking their students to the lab to practice using technology.

This intersection of these findings suggest that the participants are not meeting the normative standard of having students use technology to develop their computer literacy skills. The participants had ideas for addressing this so they could overcome barriers presented from the wide proficiency gaps in their learners. The final need this study explored was anticipated or future needs.

**Anticipated needs.** Morrison et al. (2013) asserts that anticipated needs are a way to determine changes that might occur in the future. Aligned with anticipated needs was the qualitative finding: Expressing [a] future need for increased technology use by the institute. In order to consider any future need for increased technology use by the instructors, as required by the institution, the one-on-one instructor interviews asked participants, “Explain any changes you anticipate within PNWCC in the future that will



require more use of technology within your teaching or your overall job duties?” Two participants, Corey and Pat, who serve on the college’s Instructional Council, mentioned the possibility of a make-up class policy required by the college, where lessons would be delivered using either Zoom or Moodle, in the event that classes could not take place on campus. Corey and Pat expressed that this was not going to be a requirement at this time for the ESOL department, but that it could change in the future. If this change occurred, students would need to be taught how to use Zoom and/or Moodle, in order to attend or participate in class, meaning instructors would need to be comfortable enough with these technologies to teach others how to use them. Though this anticipated need was not a reality during this study’s data collection phase, the idea that other departments on campus are required to make-up missed classes, suggests that the potential is there for the ESOL department, as well.

A need is defined as a gap between an expectation and a reality (Morrison et al., 2013; NOAA, 2009). When there are gaps in actual performance that are not equal to or do not exceed expectations, it may indicate a need for intervention (Morrison et al., 2013). Based on the findings of this study and as discussed in response to the research question, What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at PNWCC regarding technology integration?, participants have felt needs, normative needs, and a potential anticipated need, suggesting that training and/or PD need to take place. Since this was an exploratory study, acting as a needs assessment, determining needs was an important aspect of this study, as was determining the current technology integration practices, as these further guide the direction of PD.

## **RQ2: What are the Current Technology Integration Practices of the ESOL Instructors at PNWCC?**

In order to better understand the areas in which the participants (ESOL instructors at PNWCC) might have gaps in knowledge or skills, this question was designed to gain a deeper understanding of what technologies they use and how they use them. All forms of data, including the survey, the one-on-one instructor interviews, the observations, the focus group interview and the action researcher journal, explored the participants' current technology integration practices.

The data collected and analyzed all revealed the participants' frequent and varied uses of technology to support their pedagogy. As seen in Table 5.1., the following technologies have shown positive effects when used with adult English language learners. Each of this study's participants either indicated they used these and/or were seen using them in the observations.

Table 5.1. *Technologies with Positive Effects for Adult English Language Learners*

<b>Technology</b>	<b>Scholarly Resource</b>
Internet	Healey et al., 2011
Websites and apps	Bradley, 2013; Healey et al., 2011; Lineras & Romano, 2016; McClanahan, 2014
PPT	Corbeil, 2007; Lari, 2014; Oommen, 2012; Taylor, 2012; Wang, 2011
Web 2.0 tools	Bradley, 2013; Craig, 2013; McClanahan, 2014; Nakaramu, 2011; Parmaxi, & Zaphiris, 2017; Warschauer & Liaw, 2010
Mobile devices	Ally et al., 2007; Brown, 2014; Chen, 2013; McClanahan, 2014; Saidouni & Bahloul, 2016; Stockwell & Hubbard, 2013; Yukselir, 2017

The participants incorporated technology into their teaching practices in diverse ways to support the language development of their learners. As indicated on the survey instrument, the following technologies were utilized at least once a week: projector, computer, internet, and the document camera. In the observations, all participants utilized the projector, Corey and Jamie used the document camera, and Corey, Dale, and Pat used the internet. Further, in both the one-on-one and focus group interviews, participants mentioned using a multitude of different technologies for planning and delivering instruction. In either the one-on-one instructor interviews, the focus group interview, or both, the participants mentioned using the following technologies in their teaching: Color Vowel Chart, Duolingo, ELLLO, Google Translate, Learning Chocolate, Learningtyping, Lyrics in Training, Newsela, Quizlet, Randall's Cyber Listening Lab, Sounds of Speech, This I Believe, TED Ed, USA Learns, YouTube, and PPT. Many of these technologies are designed specifically for English language learning.

The qualitative analysis finding, Student's needs and barriers drive instructors' multifaceted teaching practices, reflects how the instructors use technology in their teaching and do so to support their learners in language development, as well as aid them in integrating into their communities. Though participants use technology to support their pedagogy, they do not frequently have students use technology, which was revealed in response to RQ1. In this respect, participants are not meeting or exceeding the norm. As such, their technology integration practices need to improve regarding student use of technology.

While this study's participants recognized the need to increase technology integration practices regarding student uses of technology, they also recognized needing to increase the use of technology in communicating and collaborating with each other. This was apparent in the outcomes of the focus group interview, and indicated specifically by Jamie in the one-on-one instructor interview when stated:

Jamie: I think it's important that the instructors within departments or within the college share their knowledge with each other, really more than we're doing, because people are doing some great things with technology that we're not aware of, we're not benefiting from, we're not copying, just because teachers don't watch each other teach that much.

These findings ultimately led to a theme from the qualitative data analysis - For increased technology integration, instructors perceived the need for professional development opportunities and resources to be specific to their context and situation.

### **RQ 3: What are the Current Attitudes Toward Technology of the ESOL Instructors?**

As established in the existing literature, teachers' attitudes and beliefs toward technology, regarding both their pedagogical preferences and their self-efficacy, are barriers that can prevent them from integrating technology for instructional purposes (Ertmer, 1999; Hew & Brush, 2007; Lowther et al., 2008). Research suggests aligning PD with the needs and beliefs of instructors in order to increase technology integration practices (Brinkerhoff, 2006; Ertmer et al., 2012; Kim et al., 2013; Kopcha, 2012; Oliver & Townsend, 2013; Ottenbreit-Leftwich et al., 2010).

For the purpose of this study, it was important to understand participants' attitudes toward technology, so recommendations for PD development could support the attitudes and beliefs held within them.

The survey, one-on-one instructor interviews, focus group interview, and action research journal contributed to the exploration of this question. The survey instrument included 11 questions that sought to understand participants' attitudes toward technology. With each question revealing varying levels of agreement among participants, there were no consistently held beliefs by participants about the role of technology to support teaching and learning. The one-on-one instructor interviews provided a better understanding of the instructor's participants attitudes toward technology. The following questions were asked in the one-on-one interviews:

- Can you explain what you believe the role of the teacher to be in student learning?
  - Can technology support teachers in this role?
- Can you tell me what you think the benefits of using technology with the ESOL learners at PNWCC are?
  - In what ways do you think using technology helps our learners?
- Explain the benefits of using technology to support your teaching.
- Explain any barriers that prevent you from using technology.

The responses to these questions offered a deeper look into the attitudes toward technology of these instructors through asking opinion and values questions, as well as feeling questions. As suggested by Patton (as cited in Merriam & Tisdell, 2016), researchers should consider using opinion and values questions when interested about an individual's beliefs or opinions, and to ask feelings questions when interested in an

individual's affective dimensions of their lives (e.g. happiness, fear, intimidation, confidence, etc.). Below are the participants' responses to the first two questions, which offer a glimpse into their pedagogical beliefs about the role of the teacher in student learning and technology's ability to support that role.

In response to what they believe the role of the teacher to be in student learning, Corey said the following:

Corey: Um, I think the role of the teacher is to educate the student on information they didn't know before.

Me: Do you think that technology can support teachers in this role?

Corey: Yeah, it can certainly help. Thinking of using maybe a PowerPoint, giving students something they can see the large visual. Um. Technology can also assist students in learning if they're using the technology themselves. Able to make connections visually and kinesthetically with material.

In response to what they believe the role of the teacher to be in student learning, Dale said the following:

Dale: So I'm going to speak to beginners, because that's what I'm teaching. So, I think that it is to create a safe environment for students to improve their language skills. With beginners, it's a mix of finding out what they're interested in and what they need, what their needs are, and then also of course to bring curriculum. Within that curriculum, you're working on developing vocabulary and grammar within meaningful activities that allow them to practice all four domains.

Me: Do you see technology supporting teachers in this role?

Dale: So, I think it can be used [pause] with the population that we teach. I think that um [short pause] for the students at the beginner level, that I am teaching, primarily I use it for input of information, so that it's bringing other people into the classroom, so that they can listen to other accents and they can work with it. Of course, you can repeat the same thing over and over again, so they can be listening more and more deeply and that kind of thing.

In response to what they believe the role of the teacher to be in student learning, Jamie said the following:

Jamie: The teacher is a guide and a witness to the students. I'm not, I'm not, I've never been the kind of talking-head teacher that feels like it's my job to bestow knowledge, my knowledge, to put my knowledge from my head into my students' heads. The goal is to always find, in fact, one of the things I try to do is celebrate mistakes, because when students make a mistake, no matter what the field is, but especially when you're talking about English, then that's when the teacher can identify what they need to work on. And if the students... But in our culture, the philosophy is protecting students from making mistakes. Teachers are always intervening and saying, "Oh no, that's here. This is how you do it, Johnny" and doing it for students. But the more helpful thing is to acknowledge that there is, there is something that the students need to learn, and that you identify it by them making mistakes, and that you build on that. And

that's how learning is accomplished, by meeting the student right where they are in their progression, in their work.

Me: Do you think that technology can support teachers in that role?

Jamie: I'm sure it can. Ummm. Yeah. I mean all of the online quizzes and everything is going to give you lots of information about what... If you're looking at grammar, what issues do students have? Where does it break down? Where are they in their progress? So I think technology is great for identifying current levels of students, and also helping the teacher figure out what to focus on, um, what subjects or what skills to do their lesson planning around. I think. And also it's very good for, once you've identified something, there are a million resources that you can use in the classroom or recommend to the students, to help them gain that vocabulary, or skill knowledge, or grammatical understanding, because there's so much available now it's kind of overwhelming. But it definitely could be a help, yes, definitely.

In response to what they believe the role of the teacher to be in student learning, Pat said the following:

Pat: I think the role of the teacher, my goal in the class is to make everybody comfortable and you create a comfortable, safe environment. Where the students just want to talk and they aren't thinking about the language that they're using. Because for our classes, when I survey at the beginning, almost always they say speaking, is what I want to practice most because that's where more students have fears. And so my job as a teacher, I see



my primary job is to create that kind of environment in the classroom where everybody feels as though they want to come in and communicate and form a community and learn and talk and not worry about what they're saying. But just talk and not have that be the focus of grammatically correct grammatical correctness or anything.

Me: So do you think technology can support, you-

Pat: Oh. Totally. Totally.

Me: As a teacher in these roles?

Pat: Totally. Yeah. I use it all the time. Especially because I like to bring in things that are funny or an interest, just topics that are interesting. And so technologies, they can, YouTube is a great place to find a lot of that.

The responses from participants show how their beliefs about teaching and learning reflect their uses of technology. For these participants, beliefs about teaching were focused on student learning. Ottenbreit-Leftwich et al. (2010) found similar responses in their study of eight award winning teachers for their technology integration. The teachers' core beliefs about how best to facilitate learning to improve student achievement drove their technology integration practices, thus the teachers' pedagogical beliefs influenced their uses of technology (Ottenbreit-Leftwich et al., 2010). The teachers in Ottenbriet-Leftwich's study also used technology to address student needs, specifically to engage and motivate students, to enhance comprehension and higher order thinking skills, and to increase students' technological skills. As found in a qualitative analysis finding of this study, student's needs and barriers drive instructors' multifaceted teaching practices. Where categories related to focusing on student interest and needs, as

well as planning and delivering instruction, both revealed how dedicated the participants in this study were in catering to their learners' need to both advance language development and integration into their communities. This was evidenced in participant responses to how technology benefits their learners, which ranged from language development to advancing computer skills, both of which were thought to be avenues towards better jobs for their students.

