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Perceived Obstacles by ESL Instructors and Required Support for the Integration of Educational Technology

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PERCEIVED OBSTACLES BY ESL INSTRUCTORS AND REQUIRED SUPPORT FOR THE INTEGRATION OF EDUCATIONAL TECHNOLOGY

A Dissertation Presented

to

The Faculty of the School of Education Department of Learning and Instruction

In Partial Fulfillment

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Doctor of Education

by

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ABSTRACT

Perceived Obstacles by ESL Instructors and Required Support for the Integration of Educational Technology

Nowadays, the use of technology has become a significant part of the language learning process inside and outside of the classroom. Many previous studies and surveys, most language educators hold a relatively positive attitude to the usage of technology in language teaching and learning. But many other studies also found that language teachers were not really using technology in their classrooms, or only for very low-level learning and teaching. The integration of technology in second language learning and teaching is still a problem that has not been fully researched.

This descriptive study was designed to explore the obstacles that prevent ESL instructors from integrating technology into their teaching practice and gain a deep understanding of ESL instructors' needs and expectations for technology use in the language classrooms in the community colleges. Findings suggest that most ESL instructors hold a relatively positive attitude toward integrating technology into language teaching, but at the same time they did encounter many obstacles and difficulties in the technology integration process. Lack of time, tools/technology not working as expected, and inadequate equipment were three main obstacles identified by the survey data. The qualitative interview data further confirms and explains the results of the survey, and at the same time brings new findings and a deeper understanding of the reasons behind the surface problems. Lack of necessary technology skills, generation gap, and neglect of ESL students' perspectives were brought up

in the interviews. At the same time, ESL instructors' needs and expectations for technology in their classrooms were well addressed as well.

This dissertation, written under the direction of the candidate's dissertation committee and approved by the members of the committee, has been presented to and accepted by the Faculty of the School of Education in partial fulfillment of the requirements for the degree of Doctor of Education. The content and research methodologies presented in this work represent the work of the candidate alone.

Xiaotian Zhang — May 13, 2021
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CHAPTER ONE

INTRODUCTION

Statement of the Problem

For the education and schooling system, this is a significant time. Just as Collins and Halverson (2018) asserted in their *Rethinking Education in the Age of Technology: The Digital Revolution and Schooling in America*:

> "We are in the midst of a great opportunity to redefine the relation of education and schooling….This is a time of opportunity for educators -- one that we have not faced in more than 150 years." (p.121)

We are in the midst of this transition time. What technology will bring to education and how to apply technology appropriately in learning and teaching has been a heated topic in recent years.

Many studies are optimistic about the future and prospects that technology can bring to education (Cioffari, 1967; Perren et al, 1970). Vincenzo Cioffari (1967) wrote: "The most striking advances will be brought about by technology -- language laboratories will be tailored to individual needs, and present limitations will be overcome" (p. 14). Many other linguists also believe that by the development of technology, the two significant issues will be addressed and resolved. The first one is the difficulty of building an authentic language environment for learners, and the second one is to find a more effective one to drill language (Cioffari, 1967; Perren et al, 1970).

Perren et al (1970) also summarized the reasons why technology should be included in language teaching and learning. Firstly, today's students expect technology aids to be used in

classrooms. Because with the development of technology, students are getting used to the usage of technology in all aspects of life. They are taking technology as part of their daily lives. Secondly, our language teachers are trained for the next 30 years instead of just now. Based on the speed of development of technology, it's hard to predict where technology will bring us ultimately. Therefore, there is a strong need to encourage our language teachers to start to include technology in their classrooms now and prepare them for the future.

Nowadays, the use of technology has become a significant part of the language learning process inside and outside of the classroom (Ahmadi, 2018). In recent years, among many educators, there is a consensus that the application and usage of the technological environment can increase meaningful learning, self-monitoring, and social interaction (Lam, 2009; Chandler-Olcott & Mahar, 2003). Moreover, another consensus is that the combination of technology and education can increase students' learning performance, productivity, and learning outcomes, which are all significant to students' success (U.S Department of Education, 2010).

Both technology enthusiasts and skeptics agree that a knowledge revolution is coming with the development of technology. How to take advantage of technology and how to apply it appropriately into learning and teaching is the most significant problem we face and to resolve (Collins & Halverson, 2018). The integration of technology in second language learning and teaching is still a problem that has not been fully researched (Chamorro & Rey, 2013).

The number of public-school students who were identified as English language learners (ELLs) is nearly 5 million in the United States in Fall 2016, based on the most updated data from the National Center for Education Statistics. Based on the report, California has the highest share of English language learners among its students in public schools, with a

percentage of 22.2% in Fall 2016 (NCES, 2019). California, the most diverse state, has around 1.3 million ELL students. How to help these students develop their English skills and then achieve academic success is a big concern for most English as a Second Language (ESL) teachers. Based on many studies and surveys, most language educators hold a relatively positive attitude to the usage of technology in language teaching and learning (Lam, 2009; Kern, 2006; Chandler-Olcott & Mahar, 2003).

But a deep incompatibility has been uncovered between the traditional schooling system and the new technology by the history of recent public schools. Many teachers feel that technology makes teaching harder. Most schools are keeping the new technology on the outside boundary of the core teaching practice (Collins & Halverson, 2018). Some educators argue that teachers have to be conscious of the usage of technology in their classrooms (López-Estrada et al, 2018).

Based on many studies and surveys, most language educators hold a relatively positive attitude to the usage of technology in language teaching and learning (Lam, 2009; Kern, 2006; Chandler-Olcott & Mahar, 2003). But many other studies also found that language teachers were not really using technology in their classrooms, or only for very low-level learning and teaching (Chamorro & Rey, 2013). What prevents language educators from using technology to improve their teaching and learners' learning? How to integrate the application of technology into second language learning and teaching and what language teacher's real attitude toward the usage of technology are still problems that need to be studied more. Therefore, the purpose of this study is to explore what obstacles prevent ESL instructors from applying technology in teaching English and what kind of technology can be applied in ESL

classrooms to better support ESL teachers in helping students acquire a second language in the community college.

Purpose of the Study

The current study is determined to explore the obstacles that prevent ESL instructors from incorporating educational technology in their language teaching and also to find out what kind(s) of support and technology can be applied in ESL classrooms to better support English teaching and learning in the community colleges. This study extended previous related research in three ways. First, this study specifically focused on ESL instructors and English language teaching compared to previous studies with a wider focus on higher education instructors from various disciplines. In higher education, the community college instructors teach full time, whereas, for most university instructors, teaching is only part of their responsibilities. Because of this, community college instructors seem to be a better population to use to understand the relationship between language teaching and technology incorporation. Second, this study is based on a combination of TAM3 and MBIT instruments to explore instructors' perceived obstacles in more comprehensive detail. Thirdly, this study used an explanatory sequential mixed-methodology design (Creswell, 2014) focusing on community college instructors, who don't usually have research burdens compared to other higher education instructors.

Therefore, the purpose of this study is to identify the obstacles preventing community college ESL instructors from applying educational technology in teaching English and how to better support them in integrating educational technology into their teaching in the Bay Area, California. This study applied an explanatory sequential mixed-method approach to achieve its

purpose and gain a deeper understanding of the relationship between language teaching and educational technology application.

The explanatory sequential mixed-methods design consists of two phases. During the first phase, the quantitative data were collected through an online survey. The survey link was sent to 81 ESL instructors from four community colleges in the Bay Area.

And, in the second phase, qualitative data were collected through individual semi-structured interviews. 7 of the total ESL instructor participants of phase 1 were selected and invited to participate in the second phase of the study. The overall purpose of this design is to use the qualitative data to help explain the initial quantitative results in more detail and to provide a deeper understanding of the relationship between language teaching and technology incorporation (Creswell, 2014).

Significance of the study

Nowadays, the use of technology has been regarded as a significant part of the language learning process inside and outside of the classroom (Ahmadi, 2018). According to Tamin et al.'s (2011) summarization of the past 40 years of studies, the usage of proper technology can engage students more and improve academic achievement. Both technology enthusiasts and skeptics agree that a knowledge revolution is coming with the development of technology. How to take advantage of technology and how to apply it appropriately into learning and teaching is the most significant problem we face and to resolve (Collins & Halverson, 2018).

Teachers are acting as the change agents in the transition from traditional classrooms to modern classrooms. However, in terms of language teaching, most language teachers only use technology to provide basic and relatively low-level practice for students (Chamorro & Rey,

2013; Tondeur, van Braak, & Valcke, 2007b). Given that language teachers' role is critically significant in the transition for technology integration in language teaching and schools, it's necessary to explore and understand the obstacles and barriers that prevent teachers' application of technology in their teaching (Teo, 2008).