The following dialogue from the one-on-one instructor interview with Dale captures these concepts, as well as presents challenges that are frequently experienced within this context. When Dale was asked what the benefits were of using technology with the ESOL at PNWCC the following was stated:

Dale: Well, I think as I mentioned, it brings other humans into the classroom, hearing other accents there. You can repeat the dialogue over and over again so you can hear it over and over again. You can use songs, right? So there are different ways to work with the learning that way... But it's a cost benefit analysis. Remember, the other issue is that a lot of times you actually hear ... I've been a little lucky or had a little bit more of a core group who's actually been showing up more regularly. But inevitably, some people come, some people don't, right? Then you'll get somebody, then they don't show up for two weeks, but somebody else shows up for two weeks or oh, here are three more people who just showed up who just happened to be rolling through town, because they're picking and now they're gone. So, that's a challenge too, right? What was the question again?

Me: It was just that, in what ways do you see that technology can help our learners?

Dale: Yeah, so I think that especially as you move up, I think when you get up into like when you get into Pat's level, right, the advanced. Okay, then I think you're going to get a core group who's going to come more regularly. They're a little bit closer to moving into using language in order to further their career goals in a more substantive manner. At that time, it's probably, I think that's a really good time to be looking at, well, what are your career goals and how can we perhaps...

Dale revealed the challenge of sporadic attendance, which is not uncommon within community college ESOL programs. Warriner (2007) states,

...recent immigrants and refugees find themselves in a double-bind familiar to the working poor: they must choose between foregoing the job security provided by their low-wage job in order to obtain further training and credentials for the workplace and staying in the dead-end job with no benefits which involves postponing the pursuit of educational opportunities that might open more doors, provide better pay, or ensure greater economic security (p. 322-323).

This challenge felt by Dale is not the only challenge presented by students, as was evidenced within the emerged categories from the qualitative data analysis: Ideas for addressing student related barriers to increasing their technology skills and Expressing barriers and challenges to technology use. The data informing these identified barriers were varying student ability, time, institutional environment, technology itself, as well as attitudes and beliefs. Specifically, Pat and Jamie both expressed doubt about the value of

technology for their learners. In Dale's quote above, a cost benefit analysis of using technology was mentioned, also suggesting reservation about using it with this population. Regarding barriers presented by technology itself being time consuming and challenging, Jamie also stated the following in the one-on-one instruction interview:

Jamie: And so I think just because that's happened enough times I kind of like, I'm just going to read it, forget it. I'm just not going to... because you just don't want to waste the time. So sometimes if you don't think ahead and have it totally set up and ready to go, it's easy to not do it. What is the value? Is it really worth the trade off?

It is noteworthy that the participants questioning the value of technology conflicts with the extensive data offered in this study showing how using technology is beneficial for teaching and learning within this context. Jamie was expressing challenges due to technology not working properly, as well as the time it takes to set it up, which ultimately led to them questioning the value. Hixon and Buckenmeyer (2009) claim that even though teachers often blame equipment, resources, and support as reasons for not integrating technology, the root of the problem is their attitudes and pedagogical beliefs.

Though there is data suggesting that participants attitudes and beliefs prevent them from using technology in their courses, there is a preponderance of data suggesting that technology has benefits for teaching and learning in this context. The participants expressed the desire to overcome the barriers they experience, so that they increase their uses of technology, particularly regarding the increased use of technology by their learners. They also indicated the need for the use of technology to collaborate and share resources both regarding technology integration and other classroom practices, such as

language and content focus and what resources are being used to support development in these areas. The ideas presented by participants to overcome barriers were specific to the unique situations they experience within this context and aligned with instructors perceived need for professional development opportunities and resources to be specific to their context and situation. The concept of creating PD opportunities for teachers that are specific to their needs is echoed throughout the literature (Ertmer, 1999; Hew & Brush, 2007; Hixon & Bruckenmeyer, 2009; Kopcha, 2010, 2012; Oliver & Townsend, 2013). PD opportunities that are designed with context specific needs can aid in overcoming barriers related to attitudes and beliefs (Brinkerhoff, 2006; Ertmer et al., 2012; Kim et al., 2013; Kopcha, 2012; Oliver & Townsend, 2013; Ottenbreit-Leftwich et al., 2010).

This section has answered the research questions of this study with support from both the findings of this study and existing literature. Acting as a needs assessment, this study uncovered the felt, normative, and anticipated needs of the instructors, as well as their current technology integration practices, and their attitudes toward technology, so recommendations for PD opportunities focused on technology integration could be made. These are discussed in detail in the sections that follow.

### **Implications**

Conducting this AR resulted in immense growth for me as an educator and researcher. It allowed me to make recommendations for the participants in my context, as well as discuss the impact of this research on the field of TESOL at large. In the following sections, I discuss these implications and recommendations. The sections are as follows: a) personal implications, b) recommendations for PD in technology integration within community college ESOL programs, and c) implications for future research.

## **Personal Implications**

Facilitating this AR study has contributed to my advancement as both a researcher and educator. This section elaborates on these advancements and includes the following subsections: a) theoretical framework, b) advancements as a practitioner researcher, and c) growth as an educator. The development I experienced in each area is described.

**Theoretical framework.** From the start of this program, I have been learning about research design. When we began, I was familiar with and understood the difference between quantitative, qualitative, and mixed methods designs, but I was not familiar with the idea that our worldview shaped our research paradigm. Upon studying the philosophical worldviews, I knew that mine was constructivist. I believe that human beings understand the world based on their experiences and interactions with other humans (Creswell, 2014). As an educator, I also teach according to this worldview. I believe learners learn through meaningful interaction and that their learning is largely shaped by their previous experiences with the world.

As highlighted by Applefield, Huber, and Moallem (2001), the four central characteristics of constructivist beliefs are as follows: 1) learners construct their learning, 2) students' new learning depends on their existing understanding, 3) social interaction is critical to learning, 4) authentic learning tasks are necessary for meaningful learning. Based on my constructivist beliefs, I use a student-centered approach, where interaction and collaboration form the basis for learning. I also frequently utilize technology to facilitate interactive learning opportunities. Research shows that teachers with a constructivist approach are more likely to incorporate higher levels of technology into their instruction (Ertmer, 2005; Ertmer & Ottenbreit-Leftwich, 2010; Ertmer et al., 2012;

Petko, 2012; Prestridge, 2012). Further, there is a link between teachers' constructivist beliefs and using technology to promote creative thinking and learner-centered activities (Prestridge, 2012). Prior to entering this program, I would not have been able to determine a specific paradigm associated with my beliefs. Through this research, I have not only solidified these beliefs, but come to understand them more deeply, and particularly how these beliefs shape me as a researcher and educator.

My constructivist beliefs led me to an interpretive-descriptive qualitative design for my AR. Thorne (2016) explains that the motivation driving interpretive-descriptive qualitative research is strengthening qualitative research through realignment with the epistemological underpinnings of the discipline in which it is being applied. Through open ended inquiry and multiple data sources, the intent of my research was to understand the phenomenon of a study based on the experiences and perspectives of the participants (Adom, Yeboah, & Ankrah, 2016). While I understood all of this when I set out on my research journey, the experience of designing, conducting, and analyzing qualitative research reinforced its ability to understand how people interpret their experiences, construct their realities, and the meanings they assign to these experiences (Merriam & Tisdell, 2016). For me, using an interpretive-descriptive qualitative design, acting as a needs analysis, offered a deep understanding of the experiences of my participants and the attitudes and beliefs they hold consistent with those experiences. This has allowed me to make recommendations based on their interpretations of what is needed in order to improve their technology integration practices.

This research experience has contributed immensely to my growth as a researcher, particularly in understanding how my paradigm influences me. Further, conducting this research as an AR study has made me firmly believe that it is a productive and highly effective form of professional development.

**Advancements as a practitioner researcher.** Upon admittance into the program, I quickly learned of our expectation to determine a problem of practice as the focus of our AR study. At that point, I had not heard of AR. As we went through our courses, and learned more about this approach to research, the reflective, collaborative, practical, cyclical nature of AR (Manfra & Bullock, 2014; Mertler, 2017) became increasingly appealing. AR is focused on improving the quality or effectiveness of an educational context through a focus on understanding the characteristics of the population within that context (Mertler, 2017). It is a form of research that can result in the forward motion of change and I got to experience this first-hand.

True to AR, my study followed the cycle of acting, developing, reflecting, and planning (Mertler, 2017). Within this cycle, I identified a problem, conducted a thorough review of literature of the variables related to that problem, designed and executed research, analyzed and reflected on the process, in order to make recommendations for next steps. The interpretive-descriptive qualitative nature of my study allowed my participants' experiences and needs to drive these recommendations. Every aspect of this process has contributed to my advancements as a practitioner researcher.

Conducting the review of literature gave me a solid foundation regarding my expanded knowledge of models of technology integration, factors that impact teachers uses of technology in classroom practices, PD's role in increasing technology integration,



designing PD to meet the needs of the instructors it serves, as well as theoretical underpinnings of PD. Through my review of literature, I acquired extensive knowledge regarding TPACK, TAM, and Diffusion of Innovations theory, all of which offer fundamental understandings of technology integration. Further, I grew to recognize the factors that prevent technology integration and how PD can address those factors.

My review of literature continued to guide me throughout my research endeavors. I was able to validate assumptions I previously held, as well as further understand and support the visions of my own study. Writing the review of literature was a monumental step in my research process. Continually revisiting it has contributed to my further understanding of the concepts and theories within it. It allowed me to frame and conduct a study that may further contribute to the field of TESOL, specifically within the community college context. While the review of literature was a huge point of growth for me as a research practitioner, articulating my methodology and designing my data collection instruments was also tremendous toward my advancements as a practitioner researcher.

For my study, I designed a survey instrument, as well as a one-on-one instructor interview protocol and a focus group interview protocol. I also found an observation instrument that met the needs of my study. Developing these data collection instruments emphasized the importance of collecting data designed to specifically address my research questions. The ability to be able to think through “a problem, a question, a method and the eventual research product” is a vital skill in becoming a skilled researcher (Thorne, 2016, p. 45). Undergoing the process of aligning research questions with the various forms of data collection helped me reshape the questions in my interviews to

better obtain the information I was seeking. Thinking critically about the purpose of my observation and what I was looking for, allowed me to locate an instrument to best serve that purpose. Though I am still learning, I am better equipped to design data collection instruments and/or locate the appropriate resources or tools to support the process. Developing data collection instruments to answer my research questions has forwarded me as a researcher, particularly an interpretive-descriptive qualitative researcher. The process of collecting the data also contributed to my advancement as an interpretive-descriptive qualitative researcher and propelled me further into my role as an action researcher.

Piloting research as an insider in collaboration with other insiders (Herr & Anderson, 2005), I worked closely with my study participants to explore and understand the phenomenon from an inside perspective (Elliott & Timulak, 2005). Through collecting data from the one-on-one instructor interviews, observations, and a focus group interview, I got to witness first-hand the participants' input, experiences, and perspectives. After executing this first cycle of AR, I feel prepared and confident for designing and conducting further AR studies. I also feel better equipped as an interpretive-descriptive qualitative researcher in designing data collection instruments, collecting data, and analyzing data that align with my paradigm.

The data analysis process was rigorous for me, as I had 13 artifacts of qualitative data, including four one-on-one instructor interviews, four detailed observation write-ups, four reflective entries in my action researcher journal, and one focus group interview. As detailed in Chapter 4, these all were a part of the inductive analysis, where 748 codes resulted in 10 categories, three themes, and one assertion. Prior to conducting this study, I

had never inductively analyzed qualitative data. I was guided by Saldana (2016) in choosing appropriated coding methods. I wrote extensive analytical memos, as recommended by Saldana as a way to reflect on and further my thinking. I underwent weekly peer debriefings with my dissertation chair to realize the categories, themes and the assertion that emerged from my codes and were revealed through my analytical memos. This is a process that has once again given me the skills and confidence to endeavor future qualitative studies. Based on this experience, I can hone my skills for future inductive analysis. I believe that AR following an interpretive-descriptive qualitative design aided me in crafting a needs assessment that can help shape PD opportunities for the participants.

In the process of this research, I have also come to fully support and believe in AR as a mode of PD. AR is an approach to research focusing on positive change and the improvement of educational practice (Johnson & Christensen, 2017; Mertler, 2017; Mills, 2018) and is largely focused on the PD of teachers and encouraging them to be lifelong learners (Mills, 2018). Witnessing AR as a form of PD has made me realize what a powerful form of research it is in motioning change for the betterment of instructional application. After conducting this AR, I can attest to the effectiveness of AR as a form of PD. I plan to continue utilizing it as a practitioner researcher, whose research interests include technology integration and PD. I view it as a practical and attainable form of research and believe that the collaborative nature of it fits well with adult learners, particularly regarding the self-directed, transformative nature of it. Facilitating this AR study has not only contributed to my advancements as a practitioner researcher, but also as an educator.

**Growth as an educator.** I admittedly came into this project with the belief that my technology integration efforts and practices were greater than that of my colleagues. I felt that my intentional, varied, and frequent uses of technology in my teaching likely surpassed that of my fellow instructors within the ESOL department. Having the opportunity to interview and observe the participants, showed me their innovative uses of technology. They introduced me to new approaches to using videos, ignited an appreciation of the document camera, informed me of apps and websites I was not familiar with, demonstrated new strategies for teaching language skills, and most importantly showed me how much we have to learn from one another.

The strategies, approaches, and resources that I learned from my fellow colleagues were mostly witnessed in the observations. I believe observing our fellow instructors offers an active learning opportunity and is an effective form of PD (Avalos, 2011; Garet et al., 2009; Richter et al., 2011). As highlighted by Richter et al. (2011), observations are considered informal learning opportunities, where teachers take the initiative to organize their own learning goals and strategies independently. I feel fortunate that I was able to observe my colleagues, as it expanded my knowledge base and offered confirmation regarding the growth that can be experienced through observing others.

In agreement with the research, I believe that continual PD in technology integration is important for educators (Cervera & Cantrabana, 2015; Cifuentes et al. 2011; Doherty, 2011; U.S. Department of Education, 2017; Whitehead et al. 2013). Conducting this AR was a form of PD for both myself and my colleagues, it contributed to my development as an educator, particularly regarding technology integration and the

importance of a needs assessments. Exploring the felt, normative, and anticipated needs of the instructors, as well as their technology integration practices, and attitudes toward technology, resulted in expanded knowledge of technology integration specific to this context, as well as a greater empathy for my fellow colleagues and our students. My colleagues offered a wealth of knowledge and experience as English language educators. They have all been teaching this population of learners for longer than I have and through this AR I understood more deeply the needs of teachers and learners within this context. Because my research acted as a needs assessment, I have also grown as educator regarding my instructional design practices. Following the instructional design process of Morrison et al. (2013), I conducted a needs assessment, resulting in a type of goal analysis, where an aim was identified, and goals have been recommended. These recommendations are discussed in the sections that follow.

### **Recommendations for Professional Development in Technology**

#### **Integration for PNWCC ESOL Department**

Mills (as cited in Mertler, 2017) characterizes the AR process as follows: 1) identifies an area of focus, 2) collects data, 3) analyzes and interprets the data, and 4) develops a plan of action. The instructional design process, like action research, is focused on identifying a problem and systematically finding a solution (Morrison et al., 2013). For this AR study, a needs assessment was conducted in order to determine if and what type of PD could aid the participants in increasing technology integration practices for pedagogical purposes. This followed the needs assessment and goals analysis steps in the instructional design process as presented by Morrison et al. (2013). Based on the findings of the needs assessment, specific recommendations for PD opportunities for the

participants were determined. These recommendations act as the goal analysis step of identifying an aim and setting goals (Morrison et al., 2013). Identifying the aim requires the group to determine one or more aims that address the need(s) and setting goals involves establishing goals for each aim (Morrison et al., 2013). The following discusses the needs of the participants, as identified through the research questions, and the aims and goals, as recommendations to the PNWCC for next steps. The following sections are included: a) needs of participants b) recommendations for PD in technology integration.

### **Needs of Participants**

As discussed in response to the research questions, the participants had felt needs, normative needs, and a potential anticipated need. They also expressed attitudes toward technology that suggest PD could aid in overcoming barriers that they experience, especially regarding their perceived student's technology beliefs. The participants expressed the felt need to increase integration practices, particularly with their students' uses of technology, which was revealed as a normative need that they were not meeting. The participants also felt that technology could be used to facilitate collaboration among them, with the creation of a repository, where resources and experiences could be shared. The participants also had specific ideas for overcoming student related barriers. It was also found that the barriers experienced by participants did not deter them from believing in the benefits of technology.

The inductive analysis of the data revealed the following assertion: Participants discern that the attributes of technology use outweigh student and instructor barriers for English language teaching and learning within this context. Specifically, the assertion was supported by the following one of three themes: For increased technology

integration, instructors perceived the need for professional development opportunities and resources to be specific to their context and situation. These findings align with existing research regarding successful technology integration PD being specific to teachers' needs within their specific environments (Ertmer & Ottenbreit-Leftwich, 2010). The importance of identifying teachers' needs and developing PD around these needs has driven at least three researcher studies to utilize a needs analysis in determining how to develop PD opportunities in technology integration for specific instructor populations (Ireh, 2016; Kopcha, 2010; Vatanartiran & Karadeniz, 2015). This current study did the same. Within the findings from the qualitative analysis, specific ideas from participants were revealed as ways to address the needs of the participants:

1. A technology lead who:
  - a. Determines suitable websites for learners and creates a simple link or icon to these websites with an accompanying handout that lists these sites for learners to take home.
  - b. Creates and organizes an online space for instructors to share resources and experiences.
2. Collaboration in the online space, where resources, lesson plans, and experience are shared.
3. Collaborative meetings twice a year to share ideas and collectively share resources and organize the online space to ensure continuity in instruction and resources for students.

The ideas were generated by participants based on their needs. Recommendations for integrating these ideas into PD for these instructors are presented below.

## **Recommendations for Professional Development in Technology Integration**

This section features the recommendations for PD in technology integration for the participants of this study. These recommendations are based on the participants' unique needs, the ideas they generated, as well as existing research, and are organized according to the following subsections: a) technology mentor/coach, b) professional learning community/community of practice, c) action research.

**Technology mentor/coach.** A technology mentor/coach is recommended for the ESOL department at PNWCC. The participants identified the need for a technology lead from within the department who can determine suitable websites for learners, create a simple link or icon to these websites with an accompanying handout for students to take home, and develop and organize an online space for instructors to share resources and experiences, as well as facilitate collaborative meetings. This technology lead could be considered a mentor or coach. Having a technology mentor or coach is a form of technology integration training, where those who are well-trained or experienced with technology support their less experienced colleagues (Oliver & Townsend, 2013). Peer coaching and mentoring provide collaboration and reflection, which are considered key components in effective PD (Garet et al., 2001; Sprott, 2019). They lead to positive outcomes regarding the increased use of technology integration in classroom practices (Charbonneau-Gowdy, Capredoni, Gonzalez, Jayo, & Raby, 2016; Garet et al., 2001; Georgina & Olson, 2008; Oliver & Townsend, 2013; Richter, Kunter, Klusmann, Lüdtke, & Baumert, 2011; Sprott, 2019; Zhao & Bryant, 2006). Mentoring or coaching provides an opportunity for expanding perspectives, analyzing preconceived notions, and sharing expertise to support adult development (Drago-Severson, 2008).



The participants would benefit from a technology lead to facilitate the specific ideas they shared. The technology lead could also act in the role of a mentor/coach for the participants when they felt challenged by technology, wanted to share ideas or learn to navigate new resources, or had questions regarding their current uses of technology. Having a technology lead acting as a mentor/coach could foster a positive relationship among fellow faculty members that resulted in increased technology integration.

In a narrative study exploring advanced teachers' accounts of what helped and hindered them in growing as 21st century teachers, Sprott (2019) focused on coaching and mentoring in the development of teacher's skills. Participants of the study reported that a single, long-term mentor was transformative to their thinking; it was the private, reciprocal relationship that benefitted them. In their study, Georgina and Olson (2008) surveyed faculty members in US colleges of education in fifteen institutes of the University of North Dakota regarding how faculty technology knowledge and technology training impact their instruction. The results showed strong relationships between technology knowledge and practices with technology in teaching. Additionally, results revealed that technology trainings could be maximized with one on one training and small group faculty forums with a trainer. Among their recommendations, Georgina and Olson (2008) suggest "...technology mentors for peer to peer discussions and innovations" (p. 7). Having the focused attention of a mentor or coach is advantageous in increasing levels of technology integration, as these studies have shown.

In addition to identifying a technology mentor/coach, the participants also identified the need for a collaborate online space to share resources and ideas. They suggested that the technology lead, create and maintain this space, and that meetings

were held twice a year to further contribute to the space, aligning resources and sharing ideas, experiences, and challenges. What the participants are describing would be considered a professional learning community, also recommended for the participants and further discussed below.

**Professional learning community/Community of Practice.** Research supports that opportunities for collaboration are among one of the characteristics that lead to successful PD (Bostancioglu, 2018; Cifuentes et al., 2011; Garet et al., 2001; Thoma et al., 2017; Sheffield, Blackley, & Moro, 2018; Sprott, 2019; Twining et al., 2013; Wennergren, 2015). Professional learning communities (PLCs) and communities of practice (CoPs) are forms of PD that foster collaboration. As highlighted by Jones, Fox, and Levin (2011), PLCs and CoPs share a common interest and address these interests through activities that require collaboration, discussions, and the sharing of related resources. PLCs and CoPs are forms of ongoing professional development that can better support educators than traditional forms of PD, such as one-shot workshops (Cifuentes et al., 2011; Garet et al., 2001; Smaldino, Lowther, & Russell, 2012; Stewart, 2014; Thoma et al., 2017; Wennergren, 2015; Whitehead et al., 2013). Several studies emphasize the use of PLCs and CoPs in technology integration training and are discussed below.

The five common characteristics of a PLC, as found by Thoma et al. (2017) and are named in their review of literature, include: sharing a common view of the mission; reflecting on practice; participating in reflective discussions; offering feedback to peers regarding their instruction; and keeping student learning as the primary focus. Cifuentes et al. (2011) and Thoma et al. (2017) explore PLC as a form of PD for technology integration. In an effort to overcome barriers to technology integration, Thoma et al.

(2017) formed and reported about the experiences of using a PLC for technology integration into their literacy instruction. This PLC centered around using the technology integration planning cycle (TPIC) to overcome barriers to technology integration in literacy instruction. They reported on the impacts of the PLC over the course of a year and found the teachers experienced positive results from participating in the PCL as they were utilizing technology more effectively in their literacy instruction. Cifuentes et al. (2011) offers a larger and longer study in which to further understand using PLCs as a form of PD in technology integration.

In recognition that PD is necessary for technology to impact student achievement and that PD is considered more effective when it happens continually, Cifuentes et al. (2011) built a PLC to support technology integration in three rural school districts. After two-years, the authors concluded that their learning community model contributed to a more thorough understanding of how a PLC can facilitate technology integration and contribute to increased levels of student engagement and achievement. This study suggests that PLCs are an effective form of PD for technology integration.

Bostancioglu (2018) investigated an online CoP to determine whether it was a feasible option for PD in technology. The study evaluated the impact of an online CoP, known as the Webheads in Action (WiA) community, who consists primarily of EFL educators from all over the world. Findings from the study showed significant differences for participants based on their level of participation in the online CoP. Bostancioglu (2018) identified members as peripheral, active, or core according to their participation levels. Those who actively participated perceived to have increased their knowledge and skills regarding technology and its integration into instructional practices, but no matter

the level of participation, all participants reported to have at least developed technology knowledge. Bostancioglu (2018) encourages teachers to participate in online CoP as a form of professional development.