Most previous studies exploring perceived barriers to technology integration into teaching have done so without a specific focus discipline (Mercader, 2020; R. Romero, I. Riquelme & C. Halal, 2019; Kunda, Chember & Mukupa, 2017; Buchanan, Sainter, & Saunders, 2013). Also, some researchers have analyzed the barriers at all levels of education, especially in the context of secondary education (González-Sanmamed et al. 2017; Área-Moreira et al. 2016; Hew and Brush, 2007). Little research has been done focusing on language teaching and using higher education language instructors. What's more, most previous studies just rely on a single technology acceptance model, like TAM (Holden and Karsh, 2009), yet there are relatively few studies that rely on a combination of 2 models. There are no known studies based on the Model of Barriers to the Incorporation of Digital Technologies (MBIT) to explore language instructors' perceptions of technology integration into language teaching. This mixed-methods study is significant because it bridges the gaps mentioned above.

This study extended previous related studies by (a) specifically focusing on language teaching and using language instructors as the research participants, (b) basing on a combination of two technology incorporation models, which include TAM3 and MBIT, and (c) conducting an explanatory sequential mixed-methodology design (Creswell, 2014) focusing on community college instructors instead. Moreover, this study extended previous studies by exploring language instructors' perceptions of good educational technology and

expectations of future technology support in language teaching. Understanding the perceptions of language teachers can provide a way to address the barriers and provide support to teachers more effectively.

At this time, the whole world is experiencing an unprecedented pandemic, the COVID-19 pandemic, which is a severe global health crisis for us right now. The new virus has spread to every continent (except Antarctica) since its emergence in 2019. The COVID-19 is much more than a global health crisis, it is also a severe global socio-economic crisis. Everyone is under the stress brought by the pandemic without knowing when normality will come back. People have to adapt to working from home, homeschooling their children, and keeping social distance from other people. All public schools in California had transferred to online teaching since March 2020. All ESL instructors in the community colleges had to transfer to online teaching with very short notice last March, which makes the current study more difficult and necessary to be conducted.

Theoretical framework

The grounding framework of this study is the combination of the Technology Acceptance Model (TAM) and the Model of Barriers to the Incorporation of Digital Technologies (MBIT). TAM is a theoretical approach that explores the rationales and processes of acceptance and actual usage of new technology by different people (Davis, Bagozzi, & Warshaw, 1989). MBIT is an explanatory model to identify both barriers and factors that influence the incorporation of technology into higher education teaching and learning (Mercader, 2020). Both TAM and MBIT are exploring the possible factors that influence an individual's actual use of technology, but they do have some differences. Compared to TAM, MBIT focuses more on higher education and explores more detailed

factors, while TAM focuses on the general acceptance of new technologies and explores at a more cognitive level. Let's take a closer look at what TAM is and how TAM works firstly.

Technology Acceptance Model (TAM)

TAM was one of the first models to use cognitive factors to analyze technology acceptance and usage in an array of areas (Davis, 1989). TAM focuses on new technologies' perceived usefulness and perceived ease of use as the primary determinants of the acceptance and actual use by various users (Jeffrey, 2015). Over the past three decades, TAM has gained a lot of attention and been intensively expanded and continuously studied. There also have been substantial empirical studies that are in favor of TAM (Karahanna, Agarwal, & Angst, 2006; Venkatesh et al., 2003, 2007). The development of TAM has been sound and rational, from the initial TAM that only includes the 2 major determinants Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), to the extended models that started to explore more determinants for the two major determinants and the connections and interactions between them. In the past three decades, TAM3, TAM2 (Venkatesh & Davis, 2000 & Venkatesh, 2000), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) are the major extended versions of the initial TAM.

For the current study, the researcher mainly focused on the TAM instead of the UTAUT since compared to TAM, UTAUT is more difficult to test (Scherer, Siddiq, & Tondeur, 2019). Despite the various models, TAM is the most popular and commonly used model to describe technology acceptance for various research areas (Marangunić & Granić, 2015; Scherer, Siddiq, & Tondeur, 2019).

Initial TAM

The initial version of TAM (see Figure 1) was first developed by Fred Davis and his colleagues in 1989.

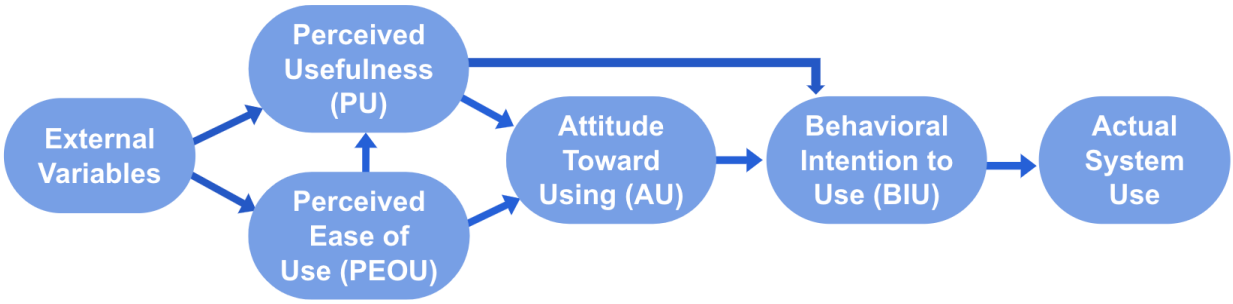

Figure 1: Technology Acceptance Model (TAM) from Davis, 1989.

The initial version of the TAM mainly focused on two primary parts affecting people's intention to actually use new technologies: Perceived usefulness (PU) and Perceived ease of use (PEOU) (Schair & Willis, 2016). PU and PEOU will influence an individual's attitude towards using (AU) new technologies. Each individual's positive or negative AU will directly affect his or her behavioral intentions to use a technology (BIU). Therefore, PU and PEU could indirectly influence people's BIU for technology usage (Walker, Kho, Tan & Lim, 2020). The primary goal of the initial TAM is to forecast the acceptance of new technology among different people and identify potential design problems of the new technology (Mun et al., 2006). Table 1 displays the definitions of the initial TAM.

Table 1. Definitions of the initial Technology Acceptance Model

Term	Acronym	Definitions
Perceived Usefulness	PU	The extent to which a user believes that new technology will enhance his/her performance and effectiveness
Perceived Ease of Use	PEOU	The extent to which a user believes that using new technology will be free from the effort on his/her expense
Attitude toward Use	AU	A user's positive or negative attitude to the usage of new technology
Behavioral Intention to Use	BIU	A user's attitude and formulated plans to use new technology

Note: Adapted from (Davis, 1989).

TAM2

TAM2 (see Figure 2) was developed based on the initial TAM by Venkatesh and Davis in 2000. Compared to the initial TAM, TAM2 explores more in both cognitive instruction processes and social influence processes (Venkatesh and Davis, 2000).

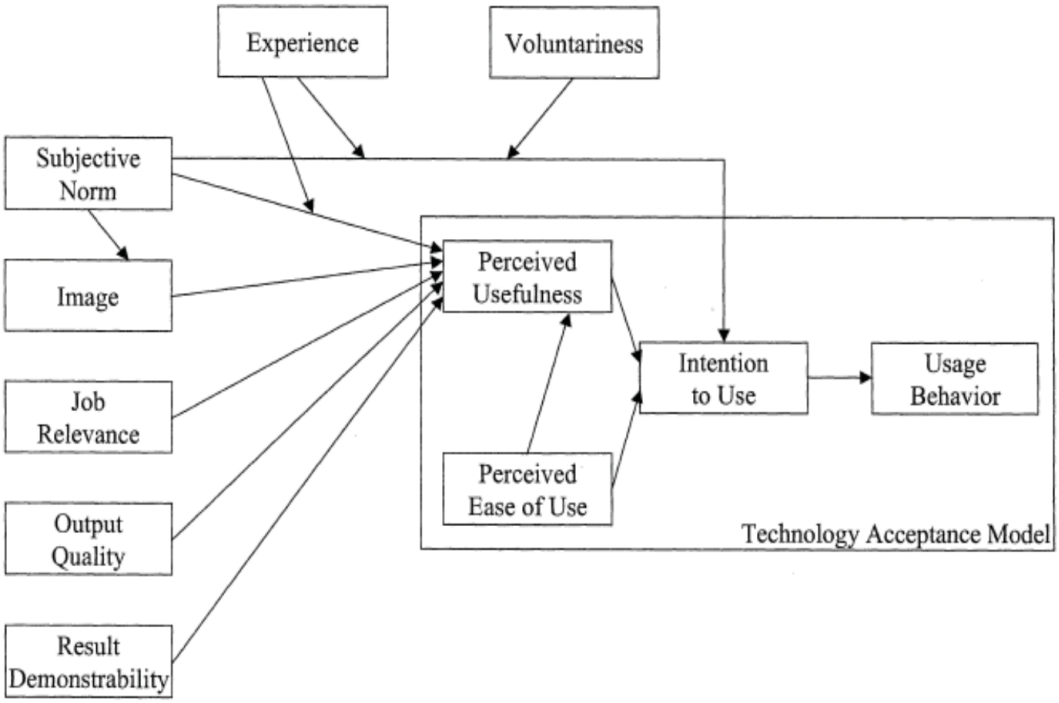

Figure 2:Technology Acceptance Model 2 from Venkatesh and Davis, 2000.

Many research studies have pointed out that the influence of an array of social factors such as social influence and job relevance can significantly affect the users' intention and behavior towards the acceptance of new technologies (Kamal et al., 2020). Many researchers argued that various external variables would affect users' perceived usefulness and perceived ease of use directly or indirectly, thus affecting users' actual behavior (Venkatesh & Bala, 2008). Using the initial TAM as a skeleton, TAM2 extended TAM by including more other external variables analysis, such as subjective norm, social influence, voluntariness, image, job relevance, output quality, and result demonstrability (Venkatesh and Davis, 2000). Table 2 displays the definitions of TAM2.

Table 2. Definitions of the Technology Acceptance Model 2

Term	Definitions
Subjective Norm	People's perception that the people who are significant to them believe they should or should not perform a certain behavior in question
Voluntariness	The degree to which potential users perceive the usage decision to be voluntary
Image	The extent to which the adoption of new technology is believed to improve one's certain status within one's social environment
Job Relevance	The degree to which the users perceive the new technology is relevant to his or her job
Output Quality	The degree to which how well the new technology could perform on relevant tasks
Result Demonstrability	"Tangibility of the results of using the innovation" (Moor & Benbasat, 1991, p.203)

Note: Adapted from (Venkatesh and Davis, 2000).

TAM3

Many researchers agree that the TAM and TAM2 are useful models but believe that it could be upgraded to a broader and more comprehensive framework to address more social and human determinants of PU and PEOU (Legris, Ingham, and Collerette, 2003).

Venkatesh (2000) developed a model called the determinants of perceived ease of use based on the "anchoring and adjustment framing of human decision making" (Venkatesh and Bala, 2008, p. 278). Based on the frame determinants of perceived ease of use and TAM2, Venkatesh and Bala (2008) developed a more integrated technology acceptance model, which is known as TAM3 (see Figure 3). Venkatesh and Bala (2008) developed the TAM3 based on four dimensions, which include the facilitating conditions (external support to facilitate the

application of new technologies), individual differences (personality and demographics), social influence (different social mechanisms and processes), and system characteristics (salient features of a system that can directly affect users' using experience positively or negatively). Compared to TAM and TAM2, TAM3 explores more deeply the determinants that influence PEOU of new technologies, which helps TAM3 to perform a more comprehensive logical connection of the determinants of people's new technology acceptance and adoption (Lai, 2017; Jeffrey, 2015; Venkatesh and Bala, 2008).

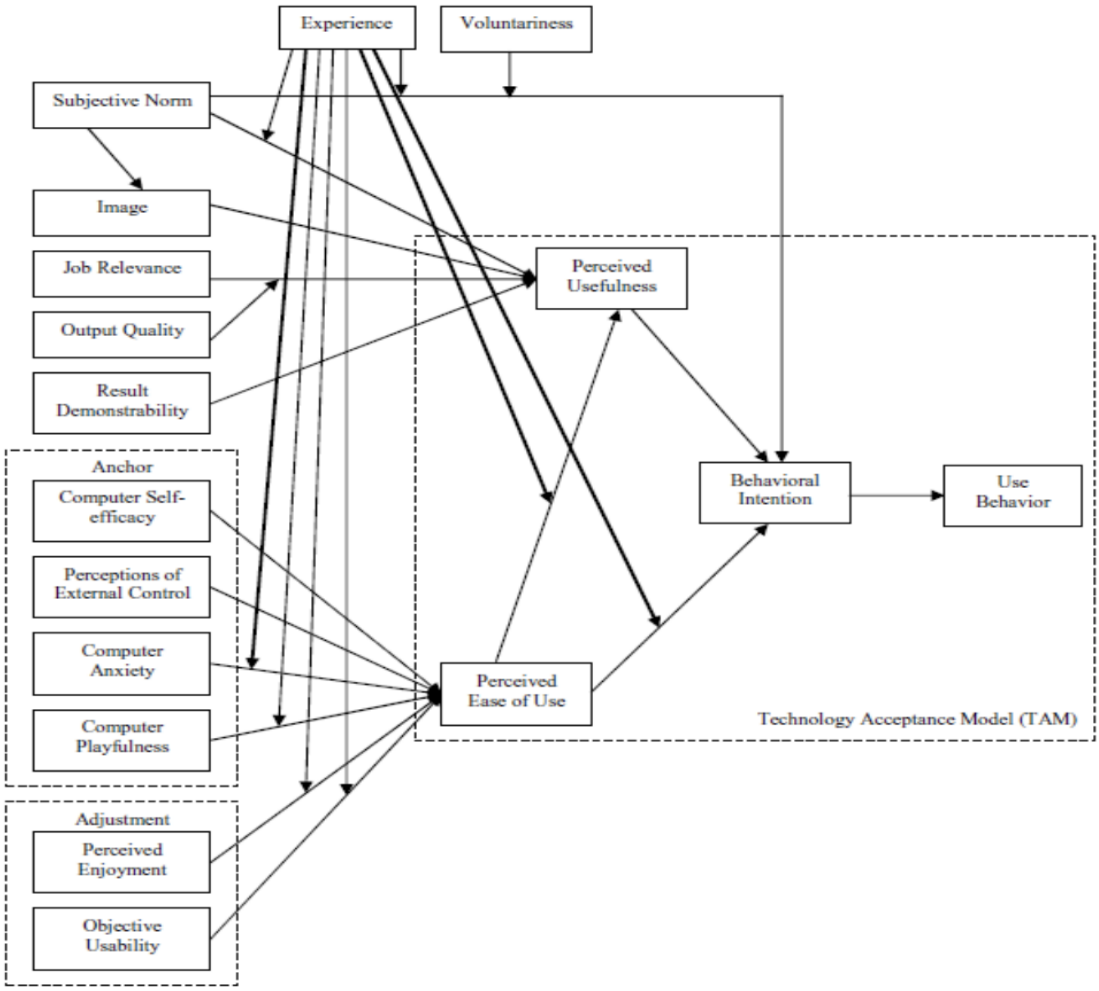

Figure 3:Technology Acceptance Model 3 from Venkatesh and Bala, 2008.

Based on the model of determinants of perceived ease of use, an individual will develop an early perception toward the perceived ease of use of a new technology depending on several anchoring factors related to his/her general beliefs about computers and technology use (Venkatesh, 2000). According to Venkatesh (2000), the anchoring factors include computer self-efficacy, perceptions of external control (facilitating conditions), computer anxiety, and computer playfulness. Computer self-efficacy, computer anxiety, and computer playfulness represent individual differences, which refer to an individual's general beliefs about computers and technology use.

Venkatesh (2000) also stated that the anchoring factors related to individuals' "initial judgments of perceived ease of use" (Venkatesh and Bala, 2000, p. 278); therefore, these judgments would be adjusted by individuals after they get some practical experience with the new technology. With the increasing experience with the new technology, the effect of computer self-efficacy and perceptions of external control will still be strong, while the role of the other two anchoring factors (computer playfulness and computer anxiety) will be weaker over time. After individuals gain direct experience with the new technology, the system characteristics-related adjustments (perceived enjoyment and objective usability) would play an important role in developing an individual's perception of perceived ease of use of the new technology (Venkatesh, 2000). Table 3 displays the definition of the determinants of perceived ease of use.

Table 3. Definitions of Perceived Ease of Use (TAM3)

Determinants	Definitions
Computer Self-Efficacy	The extent to which a user believes that he or she is able to perform a specific task/job using computers (Venkatesh & Bala, 2008).
Perception of External Control	The extent to which a user believes that organizational and technical support facilitates the use of the system (Venkatesh & Bala, 2008).
Computer Anxiety	The extent of "an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers" (Venkatesh, 2000, p. 349).
Computer Playfulness	The extent of "cognitive spontaneity in microcomputer interactions" (Venkatesh & Bala, 2008, p. 279).
Perceived Enjoyment	The degree to which "the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use" (Venkatesh, 2000, p. 351).
Objective Usability	A "comparison of systems based on the actual level (rather than perceptions) of effort required to completing specific tasks" (Venkatesh, 2000, pp. 350–351).