PLCs and CoPs are shown to increase technological knowledge and skills regarding technology in education. This can be attributed to the support, collaboration, and reflection offered through participating in a PLC or CoP. Based on the idea generated by participants for an online space to share resources and collaborative meetings to further develop the online space, as well as share ideas, experiences, and challenges related to technology, a PLC/CoP is recommended for them. It is further recommended that the implementation of the technology mentor/coach and the PLC/CoP occur within another cycle of AR, which is detailed below.

**Action Research.** As established by Dawson (2012), AR is a powerful vehicle for professional development, particularly within the realm of technology integration, as it can offer teachers an intentional study of the ways that technology impacts student learning, as well as “a lens through which teachers may experience conceptual change regarding their beliefs about technology integration practices” (p. 117). Based on my experiences conducting this AR study, participant responses and reactions to their experiences participating in this study, and as found in existing research, it is recommended that the aforementioned strategies of implementing a technology mentor/coach and a PLC/CoP be done through another cycle of AR.

As discussed above, I experienced tremendous growth as an educator through conducting this AR. I fully recognized that facilitating this study acted as a point of professional growth, as true to the nature of AR, it is a form of professional development

(Mertler, 2002; Mills, 2018; Rodriguez & McKay, 2010). This process not only offered me, but all of the participants the opportunity to reflect on our practice, share ideas and experiences with each other, and to collaborate on next steps. AR truly was a form of PD for us. In addition to my experience, this was evidenced in comments made by the participants.

In reference to participating in my AR study, Pat said the following:

Pat: But since we did this [AR], I was thinking about it more and found the same thing. I said to the students, all of a sudden, "Do you want to do typing?" They're like, "I want to do typing." I was like, "Really?" I said, "Well I'm just here to do what you want to do. Let's go do typing."

In participating in my AR study, Pat began to reflect on and revisit their use of technology. As a result, Pat asked students about their interest in using technology, specifically to improve typing, which was an area identified as needing improvement. This demonstrates how participating in AR resulted in a move to improve student achievement, which is a determiner for the effectiveness of PD (Avalos, 2011; Coldwell, 2017; Desimone, 2009; Evens, Elan, Larmuseau, & Depaepe, 2018; Gaines et al., 2019; Twining et al., 2013). In the focus group interview, Dale also suggested that taking part in the AR, particularly the focus group aspect of it, was like a form of PD, and the type of situation we may want to continue pursuing. Making recommendations for next steps for PD in technology integration, Dale stated the following:

Dale: That would be part two though right. It would be sort of like what we're doing now [in the focus group interview] because we've already voiced various things that would be helpful...

Because of AR's ability to positively impact a change in teaching practices, it is recommended as a form of professional development (Avalos, 2011; Dawson, 2012; Manfra & Bullock, 2014; Rodriguez & McKay, 2010; Young & Petyon, 2008). Rodriguez and McKay (2010) suggest AR is a particularly effective option for practitioners working with adult English language learners within programs in the U.S. because of the unique needs of the experienced teachers within this context. They also indicate that mentoring/coaching and peer observations could provide the opportunity for teachers to step out of their normal teaching roles and develop new paradigms for their work (Rodriguez & McKay, 2010). Additionally, as discussed above, based on my own experiences, and evidenced in the existing research, peer observation offers a form of active learning and can play a role in successful professional development (Avalos, 2011; Garet et al., 2009; Richter et al., 2011). It is therefore recommended that in addition to identifying a technology mentor/coach, creating a collaborative online space, and meeting biannually, the participants also integrate peer observation into the next cycle of AR. The collaborative online space, biannual meetings, and observations work together to form a PLC/CoP, and the integration of these forms of PD could follow an AR cycle. The following provides an overview of the next cycle of AR recommended for the ESOL department at PNWCC.

***Phase I.*** The first step recommended for the next cycle of AR is to meet as a department, discuss the findings of this study, and to implement the following:

- Identify a technology mentor/coach for the department
- Determine an appropriate platform for the online shared space for sharing resources

- Schedule two collaborative meeting times to occur within the next academic year
- Solidify a commitment to observing two peers within the next academic year
  - Establish the goal of the observations, including a protocol
- Establish methods of data collection for this cycle of AR

***Phase II.*** During the second phase of the next cycle of AR, the department would have varying roles as follows:

- Technology mentor/coach
  - Identify a list of websites for learners within this context and create a simple URL to access websites
    - Share with fellow instructors
  - Contact IT to create an icon to the above websites on campus computers
  - Develop and share collaborative online space with other instructors
  - Share resources and ideas in collaborative online space
  - Check in frequently with other instructors to encourage contributions to online space and to address questions and challenges
  - Observe a fellow ESOL faculty member using the established observation protocol, which could act as a form of data collection for this cycle of AR
- Instructors
  - Take students to computer lab to access the sites identified by the technology mentor/coach
  - Share resources and ideas in the collaborative online space
  - Communicate with the technology mentor/coach with issues, challenges, and ideas regarding technology integration

- Observe a fellow ESOL faculty member using the established observation protocol
- ESOL Department and Administration
  - Attend one of the biannual collaborative meetings, where there is a discussion centered on the following that is potentially recorded, transcribed, and analyzed for data collection within the form of a focus group interview:
    - Feedback on the ease of access and effectiveness of the websites for learners, including what is and is not working
    - Organization and evaluation of resources and ideas shared in the online collaborative space, revising elements of the site, as needed
    - Discussion of the role of the technology mentor/coach, including what is and is not working and recommendations for moving forward
    - Review of the observation process and experience, including pros and cons and suggestions for improvement
    - Evaluation of the overall effectiveness of the newly implemented PD strategies, including any changes that need to be made and/or next steps

***Phase III.*** The third phase includes many of the same tasks as the second phase with a stronger emphasis on reflection and next steps. The tasks according to the various roles are as follows:

- Technology mentor/coach



- Offer reflection on shared resources and ideas in the collaborative online space
- Identify patterns or themes from the instructor contributions to the online space and in addressing questions and challenges
- Reflectively summarize the information recorded on observation protocol
- Instructors
  - Offer reflection on their experience in taking students to the computer lab and about student's accessing the websites identified by the technology mentor/coach
  - Identify pro's and con's for sharing resources and ideas in the collaborative online space
  - Summarize communications with the technology mentor/coach about issues, challenges, and ideas regarding technology integration
  - Reflectively summarize the information recorded on the observation protocol
- ESOL Department and Administration
  - Attend the final biannual collaborative meeting of the year, where the following are included in a discussion that is potential recorded, transcribed, and analyzed for data collection within the form of a focus group interview:

- Update on student progress from continuing to utilize the websites
  - What are the perceived increases in language development?
  - What are the perceived increases in computer skills?
- Organization and evaluation of resources and ideas shared in the online collaborative space, revising elements of the site, as needed
- Reflection and evaluation of the overall effectiveness of the implemented PD strategies
  - Has the incorporation of the mentor/coach, collaborative online space, peer observation process, and biannual meetings resulted in an increase in instructor technology integration practices? If so, in what ways?
  - What should our next steps be? Should we continue to implement these strategies as regular practice? What changes do we want to make to these strategies to make them more effective?
- Develop a plan for analyzing and presenting our findings

*Phase IV.* During this phase of the AR cycle, faculty work to analyze the results, so that they can communicate them to stakeholders at PNWCC and/or within a larger context.

These phases offer a potential structure for the next cycle of AR, including the forms of PD that the participants of this study identified as appropriate for their unique situations. The recommendation to incorporate these PD opportunities within another cycle of AR are based on the findings of this study, including the experiences of the participants, and are also supported throughout research regarding effective PD in technology integration and for practitioners of adult ESOL learners in programs in the U.S. The following section discusses the implications of this study on future research.

### **Implications on Future Research**

The three themes and one assertion from the interpretive-descriptive qualitative analysis of this study offer implications for future research regarding PD for technology integration within the community college ESOL context. In this study, the findings suggested that PD in technology integration within the community college ESOL be specific to the unique needs of the instructors. These findings were congruent with existing literature regarding PD in technology integration, PD in CALL, and PD within the ESOL community college context. Ottenbreit-Leftwich et al. (2010) and Kopcha (2012) both emphasize situating PD in technology integration to address the needs of the teachers that are specific to their environments. Kopcha (2012) suggests that situating professional development can aid in overcoming barriers such as vision and beliefs. The contextualized nature of CALL training is also emphasized throughout research, where it is encouraged that professional development focus on technologies that are applicable to

the context of focus (Almuhammadi, 2017; DelliCarpini, 2012; El Shaban & Egbert, 2018). Situating and contextualizing PD based on the unique characteristics of the context is also recommended for PD for community college ESOL instructors (Rodriquez & McKay, 2010; Young & Petyon, 2008). Young and Petyon (2008) recognize the complexities of designing PD opportunities for educators working with adult ESOL learners in community colleges, and recommend using a data-driven, systematic process to determine the needs of these practitioners in order to plan for PD.

My study acted as a data-driven and systematic approach in determining the needs of the participants. Through the data collection instruments and analysis, the needs of my participants were determined. Without fully exploring their needs and coming to understand their barriers based on their experiences, it would not have been possible to recommend avenues of PD that met those needs. The input from the participants regarding their experiences and their ideas guided the recommendations, aligning with theories of adult learning, which encourage participants to be involved in decisions about PD. Trotter (2006) claims that teachers should be given freedom to develop PD opportunities based on their needs and personal interest. The recommendations made as a result of the findings of this study offered the participants the opportunity to determine the direction of the PD.

This study was designed to act as a needs assessment, where interpretive-descriptive qualitative data was collected and analyzed to represent the participants' experiences with and attitudes toward technology. As the literature suggests, a needs assessment is an important step in determining directions for PD in technology integration, as well as within the adult ESOL context. My study could provide other

researchers with a model for designing and conducting a study that acts as a needs assessment regarding technology integration within this context, or potentially within other similar contexts. It should also be noted that my study contributes to the body of research regarding effective PD opportunities for instructors within community college ESOL programs, where there seems to be a paucity in research. When conducting the review of literature, publications regarding PD within this context were dated 10 years or more. My study offers a recent contribution to this body of literature. Further, those interested in conducting AR could be guided in their future research endeavors through the review of my study. My study shows promise for utilizing a needs-based approach to designing technology integration PD for practitioners of adult community college ESOL through the use of an interpretive-descriptive qualitative design within a cyclical AR study. Though my study could inform and guide others in developing a needs assessment within a context of focus in order to determine directions for PD, there are limitations to consider. The limitations of this study are discussed in the following section.

### **Limitations**

As is characteristic of qualitative research, my study had limitations regarding the absence of quantitative data, ambiguities that inherently exist in human language, as well as the small size of my population (Ochieng, 2009). Additionally, AR could be considered a limitation because it is focused solely on a problem identified within a specific context (Mertler, 2017), making it difficult to suggest the findings of this study as applicable to other contexts. The final limitation was me, the researcher. These limitations are discussed in further details in the following paragraphs.

My study did not include quantitative data. Quantitative data offers objectivity (Queirós, Faria, & Almeida, 2017) that may be more difficult to achieve through qualitative data collection and analysis. Also, the addition of quantitative data to my qualitative design, would have made my study a mixed methods research design, where a richer understanding of the subject of study may have occurred (Merriam & Tisdell, 2016). However, as true to my constructivist beliefs, I chose an interpretive-descriptive qualitative design to understand the reality of my participants based on their experiences. This suggests, and is true of my belief, that there is not one reality, but many realities, which contrasts with quantitative researcher's view that there is one aspect of reality within a phenomenon that can be measured (Merriam & Tisdell, 2016). For those with a pragmatic world view, they might consider adding in an element of quantitative data to this interpretive-descriptive qualitative design (Creswell, 2014). As cited in Queirós, Faria, and Almeida's (2017) comparative analysis of qualitative versus quantitative research, Choy reached the conclusion that a complementary approach, using both qualitative and quantitative data to answer the research question, may provide better results than the use of one methodology alone.