Note: Adapted from (Venkatesh and Bala, 2008).

In TAM 3, Venkatesh and Bala (2008) proposed three new interactions: Experience affecting the influence of Computer Anxiety to Perceived Ease of Use (with experience increasing, the influence of Computer Anxiety on PEOU will be weaker), Experience affecting the interaction from Perceived Ease of Use to Perceived Usefulness (with experience

increasing, the influence of PEOU on PU will be bigger), and Experience affecting the influence of Perceived Ease of Use to Behavioral Intention (with experience increasing, the influence of PEOU on Behavioral Intention will be weaker). Moreover, Venkatesh and Bala (2008) stated that the determinants of PEOU will not affect PU, and the determinants of PU will not affect PEOU, therefore, there are no cross-over effects posited in TAM3.

Model of Barriers to the Incorporation of Digital Technologies (MBIT)

Model of Barriers to the Incorporation of Digital Technologies (MBIT) is a new explanatory model, developed by Mercader in 2020, to identify both barriers and factors that influence higher education instructors' use of technologies in university teaching. Mercader (2020) stated that whereas the TAM does explore some of the potential factors that influence the technology incorporation process, it is deficient to explain the specific obstacles that exist in higher education situations. Therefore, Mercader (2020) developed the MBIT as an explanatory model primarily based on higher education instructors and higher education situations.

Mercader (2020) classified the barriers that block the integration of technology into higher education into four areas: personal, professional, institutional, and contextual. Personal and professional barriers are regarded as internal barriers, while institutional and contextual barriers are referred to as external barriers (Mercader, 2020). Based on the MBIT, personal barriers (technophobia, lack of motivation, generational gap) refer to the obstacles that the person generates by himself/herself and can be solved on his/her own; professional barriers (pedagogical conceptions, lack of training, lack of time, ignorance of methods of teaching with technology) refer to the obstacles that are directly related to individual instructors, but also closely related to their profession; institutional barriers (poor infrastructure quality, lack of

infrastructure, absence of planning, lack of institutional support, ineffective/no leadership, untimely training, lack of incentives, inadequate training, lack of evaluation) refer to the organizational aspects; contextual barriers (constant evolution of tech, work saturation, university model) refer to the obstacles related to the environment and the social context.

Mercader (2020) stated that except from the obstacles, certain factors would also affect the integration of technology in higher education, such as instructor's age, gender, teaching experience, and level of technology competence. Combining the classified barriers and the potential factors, Mercader (2020) developed an explanatory Model of Barriers to the Incorporation of Digital Technologies (MBIT) in higher education. Figure 4 displays the MBIT model. All barriers are displayed in a clockwise manner from personal area, professional area, institutional area, to contextual area.

Because the primary purpose of this study is to explore the potential obstacles and barriers for ESL instructors in incorporating technology into their teaching, therefore, the current study only focused on the barriers classified by Mercader (2020) and didn't test the objective factors (discipline, gender, experience, digital skills, and training) that are cited in the development of MBIT.

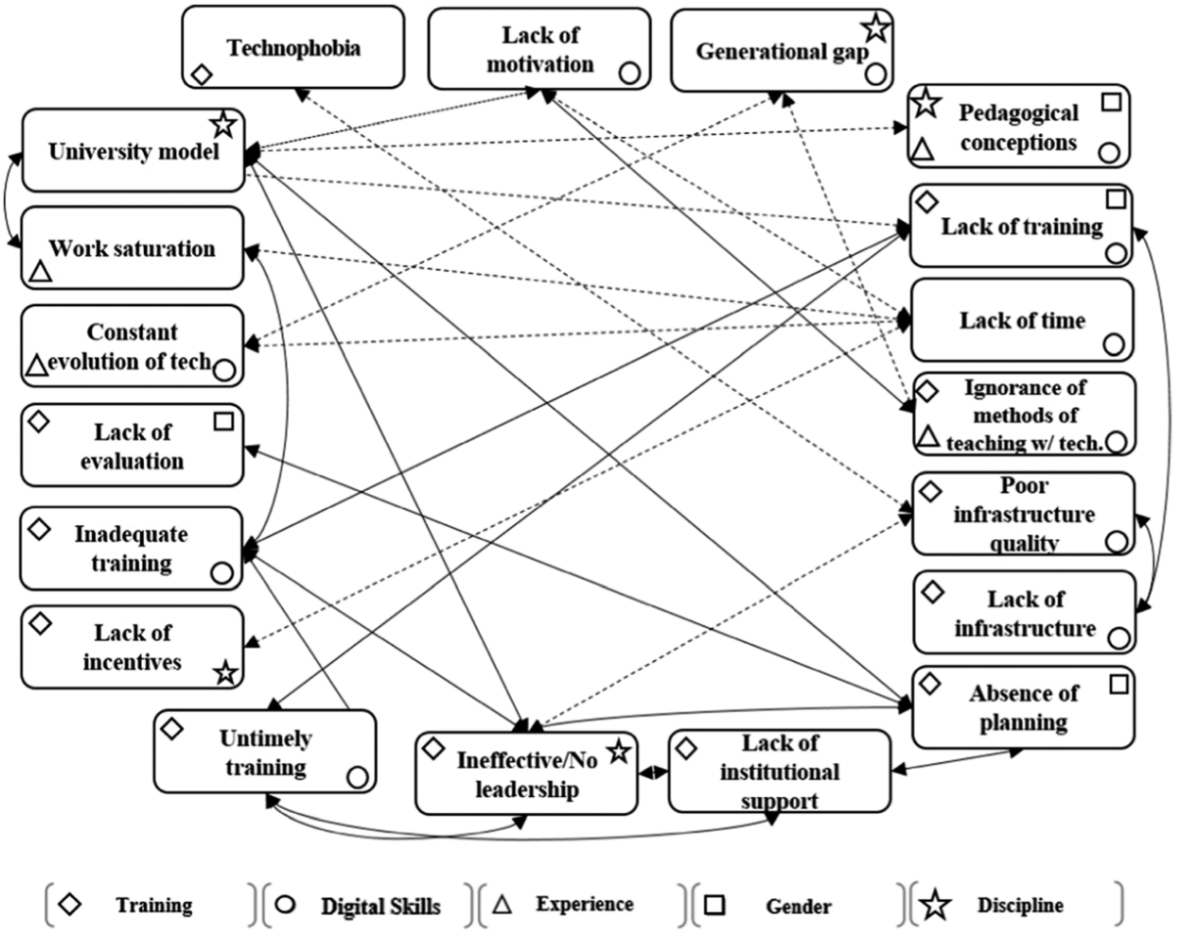

Figure 4:Explanatory Model of Barriers to the Incorporation of Digital Technologies (MBIT) from Mercader, 2020

For the current study, a combination of TAM3 and MBIT was employed in designing the research procedures. TAM3 is the most updated TAM model and provides a comprehensive framework to explore what factors influence college ESL instructors' use of classroom technology, while compared to TAM3, MBIT provides a more detailed barrier classification and focuses specifically on higher education. Also, there are a lot of similarities between these two models, Figure 5 displays the connections between TAM3 and MBIT. Based on Figure 5, we can see that TAM3 is a more general and comprehensive model

compared to MBIT, whereas MBIT is more detailed and specifically focuses on higher education situations.