Qualitative data investigates words to answer the research questions (Ochieng, 2009; St. Pierre & Jackson, 2014). As a means of analysis, qualitative researchers code the words, in a process of discovering meaning (Saldana, 2016; St. Pierre & Jackson, 2014). Because of this unique approach of collecting data in the form of words and coding as a form of analysis, St. Pierre and Jackson (2014) posit that this type of study "cannot be replicated because it is emergent and experimental" (p. 717). While this may be true, Ochieng (2009) state that qualitative research can be done well with purpose,

skill, and concentration. I, therefore, come to the conclusion that researchers should determine a design based on their worldview and the purpose of their study. Qualitative research may not be the best approach for all, but for those interested in the human experience, and particularly, how the participants of the study both perceive those experiences and are influenced by those experiences, a qualitative design is an effective and appropriate choice (Creswell, 2014; Merriam & Tisdell, 2016; Ochieng, 2009).

My AR study focused on a potential problem that was explored within a specific context and only involved four participants. The small sample size and specificity of the context pose limitations for this study. My findings simply cannot be generalized for instructors within different contexts, or within all community college ESOL programs. The needs assessment approach alleviates this, as its focus is on the unique needs of participants within a specific context, but true to qualitative research, the findings cannot be extended to wider populations with the same degree of certainty that quantitative analyses can because the findings are not tested to determine whether they are “statistically significant or due to chance” (Ochien, 2009, p. 17).

The final limitation was me, the researcher. Because I acted as an insider in collaboration with other insiders, it could have posed power struggle concerns (Herr & Anderson, 2005). This was not the case for me because I do not hold a position of power within the institute. Instead, my positionality seemed to be more of a benefit than a hindrance. From my experience, this positionality resulted in collaborative inquiry that was more focused on the group than on the individuals within it, which led to professional and personal growth for all of us (Herr & Anderson, 2005). Another limitation that I presented the study was my positive bias toward technology as a tool to

support pedagogy. Because of my belief in the power of technology to positively impact the teaching/learning process and to be important in the development of 21<sup>st</sup> century skills, the questions I developed for the one-on-one instructor and focus group interviews asked participants to highlight the benefits more so than the drawbacks. While I did ask about barriers to using technology, I did not ask about reasons for not using technology. This may have skewed participants responses toward a more positive review of technology. Recognizing this limitation suggests that I have grown as a researcher. I have become more aware of how my biases can influence my research practices. I suggest other novice researchers consider their biases carefully when designing data collection instruments, to ensure that both positive and negative aspects of the phenomenon are illuminated. Researchers considering needs-based, interpretive-descriptive qualitative AR should understand and consider their positionality to alleviate potential power struggles and their bias to ensure that the data they collect represents all aspects of the phenomenon.

A needs assessment conducted by an insider in collaboration with other insiders is a viable option to determining and creating PD opportunities. Further, the use of an interpretive-descriptive qualitative design within an AR model allowed for a thorough exploration of the participants' situations based on their experiences that led to solutions to problems unique to them. While these limitations should be considered, they should not prevent others from using this study to guide and inform their own practices.



### **Closing Thoughts**

When I set out on this research journey, I was aware that technology integration was an area of improvement for the faculty within the ESOL department at PNWCC. I knew that there was a specific need to aid students in increasing their computer literacy that was not being met. My research validated this, but also expanded my knowledge of the issue, helped me articulate it more clearly, and provided me with a deeper understanding of the reasons this issue exists. In locating and reviewing the documents containing the learning standards, benchmarks and sub benchmarks, I began to understand the specific ways that technology should be used to support learners in this context, specifically with the development of technology comfortability and skills. My intuition and previous experience could have determined these but locating documents with specificity for each proficiency level and language domain expanded my knowledge and provided new insights. It also gave me a deeper understanding of how the educational entities reflect one another. Technology is an essential aspect of education today. This is recognized by the international TESOL organization, who has developed technology standards for teaching and learning. The TESOL technology standards impact the learning standards within my local context, which is reflected in the benchmarks and sub benchmarks established within this context (see Appendix A). Witnessing these connections, enlightened me to the great efforts put forth by those within the field of education in ensuring that the goals and missions of their programs prepare their learners for the skills needed in today's everchanging world.

While I was aware of the need to increase technology integration, particularly with students' uses of technology, I was not aware of all of the challenges, barriers, and attitudes experienced by the instructors that were preventing this from happening. Through the collection and analyzation of the one-on-one instructor interviews and focus group interview, the real barriers and issues instructors encounter were elucidated. I heard and felt their frustrations, but also witnessed their careful thought and reflection regarding these issues. They became more aware of their practices and began re-evaluating their uses, or lack thereof, with technology integration in their courses. For me personally, the observations also shed light on the participants uses of technology, which provided a learning opportunity for me.

In the close of chapter 1, I included a quote about using AR to further myself as an educational technology professional. Regarding my dedication to learning and collaborating with others, I said that I would continue “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (Januszewski & Molenda, 2013, p.1).

When I included that quote, I did not fully understand my own intentions. After completing this dissertation, including the data collection and data analysis process as well as all written components, I can confidently say that the knowledge and skills I have acquired have contributed immensely to my growth. I am confident in my ability to live up to those words and to continue my efforts as a practitioner researcher and educator.

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APPENDIX A: LEARNING STANDARDS, BENCHMARKS, AND SUB  
BENCHMARKS

Table A.1. *Read with Understanding Framework*

Level	Benchmark	Sub Benchmark
Beginning English as a Second (ESL) Language Literacy	N/A	N/A
Low Beginning ESL	Read for own purposes, inside and outside of class	Read some simple, visually supported digital texts (e.g., U-Scan at the grocery store)
High Beginning ESL/Beginning adult basic education (ABE) Literacy	Read regularly for own purposes, inside and outside of class.	Read simple, visually supported digital texts (e.g., familiar DVD menu)
Low Intermediate ESL/Beginning ABE	Read regularly for own purposes, inside and outside of class.	Read some simple digital texts (e.g., personal email)
High Intermediate ESL/Low Intermediate ABE	Read regularly for own purposes, inside and outside of class.	Read simple digital texts (e.g., personal e-mail; video games; DVD menus; simple web pages)
	Locate, analyze, and critique stated and implied information and/ or ideas in a simple functional, informational, or persuasive text.	Locate specific information in a simple multi-page source (e.g., within a class wiki; in an article; within a book with an index)

<b>Level</b>	<b>Benchmark</b>	<b>Sub Benchmark</b>
Advanced ESL/High Intermediate ABE	Read regularly for own purposes, inside and outside of class. Locate, analyze, and critique stated and implied information and/or ideas in an everyday functional, informational, or persuasive text.	Read digital texts (e.g., most web pages; electronic encyclopedias) Locate specific information in a lengthy source (e.g., on the Internet; within a textbook chapter)  Evaluate the reliability, accuracy, and sufficiency of information, claims, or arguments (e.g., by investigating the biases of author/publisher/website; distinguishing between fact and opinion; recognizing understatement/overstatements)

Table A.2. *Write to Express Meaning Framework*

<b>Level</b>	<b>Benchmark</b>	<b>Sub Benchmark</b>
Beginning ESL Literacy	Write using basic technologies and digital media	Use paper/pencil and very basic keyboarding Use simple electronic messaging such as phone texting
Low Beginning ESL	Write using basic technologies and digital media	Use paper/pencil and basic keyboarding and word processing/editing tools (e.g., shift key, space bar, delete/backspace)  Use simple electronic messaging such as phone texting and email  Begin to develop typing skills
High Beginning ESL/Beginning ABE Literacy	Use one or more strategies to plan and organize texts.	Use a model of a simple paragraph or disconnected text in common documents (e.g., an application form, e-mail)
	Write using basic technologies and digital media	Use basic keyboarding and word processing/editing tools (e.g., punctuation keys, cut and paste) b.  Use simple electronic messaging such as phone texting and email c.  Develop typing skills

Level	Benchmark	Sub Benchmark
	Carry out writing tasks related to expressing needs, feelings, or information	Write for practical uses (e.g., email to teacher)
Low Intermediate ESL/Beginning ABE	Draw on prior experience, new knowledge, and one's own questions, interests, and observations to generate ideas.	Read and begin to draft short summaries of the main ideas in information from print, audio and digital sources to build knowledge and vocabulary
	Use one or more strategies to plan and organize texts.	Consider what you know about writing in this situation (e.g., the implications of posting something to an internet group, the importance of not plagiarizing)
		Participate in simple research projects to build knowledge
		Use a selection of word processing/ editing tools (e.g., spellcheck, save, copy)
	Write using a variety of technologies and digital media	Adapt writing strategies to accommodate a variety of tech mediums (e.g., use PPT, email or texting)
	Use a variety of strategies to reinforce writing development	Use tools (e.g., dictionary, thesaurus, online tools such as Spellcheck) to check word choice, word form, and spelling

<b>Level</b>	<b>Benchmark</b>	<b>Sub Benchmark</b>
High Intermediate ESL/Low Intermediate ABE	Draw on prior experience, research, new knowledge, and one's own questions, interests, and observations to generate ideas.	Read and summarize information from print, audio and digital sources to build knowledge and vocabulary
	Use a variety of strategies to plan and organize a range of text types	Conduct short research projects that use several sources to build knowledge
	Use conventions appropriate for varied text types in multiple genres	Use format that enhances readability (e.g., font, white space, graphics)
	Write using a variety of technologies and digital media	Select and use word processing/editing tools (e.g., formatting tools, grammar check
	Carry out writing tasks that require presentation of information, explanation, or persuasion	Write for self-expression (e.g., messages on social media)
	Select from a variety of strategies to reinforce writing development	Use tools (e.g., collocations dictionary, online tools) to check word form, meaning, and spelling
		Read a variety of media and genres
Advanced ESL/High Intermediate ABE	Draw on prior experience, research, new knowledge, and one's own questions, interests, and observations to generate ideas.	Read and summarize information from print, audio and digital sources to build knowledge and synthesize with prior knowledge

Level	Benchmark	Sub Benchmark
	Use strategies appropriate for planning and organizing specific text types	Use models of varied genres (e.g., biography, essay, poetry, social media)
	Develop and organize ideas and evidence in persuasive or expository essays, presentation of argument, or creative texts.	Conduct short research projects to answer a question, drawing on several sources and generating additional questions for investigation
	Use conventions appropriate for varied text types in multiple genres	Use formatting (e.g., headings, bullets), graphics (e.g., charts, tables), and multi-media (e.g., video in a PPT presentation) to enhance text
	Draw from a variety of technologies and media appropriate for the writing purpose	Use format that enhances readability (e.g., margins, word wrapping, illustrations)
		Select and use a wide variety of word processing/editing tools (e.g., track changes)
		Adapt writing strategies to take advantage of a variety of technologies and social media (e.g., blogs and other social media)
	Select from a variety of strategies to reinforce writing development	Use tools (e.g., online tools, style guide) to check definitions, spellings, and
		Read a variety of media and genres

Table A.3. *Listen Actively and Speak so Others can Understand Framework*

<b>Level</b>	<b>Benchmark</b>	<b>Sub Benchmarks</b>
Beginning ESL Literacy	Use one or more simple strategies to understand or convey the main idea or specific information face-to-face and in diverse media, as an individual or group member.	Use diverse media to enhance communication such as picture dictionaries, translation tools, smartphones and glossaries
Low Beginning ESL	Use one or more simple strategies to understand or convey the main idea or specific information face-to-face and in diverse media, as an individual or group member.	Use diverse media to enhance communication such as picture dictionaries, translation tools, smartphones and glossaries
	Use a few basic strategies to monitor own and listener comprehension, enhance listener comprehension, and repair misunderstanding in collaborative conversations with diverse partners.	Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions.



<b>Level</b>	<b>Benchmark</b>	<b>Sub Benchmarks</b>
High Beginning ESL	Use more than one strategy to plan for listening and/or generate and organize content of message for speaking	Create a simple visual representation of ideas (e.g. make a chart of class responses, poster, image-based PowerPoint, etc.)
	Use strategies to build, understand, and use vocabulary related to daily interactions and topics of interest including career and academic topics.	Use glossaries and beginning dictionaries, both print and digital, to determine or clarify the meaning of words and phrases.
	Distinguish/Produce sounds in common words and connected speech. Use a few strategies to understand or convey a general idea or to extract relevant detail face-to-face and in diverse media, as an individual or group member.	Use diverse media to enhance communication such as picture dictionaries, glossaries, translation tools, video, and PowerPoint
	Use a few strategies to monitor own and listener comprehension, enhance listener comprehension, and repair misunderstanding to engage effectively in a range of collaborative discussions with diverse partners.	Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats

<b>Level</b>	<b>Benchmark</b>	<b>Sub Benchmarks</b>
Low Intermediate ESL	Use strategies to build, understand, and use vocabulary related to varied topics and contexts including career and academic contexts.	Use glossaries and dictionaries, both print and digital, to determine or clarify the meaning and pronunciation of words and phrases
	Draw from a range of strategies to understand or organize and convey information and ideas face-to-face and in diverse media, as an individual or group.	Use diverse media to enhance communication such as picture dictionaries, translation tools, smartphones, video and presentations apps, and glossaries
	Carry out, comprehend, and respond to a variety of everyday short interactions with diverse partners.	Relate and understand a sequence of events or multi-step instructions (e.g. follow voice instructions on how to get to a specific location or create a new presentation)

High Intermediate ESL	Determine own and other(s) purpose for listening and speaking in a particular situation.	Clarify own or group general or specific purposes for listening and speaking (e.g., to understand the main points of an argument; show the boss you are attentive, gather information for a group project, share information and persuade others to act, analyze purpose of information presented in diverse media and formats) or evaluative purposes (e.g., to differentiate between facts and opinions).
	Build and draw on prior knowledge about language, culture, and context to anticipate and prepare for interactions.	Prepare for discussions having read or studied relevant material (e.g. suggested texts, library or online research); explicitly draw on that preparation and prior knowledge about the topic to explore ideas under discussion.
	Use a variety of strategies to plan for listening and/or generate and organize content of message for speaking.	Select relevant content from text and digital sources, observations, experiences, and interests for predicting and addressing listening and speaking purposes (include details and examples)

	Create visual representation of ideas (e.g. PowerPoint presentation, simple video, poster, etc.)
Use knowledge of U.S. culture and career and academic contexts to select, understand, and communicate information effectively in collaborative exchanges that build on other's ideas and express one's own clearly and persuasively.	Analyze the purpose of and evaluate the motives behind information presented in diverse media and oral presentations
Use strategies to build, understand, and use vocabulary related to a broad range of general and some specialized career-specific and/or academic topics.	Consult reference materials, both print and digital, to determine or clarify the meaning and pronunciation of words and phrases
Use strategies to address/identify weaknesses in hearing/distinguishing English sounds that interfere with communication.	Recognize and produce academic and career words learned in text when they are used in speech or media
Draw from a range of strategies to understand, organize, and convey some complex information and ideas face-to-face and in diverse media, as an individual or group.	Select or create diverse media to enhance communication (e.g., charts, video, presentation slides)

<b>Level</b>	<b>Benchmark</b>	<b>Sub Benchmarks</b>
	Use a few strategies to monitor own and listener comprehension, enhance listener comprehension, and repair misunderstanding in collaborative conversations with diverse partners.	Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions.
	Carry out, comprehend, and respond to a variety of medium-length oral communications with diverse partners.	Give and follow moderate-length narratives or explanations (e.g., from presentations or non-interactive sources)

Advanced ESL	Build and draw on prior knowledge about language, culture, and context to anticipate and prepare for interactions.	Prepare for discussions having read or studied materials evaluated for credibility (e.g. watching TED Talks, library or online research); explicitly draw on that preparation and prior knowledge about the topic to explore ideas under discussion
	Use a variety of strategies to plan for listening and/or generate and organize content of message for speaking.	Determine relevant content from text and digital sources, observations, experiences, and interests for predicting, and addressing listening and speaking purposes (include details and examples)
	Use knowledge of U.S. culture and career and academic contexts to select, understand, and communicate information effectively in collaborative exchanges with diverse partners that build on other's ideas and express one's own clearly and persuasively.	Create visual representation of ideas (e.g. PowerPoint presentation, video, poster, etc.)
	Use strategies to build, understand, and use vocabulary that includes words needed for some specialized, career-specific and/or academic topics. Use strategies to address problems distinguishing	Analyze the purpose of and evaluate the motives behind information presented in diverse media and oral presentations Consult reference materials, both print

particular sounds in diverse contexts.	and digital, to determine the precise meaning and pronunciation of words and phrases
Draw from a wide range of strategies to understand, organize, and convey some complex information and ideas in face-to-face and in diverse media, as an individual or group.	Recognize and produce academic and career words learned in text when they are used in speech or media
Use a few strategies to monitor own and listener comprehension, enhance listener comprehension, and repair misunderstanding to engage effectively in a range of collaborative discussions with diverse partners.	Select or create diverse media to enhance communication (e.g., charts, video, presentation slides)
Carry out, comprehend, and respond to some complex types of medium-length communications with diverse partners.	Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats
Select from a range of language learning strategies to reinforce or continue to independently develop listening and speaking skills.	Ask and respond to questions based on several pieces of relevant evidence, ideas, and observations (e.g., form questions and answers using varied digital media resources)

Level	Benchmark	Sub Benchmarks
		Listen to and repeat new vocabulary and phrases in varied settings and for varied purposes (e.g., TED Talk; lecture; work meeting)



## APPENDIX B: SURVEY INSTRUMENT

### **Introduction to Study and Consent**

Thank you for your consideration to participate in my study. I am Courtney Cunningham. I am working towards a doctorate of education in curriculum and instruction with an educational technology concentration through the University of South Carolina. This study is for my dissertation and will fulfill my degree requirements. I invite you to participate in this study, so that I may understand more about your needs, attitudes, and practices regarding technology integration in your English to Speakers of Other Language (ESOL) courses. I will use this information to make recommendations, in collaboration with you, about how to design professional development in technology integration to meet the needs of our department.

This survey will be used as one of the forms of data collection. It will help me understand your technology skills, current technology integration practices, attitudes toward technology, as well as your experiences with professional development. There is a brief section dedicated to demographic information.

Your participation is anonymous. This means that no one, not even the researcher, will know how you answer the questions. Anonymity is ensured, as you are not required to state your name or provide your email address.

Your participation in the study is greatly appreciated and your insight is invaluable, but you are under no obligation to participate. This is strictly voluntary and there will be no negative repercussions if you decide to withdraw from the study at anytime.

If you have any questions or concerns, please do not hesitate to contact me. You can reach me at 828-242-5645 or [cbc.elt@gmail.com](mailto:cbc.elt@gmail.com). You may also contact my faculty advisor, Dr. Michael Grant. You may reach him at [michaelmgrant@sc.edu](mailto:michaelmgrant@sc.edu). If you are

willing to participate, please click next to begin the survey. It should take you 20 minutes to complete.

With sincere appreciation,  
Courtney Cunningham  
600 G St.  
The Dalles, OR 97058  
cbc.elt@gmail.com  
828-242-5645

## Demographic and Background Information

Gender

- ☐ Male
- ☐ Female
- ☐ Prefer not to say

Age

- ☐ 35-45
- ☐ 46-55
- ☐ 56 or over

Education

- ☐ Bachelor's
- ☐ Master's
- ☐ Doctorate

What degrees have you obtained?

---

Did you receive instruction in technology integration as part of the curriculum for any or all of your degrees?

- ☐ Yes
- ☐ No

Explain any professional development or other training you have received for integrating technology in the English language classroom.

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## Technology Skills

Rate your technology skills according to the provided scale:

	Learner: I am not sure how to do this task.	Basic: I have done this before, but might need some help.	Proficient: I can perform this task without any assistance.	Advanced: I could train staff to do this.
Create a Word or Google document				
Share Google Docs, Slides, or Sheets with different user rights (view, edit, make comments)				
Save files using different file extensions				
Access and utilize online interactive software				
Take digital pictures and download them to my computer				
Edit digital pictures				
Create slide presentations using powerpoint, prezzi, Google slides, etc.				
Locate, download, and include images in your presentations				

(i.e., from Google images)				
Locate appropriate videos to support class instruction (i.e., from Youtube or TedTalks)				
Download and embed video into your presentations				
Analyze and use apps				
Find lessons on the web				
Create social media accounts				
Open and use a blog site or wiki				
Create a functioning webpage				

Indicate how strongly you disagree or agree with the following statements about your technology skills.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Learning new technologies is confusing for me.					
I get anxious when using new technologies because I don't know what to do if something goes					

wrong.					
I feel comfortable about my ability to work with computer technologies.					
I enjoy finding new ways that my students and I can use technology in the classroom.					
I get excited when I am able to show my students a new technology application or tool.					
I get anxious when using technology with my students.					
I am confident with my ability to troubleshoot when problems arise while using technology.					
I feel confident in my ability to integrate multiple technologies into my instruction.					

### Technology Integration

Indicate how frequently you use the following technologies in class.

	Rarely-1-2 times a year	Seldom-every 3-4 months	Occasionally - monthly	Frequently - once a week	Regularly-during every class
CD player					

DVD player					
LCD Projector (overhead projector)					
Computer					
Internet					
Document Camera					

Indicate how often you integrate the following into your instruction or materials.

	Rarely-1-2 times a year	Seldom- every 3-4 months	Occasionall y- monthly	Frequently- once a week	Regularly- during every class
Use the internet as part of the lesson					
Use Powerpoint or similar to support the lesson					
Have students use the computer lab					
Have students access and use a class webpage that you created					
Have students create PowerPoint presentations					

Have students type papers in Word, Google docs, or similar					
Have students take assessment online					
Have students use content specific software to support their learning					
Have students use content specific apps to teach/reinforce skills					
Have students use personal devices during class					
Have students conduct research using the internet					
When planning instruction, I think about how technology could be used to enhance student learning					
When planning instruction, I consider state and national					



technology standards.					
Model effective technology use for my students.					

### Attitudes and Beliefs

Indicate how strongly you agree or disagree with the following statements.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Learning new technologies that I can use in the classroom is important to me.					
Computer technology allows me to create materials that enhance my teaching.					
Computer technologies help me be better organized in my classroom.					
Technology can be an effective learning tool for students.					
Using technology to communicate with others allows me to be more effective in my job.					
My students get excited when they use technology in the learning process.					

Using technology in the classroom is a priority for me.					
Teaching students how to use technology is a part of my job.					
Integrating technology is pertinent to my curriculum.					
The amount of time needed to prepare technology-based lessons deters me from creating them.					
I believe that integrating technology into my curriculum is important for student success.					

### Professional Development

Indicate how strongly you agree or disagree with the following statements regarding your experiences with technology training and professional development.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I want to use technology but am not given enough time to learn it.					
I want to use technology but have not been trained on how to use it.					
Most of my technology learning has been self-taught and on my own time.					

I enjoy attending technology based Professional Development.					
I would benefit from and utilize an online learning community.					

## APPENDIX C: INSTRUCTOR INTERVIEW PROTOCOL

I want to begin by thanking you for allowing me to interview you. This interview is one of the forms of data that I will be collecting for my dissertation research. Your participation is completely voluntary and appreciated. I will be asking you questions related to your experiences with using technology in your teaching practices. These questions are designed to aid me in better understanding your needs regarding technology integration, your currently technology integration practices, and your attitudes toward technology, so that I can make recommendations for professional development in technology integration for the faculty in the ESOL department at PNWCC. This interview will last approximately 30-45 minutes. I will be recording it for later transcription. Do you have any questions before we begin?

1. Describe how you currently use technology in your ESOL classes at PNWCC.
  - a. How often do you use it?
  - b. How do you use it?
2. Tell me about a time when you successfully utilized technology in a lesson or class.
  - a. Why do you consider this successful use of technology?
3. Tell me about a time you were challenged by using technology in your classes.
  - a. So what about that made it challenging?
4. Explain any barriers that prevent you from using technology.