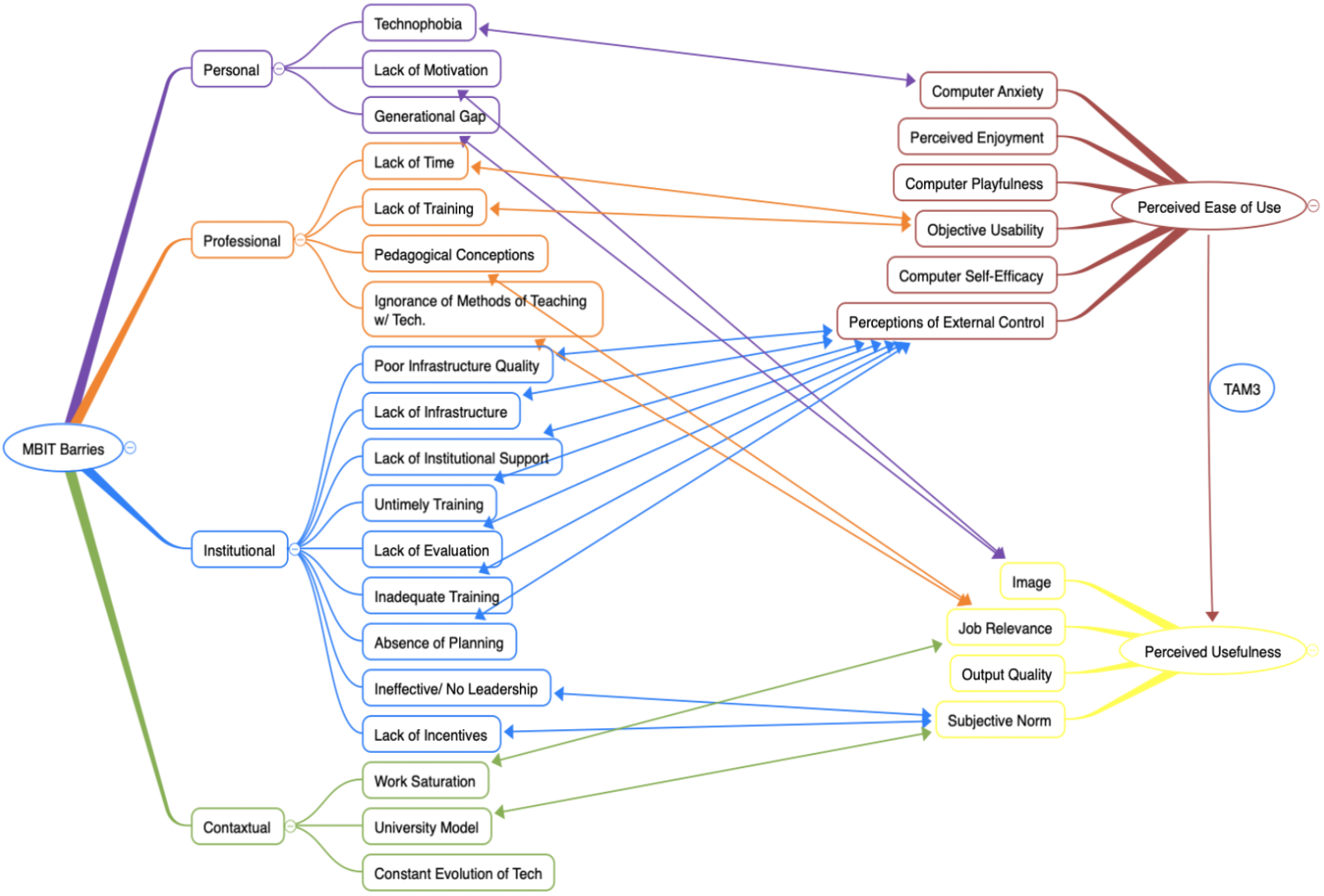

Figure 5:Connections between TAM3 and MBIT

Background and Need

Technology reaches almost every space in the world. People today think and act significantly differently from those of past centuries, due partly to the upgraded and different tools - technology - we are using to perform various tasks and our jobs (Ertmer & Ottenbreit-Leftwich, 2010).

Regarding education, there are two main trends observed in the last decade: first, educators and instructors are encouraged to integrate technology into their curriculum and teaching to facilitate student learning (Shute & Rahimi, 2017; Scherer, Siddiq, & Tondeur, 2019); second, educational institutions and systems are adding students' digital competencies into curriculum and assessments (Siddiq, Hatlevik, Olsen, Throndsen, & Scherer, 2016; Scherer, Siddiq, & Tondeur, 2019). Helping students become digitally literate has become a designated aim of the recent education system (Scherer, Siddiq, & Tondeur, 2019). In order to fulfill this goal, many researchers believe that the integration of technology into the education system is necessary, and technology should also be integrated into daily teaching and learning approaches, instructions, and standard curriculums (Yeop, 2019; Rahman, Yunus, & Hashim, 2019).

In this development, teachers' role in combining the usage of technology to learning and teaching is fundamental (Chamorro & Rey, 2013). Moreover, the way technology is integrated into the education system primarily depends on the teachers (Marshall & Cox, 2008; Farjon, Smits, & Voogt, 2018). It is more than important for teachers to integrate technology into their teaching with extra care and thought since they are playing a significant role in this technology integration development (Farjon, Smits, & Voogt, 2018).

Therefore, to what degree do teachers integrate technology into their teaching and how they integrate technology into their teaching practice has been a research focus for a long time. In order to explore this question, more questions need to be addressed, such as what technologies are used in classrooms, what type of activities are integrated with technologies, and to what extent that teachers believe about the usefulness of incorporating technology into their teaching and how these beliefs influence teachers' actual use of technology (Chamorro & Rey, 2013).

Parr (1995) stated, "the way teachers use and feel about using computers in their classroom is influenced by both their beliefs about computers and the role of computers as well as their general educational beliefs" (p. 15). Similarly, Williams and Burden (1997) also conclude that teachers' beliefs can significantly influence the way they prepare their classes and the way they arrange and organize their classes. This statement is still true to some extent nowadays. Atkins and Vasu (2000) state that teachers' attitudes play an important role in the use of technology in their classrooms. Additionally, Zhao and Frank (2003) point out, it is not likely that a teacher will use technology in his or her classroom if he or she holds a relatively negative attitude towards technology.

Therefore, teachers' general attitude towards technology is a key factor associated with their actual use of technology. Many previous studies focusing on teachers' attitudes toward educational technology have shown that most teachers hold positive attitudes toward technology application in education (Seraji, Ziabari, & Rokni, 2017; Aksan & Eryilmaz, 2011; Dogruer, Eyyam, & Menevis, 2010; Rostami, 2010). Moreover, Sharpe (2004) and Tsitouridou & Vryzas (2004) believe that most teachers view technology integration as a significant strategy for developing teaching and learning.

Chamorro and Rey's (2013) study also shows that most language teachers hold a positive attitude toward technology and believe that the use of technology can improve students' learning, but they also find an inconsistency between the teachers' "saying" and their "doing". The results' of Seraji, Ziabari, and Rokni's (2017) study pointed out that most language teachers used technology primarily for teacher-centered instruction and activities.

Based on a national survey conducted by CDW Government, Inc (CDW-G) in 2006, more than 80% of the participants (K-12 teachers) believe that technology is a significant tool, and technology integration could enhance both teachers' teaching and students' learning performance. Among the teacher participants (n = 23,756), 88% of the subjects responded using technology for administrative basics, 81% of teachers reported using technology for teaching preparation, and 79% of the teachers reported that using technology in their teaching practice (CDW-G, 2006). Based on the results of the survey, we can easily identify the increased uses of technology for teachers in general. While after a close look at these data, many researchers assert that most reported uses are still focused on traditional, teacher-centered, and low-level teaching practices, such as using slides to lecture, searching the Web for information resources, other teacher-centered activities (Mad-dux & Johnson, 2006; Ertmer & Ottenbreit-Leftwich, 2010).

Based on the Horizon Report (Johnson et al., 2016), there is a lack of technology incorporation in classroom teaching, especially regarding the emerging and trending technologies such as BYOD (Bring Your Own Device) and virtual reality. When it comes to technology integration in higher education, Duart (2011) confirms the low usage of technology for teaching among higher education instructors compared to the more widespread use of technology in research. Many other researchers also confirm this low usage of technology in

higher education teaching and learning by pointing that most higher education instructors only use technology to support low-level learning, as the lecture session, not for the development of student-centered learning (Marcelo et al., 2015; Kedrova and Potemkin, 2015).

Mercader and Gairín (2017) also confirmed that most technology tools used by university instructors are the ones that support visual presentation and virtual platforms, which are all aimed to support instructors' lecturing, instead of involving students actively in the learning process. Many other studies also indicated that the use of technology in higher education is more focused on class preparation and administrative classroom management, but not for teaching use (Berzosa & Arroyo, 2016; Gumbau et al., 2016). Similarly, based on the observations from several studies, most language teachers only use technology to provide basic and relatively low-level practice for students, such as using slides to lecture, searching the Web for information resources, drilling practice, and extra practice on the same topic (Chamorro & Rey, 2013; Tondeur, van Braak, & Valcke, 2007b).

Another concern brought up is the inconsistency between teachers' beliefs and attitudes towards technology integration and their real teaching practices in the classroom. Chen (2008) stated in his study that "During the processes of data coding and analyses, I easily identified inconsistencies between participants' expressed beliefs in survey data and practices manifested in other sources of data" (p. 69) The results collected from the survey show that most participants regard technology as an important way to achieve constructivist instruction, but the data collected from observations and interviews show that most participants only used technology to support easy tasks, they did not use technology to support high-level instructions or constructivist instructions, which can facilitate students' problem-solving ability and collaborative learning (Chen, 2008).

Similar to Chen (2008), many scholars also addressed the significance of teachers' beliefs in the integration of technology into their teaching practice (Zhao & Cziko, 2001). Therefore, there is a need to explore teachers' real attitudes and beliefs toward the application of technology in classrooms before we go deep to explain this inconsistency. At the same time, exploring the relationship between teachers' beliefs toward the application and usage of technology in classrooms and what they really do in their daily teaching practice is also significant (Chamorro & Rey, 2013).

According to Chamorro and Rey's (2013) study, teachers do believe that the integration of technology can promote language learning and teaching practice, but they also state that "this awareness comes from the experiences they have had as basic users of technology rather than from the conscious learning of teaching strategies, concepts, and development opportunities to integrate technology in a proper way" (p. 63). Based on the results of the study, Chamorro and Rey (2013) state that teachers do believe technology is fundamental in language teaching and learning, and they also believe that using technology is a significant capacity in both professional and personal life. What's more, even many teachers state that they are using technology effectively in promoting interactive learning, but the observation results do not support this statement. From the observation, Chamorro and Rey (2013) noticed that most teachers favor the drill practice provided by the computer lab and didn't plan elaborate activities through technology. Chamorro and Rey (2013) conclude that most participant language teachers tend to prepare the same kind of practice and use the same technology tool over time, specifically the drilling language practices.

Exploring what prevents teachers from applying technology to their real teaching practice is the main focus of this study. Ertmer (2005) states that most teachers no matter

experienced teachers or preservice teachers contain limited knowledge and understanding of how to apply technology effectively into their teaching practice and prompt students' learning. Studies conducted by Hernández-Ramos (2019) states that although most higher education institutions, like universities and colleges, have quality technology resources, most of the resources are underutilized. This is partly due to the fact that the instructions only use technology for reproductive or presentation tasks, like making visual presentations and managing the learning management system (Mercader, 2020). What's more, higher education instructors' technological competence level is often intermediate or even lower (Mercader, 2020; Cuhadar, 2018).

According to Alonso, Plaza, and Orfali's (2019) study, problems of access to technology are identified as the primary barrier to the acceptance of new technology for higher education instructors. Their study also reveals a significant correlation between teachers' pedagogical beliefs and their acceptance of new technology. From this perspective, we can try to explore what kind of pedagogical beliefs positively associated with the acceptance of new technology and how some pedagogical beliefs intertwined with the use of technology (Tondeur, Van Braak, Ertmer, & Ottenbreit- Leftwich, 2017; Alonso, Plaza, & Orfali, 2019).

The Technology Acceptance Model (TAM) has dominated this research area for a long time. While, instead of basing on TAM, several researchers have used other ways to explore the possible factors that hold back the integration of technology in education, but most studies mainly focused on the contexts of primary and secondary education (Área-Moreira et al. 2016; González-Sanmamed et al. 2017; Mercader, 2020). Some studies have developed classifications by area. Among these classifications, the most widespread one is proposed by the British Educational and Communications Technology Agency (BECTA, 2004), which

identifies two kinds of obstacles: individual and institutional. Individual barriers include the obstacles caused by the person, while institutional barriers include the obstacles caused by the organization. Schulz et al. (2015) extended it into four parts: human factors, intrinsic values, requirements of the tool itself, and environmental factors.

Mercader (2020) classified the barriers that block the integration of technology into higher education into four areas: personal, professional, institutional, and contextual. Personal and professional barriers are regarded as internal barriers, while institutional and contextual barriers are referred to as external barriers (Mercader, 2020). Based on the results of Mercader's (2020) study, seven main obstacles were identified to digital technology incorporation in higher education: technophobia, lack of time, absence of planning, lack of incentives, lack of evaluation, work saturation, and university accreditation model. But there were few studies focusing on barriers that block the integration of technology into language teaching and language classrooms.

Wood et al. (2005) conducted a study focusing on teachers' perceptions of barriers and supports the use of technology in elementary and secondary classrooms. Based on the results of the survey of this study, Wood et al. (2005) state that "teacher's level of experience and comfort with technology" (p. 201) is one of the most important factors for the incorporation of technology into the classroom. Based on the results of the following focus-group discussion, Wood et al. (2005) identified the supports that teachers want most were "material resources, human resources, and training and professional development" (p.189).

Gilakjani (2013) conducted a study to explore the factors that contribute to teachers' use of technology in their classrooms. Based on the analysis of previous research, Gilakjani (2013) concluded that " self-efficacy influences the use of computer technology in teaching

and learning, teaching experience is related with the real usage of computer technology, lack of technical support stops teachers from using computer technology in their classrooms, computer technology has this potential to change teachers' teaching methods and training helps teachers to implement computer technology and change their teaching practices" (p. 265). In other words, improving teachers' self-efficacy, providing more technical support, and offering more technology training can contribute to teachers' use of technology in the classroom (Gilakjani, 2013).

Little is known about higher education language teachers' perceptions of barriers and necessary support to the incorporation of technology into their classrooms. Different from elementary and secondary teachers, teachers in higher education have more diverse and sophisticated students in their classrooms. Teachers in higher education might have more concerns when integrating technology into teaching compared to elementary and secondary teachers. Also, language teaching and learning is essentially different from other disciplines. It is necessary to focus on the higher education language instructors' perception of barriers and supports the incorporation of technology. Therefore, it is the aim of this study to determine what are the perceived barriers by the ESL instructors in community colleges and what kind of support they want most in the integration of technology into language teaching.

Research Questions

The purpose of this research is twofold: one is to identify the obstacles that prevent ESL instructors from applying classroom technology in teaching English and another is to find out how to address and lessen the impacts from the obstacles and what kind(s) of support can be applied in the language classrooms to better support English teaching and learning in the

community colleges of the Bay Area. Therefore, the current study posits two research questions.

1. What obstacles or barriers do ESL teachers perceive for integrating classroom technology into English as a second language teaching?
2. What kind of support do ESL teachers need to incorporate classroom technology into their English and a second language classroom?

Definition of Terms

Educational technology: a combination of computer software, computer hardware, and educational practice to facilitate learning

English as a Second Language (ESL): the study of the English language by non-native speakers in an English-speaking country

Technology Acceptance Model (TAM): a theory that models how users come to accept and use a technology

Explanatory Model of Barriers to the Incorporation of Digital Technologies (MBIT): an explanatory model of the barriers to technology incorporation into higher education teaching

Perceived Usefulness (PU): The extent to which a user believes that new technology will enhance his/her performance and effectiveness.

Perceived Ease of Use (PEOU): The extent to which a user believes that using new technology will be free from the effort at his/her expense.

Attitude toward Use (AU): A user's positive or negative attitude to the usage of new

technology

Behavioral Intention to Use (BIU): A user's attitude and formulated plans to use new technology

Subjective Norm: People's perception that the people who are significant to them believe they should or should not perform a certain behavior in question

Voluntariness: The degree to which potential users perceive the usage decision to be voluntary.

Image: The extent to which the adoption of new technology is believed to improve one's certain status within one's social environment.

Job Relevance: The degree to which the users perceive the new technology is relevant to his or her job.

Output Quality: The degree to which how well the new technology could perform on relevant tasks.

Result Demonstrability: "Tangibility of the results of using the innovation" (Moor & Benbasat, 1991, p.203)

Computer Self-Efficacy: The extent to which a user believes that he or she is able to perform a specific task/job using computers (Venkatesh & Bala, 2008).

Perception of External Control: The extent to which a user believes that organizational and technical support facilitates the use of the system (Venkatesh & Bala, 2008).

Computer Anxiety: The extent of "an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers" (Venkatesh, 2000, p. 349).

Computer Playfulness: The extent of "cognitive spontaneity in microcomputer interactions" (Venkatesh & Bala, 2008, p. 279).

Perceived Enjoyment: The degree to which "the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use" (Venkatesh, 2000, p. 351).

Objective Usability: A "comparison of systems based on the actual level (rather than perceptions) of effort required to completing specific tasks" (Venkatesh, 2000, pp. 350–351).

Limitations

The limitation of this study includes the sample size of the participants and a neglect of the teaching beliefs of ESL teachers. The data of this study were collected from the community colleges in the same area of California. The study didn't explore the relationship between ESL teachers' personal teaching beliefs and ESL teachers' beliefs in the application of technology in language teaching and learning.

This study only focused on the external factors that may influence teachers' beliefs and attitudes to the application of technology in second language teaching and learning, without a discussion for the internal factors that might influence ESL teachers' use of technology. In the survey design part, the internal factors that may influence or prevent teachers' use of technology were not involved. For future studies, the internal factors should be studied in what way that influences ESL teachers' application of technology in English teaching and learning.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

How to take advantage of the development of technology to enhance language learning and teaching has been a heated topic for many years. More and more language educators believe that the integration of technology in language teaching has become essential in the 21st century (Flores, 2015).