5. Can you explain what you believe the role of the teacher to be in student learning?
  - a. Can technology support teachers in this role?
2. Can you tell me what you think the benefits of using technology with ESOL learners are?
  - a. In what ways do you think using technology helps our learners?
3. Explain the benefits of using technology to support your teaching.
4. What do you think could be done to improve your use of technology?
5. Can you explain any ways have you've tried to improve your use of technology in your classes?
  - a. Have you attended professional development for technology integration, any special training in technology, or have your researched or self-taught yourself about technology in ESOL?
6. Do you anticipate any changes within PNWCC in the future that will require more use of technology within your teaching or your overall job duties? Please explain.
7. Is there anything else you would like to add regarding your experiences using technology in your classes?

Thank you for your participation in this interview! Your insight is valuable to my study.

Do you have any further questions for me?

## APPENDIX D: LOOKING FOR TECHNOLOGY INTEGRATION OBSERVATION INSTRUMENT

### Looking for Technology Integration (LoFTI)

This evaluation instrument was identified, modified, or developed through support provided by The Friday Institute. The Friday Institute grants you permission to use this instrument for educational, non-commercial purposes only. You may use this instrument "as is", or modify it to suit your needs, but in either case you must credit its original source. By using this instrument you agree to allow The Friday Institute to use the data collected for additional validity and reliability analysis. You also agree to share with the Friday Institute publications, presentations, evaluation reports, etc. that include data collected and/or results from your use of this instrument. The Friday Institute will take appropriate measures to maintain the confidentiality of all data.

Copyright © 2005-2007 the SERVE Center at UNC Greensboro – LoFTI was initially developed through a collaboration between SERVE and the North Carolina Department of Public Instruction, and is supported by grants from the U.S. Department of Education (award R302A00011 and S318A030029) and through support from Microsoft Corporation U.S. Partners in Learning program. LoFTI has been modified by the Friday Institute at North Carolina State University with permission from SERVE

## Looking for Technology Integration (LoFTI)

*Purpose:* LoFTI is a tool to aid in the observation of technology integration into teaching and learning. The data gathered through the use of this instrument should be helpful in building-level staff members as they plan and/or provide professional development in instructional technology.

**1. Please enter the date and time:**

Date (mm/dd/yyyy): \_\_\_\_\_

Time (hh:mm): \_\_\_\_\_

**2. Observer Name:**

**3. Which school is being observed?** \_\_\_\_\_

**4. Teacher Name:** \_\_\_\_\_

**5. Is technology in use?**

☐ Yes

☐ No

**6. How many students are...**

In class:

Using technology?

\_\_\_\_\_ Comments:

**7. Student Arrangement:**

☐ Tables, Centers, Pods

☐ Circle or U

- ☐ Cubicles
- ☐ Rows
- ☐ Other (please specify): \_\_\_\_\_

**8. Learning Environment:**

- ☐ Auditorium
- ☐ Media Center
- ☐ Cafeteria
- ☐ Multi-Purpose Room
- ☐ Classroom
- ☐ Outside
- ☐ Gymnasium
- ☐ Virtual Environment
- ☐ Lab
- ☐ Other (please specify): \_\_\_\_\_

**9. Student Grouping:**

- ☐ Independent Work
- ☐ Whole Groups
- ☐ Learning Center
- ☐ Workshops
- ☐ Pairs
- ☐ Other (please specify): \_\_\_\_\_
- ☐ Small Groups

**Technology** includes such things as computers, laptops, software, iPods, iPads, interactive whiteboards, digital cameras, document cameras, video cameras, the Internet, clickers, 3D virtual space, etc.



## 10. Teacher Activities:

*(check only if technology is being used for...)*

- |   |   |
|---|---|
| <input type="checkbox"/> Activating prior knowledge             | <input type="checkbox"/> Providing feedback           |
| <input type="checkbox"/> Assessments                            | <input type="checkbox"/> Questioning                  |
| <input type="checkbox"/> Cues, questions and advance organizers | <input type="checkbox"/> Reinforcing/recognition      |
| <input type="checkbox"/> Demonstration                          | <input type="checkbox"/> Scaffolding                  |
| <input type="checkbox"/> Differentiated instruction             | <input type="checkbox"/> Setting objectives           |
| <input type="checkbox"/> Facilitation (guiding)                 | <input type="checkbox"/> Summarizing                  |
| <input type="checkbox"/> Lecture                                | <input type="checkbox"/> Other (please specify):_____ |

## 11. Assessment Methods:

*(check only if technology is being used)*

- |   |   |
|---|---|
| <input type="checkbox"/> Oral Response                                  | <input type="checkbox"/> Selected response            |
| <input type="checkbox"/> Product (e.g. project with rubric)             | <input type="checkbox"/> Written response             |
| <input type="checkbox"/> Performance (e.g. presentation, demonstration) | <input type="checkbox"/> Other (please specify):_____ |

**12. Technology is being used as a tool for...**

*(Check either Teacher or Student or both)*

	<b>Teacher</b>	<b>Students</b>
Problem Solving (e.g. graphing, decision support, design)	<input type="checkbox"/>	<input type="checkbox"/>
Communication (e.g., document preparation, email, presentation, web development)	<input type="checkbox"/>	<input type="checkbox"/>
Information Processing (e.g., data manipulation, writing, data tables)	<input type="checkbox"/>	<input type="checkbox"/>
Research (e.g., collecting information or data)	<input type="checkbox"/>	<input type="checkbox"/>
Personal Development (e.g., e-learning, time management, calendar)	<input type="checkbox"/>	<input type="checkbox"/>
Group Productivity/Cooperative Learning (e.g., collaboration, planning, document sharing)	<input type="checkbox"/>	<input type="checkbox"/>
Formative Assessment	<input type="checkbox"/>	<input type="checkbox"/>
Summative Assessment	<input type="checkbox"/>	<input type="checkbox"/>
Brainstorming	<input type="checkbox"/>	<input type="checkbox"/>
Computer-assisted instruction	<input type="checkbox"/>	<input type="checkbox"/>
Face to face classroom discussion	<input type="checkbox"/>	<input type="checkbox"/>

	<b>Teacher</b>	<b>Students</b>
Face to face group discussion	<input type="checkbox"/>	<input type="checkbox"/>
Asynchronous discussion	<input type="checkbox"/>	<input type="checkbox"/>
Drill and practice	<input type="checkbox"/>	<input type="checkbox"/>
Generating and testing hypotheses	<input type="checkbox"/>	<input type="checkbox"/>
Identifying similarities and differences	<input type="checkbox"/>	<input type="checkbox"/>
Project-based activities	<input type="checkbox"/>	<input type="checkbox"/>
Recitation	<input type="checkbox"/>	<input type="checkbox"/>
Summarizing and note-taking	<input type="checkbox"/>	<input type="checkbox"/>

**13. Technology hardware is in use by...**

*(Check either Teacher or Student or both)*

	<b>Teacher</b>	<b>Students</b>
Assistive Technology	<input type="checkbox"/>	<input type="checkbox"/>
Audio (e.g., speakers, microphone)	<input type="checkbox"/>	<input type="checkbox"/>
Art/Music (e.g., drawing tablet, musical keyboard)	<input type="checkbox"/>	<input type="checkbox"/>

	Teacher	Students
Imaging (e.g., camcorder, film or digital camera, document camera, scanner)	<input type="checkbox"/>	<input type="checkbox"/>
Display (e.g., digital projector, digital white board, television, TV-link, printer)	<input type="checkbox"/>	<input type="checkbox"/>
Media Storage / Retrieval (e.g., print material, DVD, VCR, external storage devices)	<input type="checkbox"/>	<input type="checkbox"/>
Math / Science / Technical (e.g., GPS, probeware, calculator, video microscope)	<input type="checkbox"/>	<input type="checkbox"/>
Desktop computer	<input type="checkbox"/>	<input type="checkbox"/>
Laptop computer (including tablets)	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify): _____	<input type="checkbox"/>	<input type="checkbox"/>

**14. Technology software is in use by...**

*(Check either Teacher or Student, or both)*

	Teacher	Students
Administrative (e.g., grading, record-keeping)	<input type="checkbox"/>	<input type="checkbox"/>
Assessment / Testing	<input type="checkbox"/>	<input type="checkbox"/>

	<b>Teacher</b>	<b>Students</b>
Assistive (e.g., screen reader)	<input type="checkbox"/>	<input type="checkbox"/>
Computer-Assisted Instruction / Integrated Learning System	<input type="checkbox"/>	<input type="checkbox"/>
Thinking tools (e.g. visual organizer, simulation, modeling, problem-solving)	<input type="checkbox"/>	<input type="checkbox"/>
Hardware-Embedded (e.g. digital white board, GPS/GIS, digital interactive response system)	<input type="checkbox"/>	<input type="checkbox"/>
Multimedia (e.g., digital video editing)	<input type="checkbox"/>	<input type="checkbox"/>
Productivity Software (e.g., database, presentation, spreadsheet, word processing)	<input type="checkbox"/>	<input type="checkbox"/>
Programming or web scripting (e.g., Javascript, PHP, Visual Basic)	<input type="checkbox"/>	<input type="checkbox"/>
Graphics / Publishing (e.g., page layout, drawing/painting, CAD, photo editing, web publishing)	<input type="checkbox"/>	<input type="checkbox"/>
Subject-specific software	<input type="checkbox"/>	<input type="checkbox"/>
Web Browser (e.g., MS Internet Explorer, Netscape, Firefox)	<input type="checkbox"/>	<input type="checkbox"/>

	Teacher	Students
<i>Web Applications</i>		
Course management software (DyKnow, etc.)	<input type="checkbox"/>	<input type="checkbox"/>
Database systems	<input type="checkbox"/>	<input type="checkbox"/>
Discussion boards	<input type="checkbox"/>	<input type="checkbox"/>
Libraries, E-publications	<input type="checkbox"/>	<input type="checkbox"/>
Search engine	<input type="checkbox"/>	<input type="checkbox"/>
Video, voice, or real-time text conference	<input type="checkbox"/>	<input type="checkbox"/>
Web lobs, blogs	<input type="checkbox"/>	<input type="checkbox"/>
Web mail	<input type="checkbox"/>	<input type="checkbox"/>
Wiki	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify): _____	<input type="checkbox"/>	<input type="checkbox"/>

**15. How was technology used in this classroom?** (RAT framework;

Hughes et al., 2006; Adapted from Wilder Research's Technology Integration

Observation Protocol, Maxfield, Huynh, & Mueller, 2011)

*(CHECK ALL THAT APPLY and type a brief description in the corresponding text box)*

☐ **Replacement.** “Technology used to replace and in no way change established instructional practices, student learning processes, or content goals. The technology

serves merely as a different means to the same instructional end. Most of the learning activities might be done as well or better without technology.” (*Example: Using an interactive whiteboard for the same purposes as a chalkboard*)

□ **Amplification.** “Technology used to amplify current instructional practices, student learning, or content goals, oftentimes resulting in increased efficiency and productivity. The focus is effectiveness or streamlining, not fundamental change.” (*Example: Using a word processor rather than written materials for instructional preparation*)

□ **Transformation.** “Technology used to transform the instructional method, the students’ learning processes, and/or the actual subject matter. Technology is not merely a tool, but rather an instrument of mentality. The focus is fundamental change, redefining the possibilities of education. Most technology uses represent learning activities that could not otherwise be easily done.” (*Example: Using Google drive or any cloud based applications for student collaboration on a project.*)

**21. Classroom Agenda:**

**22. Other comments regarding teacher (e.g. demeanor, comfort with technology, interactions with students):**

**23. Other comments regarding students (e.g. comfort with technology, peer interactions):**

**24. Other comments regarding learning environment:**

## **Definition of terms for Teacher Activities**

1. **Activating Prior Knowledge:**
  - Reminds the learner what they already know
  - Prior knowledge provides a framework or scheme through which new information is actively assimilated.
2. **Assessment:**
  - Observed demonstration of knowledge
  - Involves some formal assessment scale: rubric, grading scale
  - Examples: portfolios, exams (test or quizzes), reflections
3. **Cues, Questions, Advanced Organizers:**
  - Used to help assist students to transfer or apply what they know to what they are learning
  - Provide concepts and principles to the students directly – help the learner to integrate new materials with what they already know; they "prepare" the learner for new information.
4. **Demonstration:**
  - Method of teaching by example rather than simple explanation
5. **Differentiated Instruction:**
  - Involves teachers using a variety of instructional strategies that address diverse student learning needs
  - In differentiated instruction students are placed at the center of teaching and learning and student needs drive instructional planning.
6. **Facilitating (Guiding):**
  - Providing support and direction for students
7. **Lecture:**
  - Oral presentations intended to present information or teach students about a particular subject or topic.
8. **Providing Feedback:**
  - Telling students how they did in relation to specific levels of knowledge
  - Taking time to write comments, point out omissions, and explain thinking when reviewing student work.
9. **Questioning:**
  - Finding out what students already know (or do not know) and then connecting to students' existing knowledge base.
10. **Reinforcing Effort and Providing Recognition:**
  - Having students keep a log of their weekly efforts and achievements, reflect on it periodically, and even mathematically analyze the data;
  - Finding ways to personalize recognition; giving awards for individual accomplishments.
11. **Scaffolding:**



- Supports provided to facilitate the learner's development.
  - The scaffolds facilitate a student's ability to build on prior knowledge and internalize new information. Scaffolding may include assistance with planning, organizing, doing and/or reflecting on the specific task. Such assistance is best.
12. **Setting Objectives:**
- Setting a core goal for a unit and desired outcomes for learning.
13. **Summarizing:**
- Asking students to analyze a subject to expose what's essential and then put it in their own words.