As a result of the development of technology, we have seen significant changes in our daily lives over the last three decades. With the dissemination of the internet, multimedia, and various mobile technologies, the form of social networking, collaboration, and communication have been changed dramatically (Levy, 2009). Education is no exception. Many educators have felt the obvious changes in their daily classrooms and the ways to educate the new generation. At the present time, most students are “digital natives” and process information and learn significantly differently (Prensky, 2001) compared to their prior generations. Digital natives are used to various technology devices and technology tools and they are prone to exploring their external environment with the help of technology and the internet. Instead of writing, they might prefer typing; instead of face-to-face conversation, they might prefer meeting online; instead of going to a library to find an answer, they might prefer to search online. On account of the dramatic changes in the new generation of students, it is necessary for educators to reflect on their teaching beliefs and strategies to best meet the needs of their students.

The application of Educational Technology is attracting enormous attention currently as reflected in the nationwide remote learning caused by the COVID-19 epidemic. In the last few years, educational technology has been used to not only assist but also enhance language teaching and learning. Educators from all levels of education have tried to integrate various educational technologies to improve their teaching, increase students' engagement in learning, and provide authentic language input and practice (ACTFL, 2012). Furthermore, some educational technologies and e-learning platforms have enabled language teachers to facilitate more classroom activities and assignments and improved the language teaching and learning experience.

Remote learning will become more common in the near future as a result of the global pandemic. More students will be able to get more authentic language learning opportunities with the development of educational technology, regardless of which country they live in, their language and cultural background, and the target language material and resources available to them. There is no doubt that educational technology will continue to grow in significance as a supplemental tool and resource for language teachers in facilitating and assisting language teaching and learning. However, while educational technology can play a significant role in improving language teaching and learning, the effectiveness of any educational technology mainly depends on language educators who manage and facilitate the language classrooms.

Moreover, language learning is one of the most complicated human activities and the role of a language teacher is to manage the applications of educational technology so that the applications can effectively facilitate the language learning process. Therefore, the development of educational technology should never be the goal in and of itself, but the relationship between education and language educators should be explored and addressed

more. What hinders language teachers from incorporating educational technology and how to support teachers better in applying educational technology to facilitate language learning are the focus of this literature review.

Overview

The study of what hinders the incorporation of technology into language teaching naturally has its roots in three lines of research: language teaching with technology incorporated in, teachers' attitudes toward the technology incorporation, and perceived barriers by the teachers. The first provides the background and the context for the current study, whereas the second and the third provide a conceptual framework for the development of this study. This review of the literature begins by (a) reviewing the origins of the relationship between language teaching and technology incorporation, (b) exploring teachers' attitudes and beliefs toward the integration of technology in higher education, (c) tracing the lineage of perceived barriers studies in the last two decades, from general to specific, and (d) searching guidance and recommendations for teachers to integrate technology into their teaching.

Language Teaching & Technology Integration

The history of studies of language teaching and learning is relatively long. Since the 1940s, scientific studies have focused intensely on the nature of language learning and teaching, structural and applied linguistics, and newly developed techniques/technology (Cioffari, 1967; Perren et al, 1970). Many studies were optimistic about the future and prospects that technology can bring to education (Cioffari, 1967; Perren et al, 1970). Vincenzo Cioffari (1967) wrote, "The most striking advances will be brought about by technology -- language laboratories will be tailored to individual needs, and present limitations will be overcome" (p. 14). Many other linguists also believed that by the development of technology,

the two significant issues of language learning will be addressed and resolved. The first one is the difficulty of building an authentic language environment for learners, and the second one is to find a more effective one to drill language (Cioffari, 1967; Perren et al., 1970). Technology integration can play an important role in the way a language class is taught and, in the way, how a student learns. Also, it can increase classroom interaction and students' learning motivation in ways that a classroom without any technology cannot achieve (Baker et al., 2015; Boles, 2011). Based on the results of several studies exploring students' learning motivation, the use of technology can improve students' motivation to do their schoolwork, and Information and Communication Technologies (ICTs) can positively impact students' learning motivation (Evans, 2009; Passey et al., 2004).

In today's life, technology is applied everywhere, and children are exposed to various technologies every day. We do not need to decide whether or not to use technology to support language learning and teaching. What we really need to know is how to use technology well to achieve our teaching goals (Kern, 2006).

As the development of technology moves forward, education at all stages has become increasingly technology-oriented, which also includes the field of language teaching and instruction. This adjustment is in accordance with what the students are receiving outside of the classroom (Flores, 2015). More language learners are part of the generation called "Digital Natives" defined by Prensky (2001). Prensky (2001) stated that the popularization and dissemination of science and technology had changed the way the new generation thinks, and processes information and the outdated educational system and teaching methods might not fit their learning needs. According to Prensky (2001), students born and raised in a technology-saturated environment, require a technology-rich learning environment to facilitate their

learning and hold their attention. Therefore, integrating technology into language teaching and learning has become requisite and indispensable (Flores, 2015). It is believed by many language scholars that teachers' application of technology for high-level instruction and learning will increase students' learning by improving students' learning experience from every aspect across the curriculum (Allsopp et al. 2009; Nilsson and Van Driel, 2010). Thus, higher-level technology integration will help students grow intellectually rather than learning each skill in isolation.

The incorporation of Computer Assisted Language Learning is constructive for the evolvement of language learning and teaching since CALL has built a connection between language learning and technology (Hubbard & Levy, 2006; Flores, 2015). CALL was first defined by Levy in 1977 as "the search for and study of applications of the computer in language teaching and learning" (Levy, 1997, p.1), which is the evolution of Technology Enhanced Language Learning (TELL) and Computer Assisted Instruction (CAI). Since its inception, CALL has undergone several rounds of reform and updates. The application of CALL in language learning had moved away from the original CALL, also called the Behavioristic CALL, which was a subsection of Computer Assisted Instruction (CAI) in the 1950s and 1960s (Flores, 2015). The Behavioristic CALL mainly focuses on repetitive language drills and extensive grammar exercises, which are relatively boring and not learner friendly. Influenced by cognitive theories in the 1970s and 1980s, the Behavioristic CALL evolved to the Communicative CALL, which focuses on using computer-based activities to facilitate language learning as a process of discovery and expression. Then, influenced by the socio-cognitive view, CALL evolved to Integrative CALL and focused on the target language use in the authentic social environment.

Warschaier (1996) systematically divided the development of CALL into three stages: structural, communicative, and integrative. The first phase "structural" CALL emphasized helping students to improve their language use and grammar accuracy by exposing them to the same material repeatedly (Gruba, 2004). In this phase, technology was conducted to provide repeated language drills for students, since a computer can provide quality repeating material and it can provide immediate and non-judgmental feedback (Evans, 2009).

The second stage is "communicative" CALL, Gruba (2004) described it as a way to "help students develop their own mental models through the use of the target language by using exercises to guide meaningful peer interactions and promote fluency" (p. 629). Communicative CALL is an extension of structural CALL. The rationale behind structural CALL is that even though drilling language practice can be helpful for learning, it cannot help students gain complete knowledge of a second language (Warschauer, 1996, Baker et al.,2015). Therefore, communicative CALL focuses on using the whole language instead of focusing on a specific aspect of the target language. It explores teaching the language accuracy implicitly, rather than explicitly (Baker et al., 2015).

The third stage is integrative CALL, which is built on the previous two phases with the addition of multimedia and Internet use (Warschauer, 1996). Integrative CALL allows for the integration of graphics, animation, and video into the language learning environment, both inside and outside of the language classroom, which encourages more ways to use educational technologies in language learning and teaching. Facilitated by integrative CALL, more technology integration is applied with content-based approaches, task-based approaches, and project-based approaches (Flores, 2015). With the development of CALL, language learners can be more actively involved and engaged in the learning process. Integrative CALL triggers

language learners to explore the target language as well as the technology tool itself, which promotes the use of Web 2.0 and social media in language teaching and learning. Based on O'Reilly (2005), Web 2.0 refers to the web applications that facilitate information sharing, interoperability, user-end collaboration, and user-centered design on the World Wide Web. Web 2.0 is an evolution of the traditional web application that focuses on the user and dedicates it to improve the user-end experience. Based on the characteristics of Web 2.0, it can change and improve the language teaching and learning process significantly for providing opportunities for learners to interact with each other through web-based networks and communities, to express their ideas in social media, to learn collaboratively with their peers via multi-user software, and to improve their language skills in an authentic language environment (Flores, 2015). Moreover, integrative CALL helps students recognize the benefits and effectiveness of using technology tools in learning (Ybarra & Green, 2003; Flores, 2015).