### **Definition of terms for Student Activities**

1. **Problem-solving-** analyze, coming up with a solution
2. **Presentation** - a performance, exhibition, or demonstration put on before an audience
3. **Project-based activities:**
  - Results in a product or performance
  - Based on essential question
  - Multidisciplinary – like the “real world”
  - Student-directed – students “own” their work
  - Students collaborate
  - Authentic Technology use (authentic uses (e.g., collecting, processing, presenting information)
  - Long Term
4. **Recitation**
  - The public reading aloud of something or reciting of something from memory, especially poetry
  - Oral response by a student to questions on previously taught material
5. **Summarizing and note-taking** - to give a shortened version of something that has been said or written, stating its main points
7. **Brainstorming:**
  - Group creativity designed to generate a large number of ideas for the solution to a problem.
8. **Computer-assisted instruction:**
  - Most often refers to drill-and-practice, tutorial, or simulation activities offered either by themselves or as supplements to traditional, teacher directed instruction
9. **Cooperative learning:**
  - Students interact in purposely structured heterogeneous group to support the learning of oneself and others in the same group.
10. **Classroom discussion:**

- Whole class discussion of a topic

**11. Drill and practice:**

- Promotes the acquisition of knowledge or skill through repetitive practice

**12. Generating and testing hypotheses:**

- Asking students to predict what will happen and then conducting a test/experiment

**13. Identifying similarities and differences – comparisons, contrasts**

## APPENDIX E: FOCUS GROUP INTERVIEW PROTOCOL

Welcome everyone! I want to begin by thanking you for attending this focus group interview today. Your participation is completely voluntary and appreciated. The goal of this interview is for us to discuss the direction of a technology integration professional development that will meet your needs. Your experiences and insights are important in this process. I encourage you all to openly share your thoughts, ideas, and experiences, so that we may collaborate on the design and implementation of any future actions. The interview should last approximately 30-45 minutes. I will ask a series of open-ended questions as a guide for our discussion. I will be recording the interview for later transcription. Are there any questions before I begin?

1. Why is it important for us to use technology in our teaching and with our students?
2. In what ways can we utilize technology to support our teaching and our students' learning?
3. How are we currently using technology?
  - a. Is it working?
  - b. What more could be done?
4. What barriers do you face in utilizing technology in your teaching and how can you overcome these barriers?

5. What knowledge or skills do we need in order to better utilize technology for teaching and learning?
6. If we designed a technology training or professional development in technology integration, what would our goals be?
7. Describe an ideal model for a professional development, something you would attend and that would benefit you. This could be a one time workshop, a series of workshops, an online course, a hybrid model, and/or peer coaching and mentoring.
8. Is there anything else that you would like to add about your experiences with technology, professional development, and/or suggestions for the technology integration training?

## APPENDIX F: PERMISSION FROM PNWCC TO CONDUCT RESEARCH

Courtney Cunningham  
<ccunningham@cgcc.edu  
u>

### Dissertation Research Approval- Courtney Cunningham

**Courtney Cunningham** <ccunningham@cgcc.edu>

Tue, Jul 30, 2019 at 4:28 PM To: Marta Yera Cronin <mcronin@cgcc.edu>

Greetings Dr. Cronin,

My name is Courtney Cunningham and I am an instructor in the ESOL department at [REDACTED]. I am also an online doctoral student at the University of South Carolina, where I am working towards an EdD in Curriculum & Instruction--Educational Technology concentration.

I am writing regarding my dissertation research approval. I am planning to conduct my action research within in the ESOL department, where I will be exploring the needs, practices, and attitudes toward technology of the instructors, in order to make recommendations for professional development in technology integration.

Here is a brief description of the study:

The proposed research will explore the needs, current technology integration practices, and attitudes toward technology of the English to Speakers of Other Language instructors at [REDACTED] Community College in order to make recommendations for professional development (PD) in technology integration. The following research questions will guide the study: 1) What are the needs (i.e., felt, normative, anticipated) of the ESOL instructors at [REDACTED] regarding technology integration? 2) What are the current technology integration practices of the ESOL instructors at [REDACTED]? 3) What are the current attitudes toward technology of the ESOL instructors at [REDACTED]? 4) How should a technology integration training be developed and implemented to best support instructors in increasing their technology

integration practices?

Using an interpretive-descriptive qualitative design, this action research study will collect data in the form of a survey, classroom observations, one-on-one instructor interviews, a focus group interview, and an action research journal. Acting as a needs analysis, these qualitative data will be analyzed inductively in order to make recommendations, in collaboration with the ESOL faculty at [REDACTED], regarding PD in technology integration.

The University of South Carolina IRB requires email approval from my institute to conduct the research. I am writing to seek formal permission from you to conduct this study.

If you could respond back to this email stating permission for me to conduct the proposed research, it would be most appreciated. I'm eager and enthusiastic to proceed with my study.

I'm happy to answer any questions you may have.

Thank you,  
Courtney Cunningham

Courtney Cunningham  
<ccunningham@cgcc.edu>

## Dissertation Research Approval- Courtney Cunningham

**Marta YeraCronin**

<mcronin@cgcc.edu>

Tue, Aug 6, 2019 at 11:08 AM To: Courtney Cunningham <ccunningham@cgcc.edu>

Hi Courtney,

Sounds like an interesting research project. You have my approval.

I look forward to seeing your results.

Dr. Cronin

[Quoted text hidden]

APPENDIX G: UNIVERSITY OF SOUTH CAROLINA IRB APPROVAL



OFFICE OF RESEARCH COMPLIANCE

**INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH  
APPROVAL LETTER for EXEMPT REVIEW**

Courtney Cunningham  
[REDACTED]

Re: **Pro00091635**

Dear Courtney Cunningham:

This is to certify that the research study *Exploring the Needs, Practices, and Attitudes Toward Technology Integration of Community College ESOL Instructors: Recommendations for Professional Development through Action Research* was reviewed in accordance with 45 CFR 46.104(d)(2) and 45 CFR 46.111(a)(7), the study received an exemption from Human Research Subject Regulations on **8/5/2019**. No further action or Institutional Review Board (IRB) oversight is required, as long as the study remains the same. However, the Principal Investigator must inform the Office of Research Compliance of any changes in procedures involving human subjects. Changes to the current research study could result in a reclassification of the study and further review by the IRB.

Because this study was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

All research related records are to be retained for at least three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). If you have questions, contact Lisa Johnson at [lisaj@mailbox.sc.edu](mailto:lisaj@mailbox.sc.edu) or (803) 777-6670.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lisa M. Johnson".

Lisa M. Johnson  
ORC Assistant Director and IRB Manager



## APPENDIX H: CONSENT FORM

### UNIVERSITY OF SOUTH CAROLINA

#### CONSENT TO BE A RESEARCH SUBJECT

**Study Title:** Exploring the Needs, Practices, and Attitudes Toward Technology Integration of Community College ESOL Instructors: Recommendations for Professional Development through Action Research

#### KEY INFORMATION ABOUT THIS RESEARCH STUDY:

You are invited to volunteer for a research study conducted by Courtney Cunningham. I am a doctoral student in the Educational Technology program in the Department of Educational Studies, at the University of South Carolina. The purpose of the proposed action research (AR) will be to explore and describe the needs, technology integration practices, and attitudes toward technology of the English to Speakers of Other Language (ESOL) instructors at [REDACTED], in order to recommend and plan for professional development opportunities to meet their needs. You are being asked to consent to participate in this study because you are ESOL faculty at [REDACTED].

Research has established both the importance of integrating technology in English language learning and the importance of properly training teachers in order to integrate technology effectively. Inadequate teacher and learner training is not allowing technology to be utilized to its fullest potential in the English language classroom. A portion of the problem is due to lack of training for practicing teachers. Professional development is a way to overcome barriers preventing successful technology integration. For professional development to be successful, it should cater to the specific needs of the instructors; it is therefore important to understand the needs of the instructors and to explore the different types of professional development that fits their needs. Acting as a needs analysis, this study will collect data in order to make recommendations in collaboration with the ESOL faculty at [REDACTED] regarding PD in technology integration.

#### PROCEDURES:

If you agree to participate in this study, you will do the following:

1. Complete an online survey taking approximately 10-15 minutes
2. Participate in a one-on-one interview for 30-45 minutes
3. Allow me to observe one of your classes for 30 minutes

4. Participate in a focus group interview for 45-60 minutes

**DURATION:**

The study will take place over the course of 12 weeks. Your times commitments have been specified above and will occur at various points during the 12 week period.

**RISKS/DISCOMFORTS:**

The only potential risk is the possibility of discomfort in being observed or interviewed. If you feel uncomfortable, you can withdraw from the study with no negative consequences.

**BENEFITS:**

This action research (AR) study is designed to determine the type of PD that will aid us, the instructors, in increasing our technology integration practices, for the betterment of our teaching and our students' learning. AR is a form of professional development. Therefore, participating in the study should result in stronger teaching practices through reflection and collaboration with peers. The study should result in more faculty interaction and partnership, which will ultimately benefit student learning.

**COSTS:**

There will be no costs to you for participating in this study.

**PAYMENT TO PARTICIPANTS:**

You will not be paid for participating in this study.

**VOLUNTARY PARTICIPATION:**

Participation in this research study is voluntary. You are free not to participate by excluding your data or declining to participate in the data collections. You may also stop participating at any time, for any reason without negative consequences and your grade in the course will not be affected. In the event that you do withdraw from this study, the information you have already provided will be kept in a confidential manner. If you wish to withdraw from the study, please call or email the principal investigator listed on this form.

I have been given a chance to ask questions about this research study. These questions have been answered to my satisfaction. If I have any more questions about my participation in this study, or a study related injury, I am to contact Courtney Cunningham at 828-242-5645 or by email at [cbc9@email.sec.edu](mailto:cbc9@email.sec.edu).

Questions about your rights as a research subject are to be directed to, Lisa Johnson, Assistant Director, Office of Research Compliance, University of South Carolina, 1600 Hampton Street, Suite 414D, Columbia, SC 29208, phone: (803) 777-6670 or email: [LisaJ@mailbox.sc.edu](mailto:LisaJ@mailbox.sc.edu).

I agree to participate in this study. I have been given a copy of this form for my own records.

If you wish to participate, you should sign below.

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Signature of Subject / Participant

---

Date