Similar to the three phases of CALL identified by Warschauer (1996), Kern (2006) classified the role of technology in language teaching and learning into three aspects, "tutor, tool, and medium" (p.191). For the tutor role, computers can provide learners with grammar support, instructions, testing feedback, and other kinds of language learning support. For the tool role, computers can serve as a working tool (typing and editing), a reference tool (online dictionary), and a research tool (database, internet). For the medium role, computers can provide websites to facilitate interpersonal communication (online chatting) and distance learning (Kern, 2006).

Another big advantage provided by technology for language learning and teaching is that it can develop an authentic language environment for learners more easily than the traditional language classrooms (Chamorro & Rey, 2013). Technology-based activities can

provide students with opportunities to practice the target language in a more authentic and communicative language environment, such as real conversations with native speakers via specific apps. In addition to helping learners learn speaking and listening skills in a more authentic language environment, technology can also help students learn reading and writing more efficiently (Rey & Rosado, 2000). Furthermore, according to Tomlison (2009) and Gençlter (2015), technology-based activities can offer learners immediate information, feedback, and other related resources. Based on the results of their studies, the internet materials motivate students to learn and explore more about a certain subject (Tomlison, 2009; Gençlter, 2015; Ahmadi, 2018). Larsen-Freeman and Anderson (2011) hold the same view that technology can provide appropriate learning and teaching materials to both students and teachers and motivate students to learn more.

There are other various ways for technology to improve second language teaching and learning. According to Ybarra and Green (2003), the use of technology can provide a valuable language learning experience for students by contributing to the positive development of students' personality factors like risk-taking and learning motivation. Shyamlee (2012) conducted a study to investigate the application of multimedia technology in the language classroom. His findings suggested that the use of multimedia increased both students' learning motivation and attention because it provides students with opportunities to communicate in a more practical way.

The application of technology in language classrooms can make second language learning more engaging and motivating (Lin, 2009). Technology-based activities usually can provide online search functions and immediate feedback. With the help of technology, challenging projects can become more manageable for students (Gorder, 2008). At the same

time, technology could help teachers to increase their teaching effectiveness and methodologies more effectively and affordably (Mofareh, 2019).

Based on some previous studies, technology tools applied in the language classrooms can not only improve students' second language proficiency, but also increase learners' self-autonomy and self-esteem (Ybarra & Green, 2003; Liu, Moore, Graham, & Lee, 2002; Rey & Rosado, 2000). According to Roma's (2013) study, the use of technology in a second language classroom can enable students to learn according to their own interests and individual abilities; thus, it can encourage learners to be more productive in the learning process. Another benefit of applying technology in language classrooms is that it can gamify teaching and learning, which can motivate students from all age groups to participate more actively.

Many language scholars are in favor of the standpoint that the language teaching approaches have been gradually changed by the arrival of technology (Solanki & Shyamleel, 2012; Pourhosein Gilakjani, 2017). They believe that the use of technology can help students learn on the basis of their personal interests. Also, the use of technology can facilitate both visual and auditory learning styles (Solanki & Shyamleel, 2012; Pourhosein Gilakjani, 2017). The use of technology can also enable students to learn at their own pace and access information and materials that are not able to be provided by their teachers (Lam & Lawrence, 2002; Pourhosein Gilakjani, 2017). Similarly, Pourhosein Gilakjani and Sabouri (2014) stressed the benefits of using technology to let students have more control over their learning pace and process and provide students with infinite information. With the help of technology, self-learning and self-improvement are much easier to achieve. Rey and Rosado (2000) conducted a study to explore how email-based activities can help ESL learners develop reading and writing skills. The results of the study showed that this kind of technology-based

learning activity not only increases learners' reading and writing language skills but also motivates students to use more metacognitive strategies like learning autonomy in the classroom.

Based on Butler-Pascoe and Wiburg's studies, Chamorro and Rey (2013) summarized the seven most significant attributes of how technology can improve second language learning and teaching:

(a) It provides interaction, communicative activities, and real audiences.

(b) It supplies comprehensible input.

(c) It uses task-based and problem-solving activities.

(d) It facilitates focused development of English language skills.

(e) It uses multiple modalities to support various learning styles and strategies.

(f) It meets affective needs of students.

(g) It fosters understanding and appreciation of the target and native cultures.

(p. 54)

Next, let's take a closer look at the use of technology in second language learning and its major areas and skills respectively (grammar, vocabulary, reading, listening, and speaking).

Grammar

One of the most important applications of CALL in the early days was grammar-focused tutorial practices. Two of the most important benefits of the tutorial exercises are quality repetition and immediate feedback (Levy, 2009). In the last several years, more sentence-based and content-based grammar tasks have been created using CALL software or other commercial software influenced by the inductive grammar model, which is a relatively

new view of the grammar teaching approach. In general, most grammar practices facilitated by technology are embedded in a more communicative context (Chan & Kim, 2004). Moreover, some of the grammar tutorial practices also include a reflection on language meaning and usage exploration.

However, all these applications are still relatively rudimentary based on the level of the software's analysis of students' errors and the feedback provided. Consequently, there has been a sustained interest among language educators and researchers in developing related software to provide better grammar analysis and feedback (Dodigovic, 2005; Heift & Schulze, 2007; Levy, 2009).

Vocabulary

Along with the grammar tutorial exercises, vocabulary is also one of the most important focus areas of CALL (Levy, 1997; Levy, 2009). Vocabulary has always attracted language educators' attention because of its apparent significance for students of all proficiency levels. Technology applications for vocabulary learning are relatively broad, which includes electronic dictionaries, self-learning courseware, computer-mediated communication (CMC) technologies, and online activities/exercises (Stockwell, 2007).

With the fast development of mobile devices, the development of vocabulary-related applications and materials has become a focus (Thornton & Houser, 2002; Stockwell, 2007; Kennedy & Levy, 2008). The smartphone is a multifunction mobile device, which is expected to be the main tool for language learning in the near future. More and more applications have been developed to address the various skills of language learning, and the number of vocabulary-related applications ranks first.

Reading

Generally speaking, most technology applications related to reading are designed to facilitate the readers with word explanation or related exemplification or further information and reading exercises (Levy, 2009). Based on Chun (2006), the applications of CALL for second language reading are "electronic dictionaries, software that provides textual, contextual and/or multimedia annotations, computer-based training programs that aim to accelerate and automatize work recognition, Web-based activities that seek to teach a variety of components (from text structures and discourse organization to reading strategies) and the Internet as a resource of materials for extensive reading" (p.69).

Compared to the applications for other language skills, the functions of reading software are relatively developed. While, based on the observation from Chun (2006), the next pedagogical problem is how to encourage students/readers to use the multimedia functions provided by the technology applications to improve their learning. According to Laufer and Hill (2000), even when various information resources are available with the help of electronic dictionaries, most readers still opt for the simplest word definitions and translations.

How to get readers to use the multiple functions appropriately is quite a problem. The cause of this problem is partly due to the fact that most readers do not know how to use the annotations, inside dictionaries, or other functions optimally. Thus, application usability and timely user training are crucial to address this problem. Appropriate instructions and resources should be readily accessible for the readers, and the readers need to learn how to use them optimally (Levy, 2009). Moreover, the technology applications of reading are expected to be

more individualized to meet individual student's preferences and language levels (Jones, 2003; Chun, 2006; Levy, 2009).

Listening

Nowadays, audio and video have permeated almost all aspects of language teaching and learning. On the Internet, students are able to search various kinds of audio and video materials, which are easily accessible. Most media players enable students to manage and edit the audio files conveniently for further learning, by rewinding or adjusting the speed of the listening files (Levy, 2009).

To improve listening skills, students need to learn and practice to distinguish the sounds of the target language. In order to address these learning goals, CALL had been applied mainly to facilitate speed regulation and repetition (Jones, 2003). Some technology applications provide the pre-listening tool to help students activate their previous knowledge and other multimedia resources to make the language input more meaningful and comprehensible (Jones, 2006).

Another technology that also gets a lot of attention for improving listening skills is the podcast (Rosell-Aguilar, 2007; O'Bryan & Hegelheimer, 2007; McCarty, 2005). A podcast is defined as a media (audio or video) file that can be broadcasted on the Internet. Learners can create and broadcast their own podcasts via the Internet or a podcasting blog (Rosell-Aguilar, 2007; McCarty, 2005).

Speaking

Speaking has attracted a variety of CALL technologies and applications, which include applications that facilitate user interaction via voice chat and text messaging, transmit and transcript audio and video into text, and provide instant voice service such as Skype. Many of

the above-mentioned functions remain just tools; however, their value in improving speaking skills will rely on effective teaching methods to accompany them (Parvin & Salam, 2015; Levy, 2009; Mullen et al., 2009).

According to Eaton (2010), computer-facilitated conversations and communication are beneficial for second language learning. Compared to face-to-face conversations, computer-facilitated communication is prone to encourage more equal participation in the discussion, thus, the class conversations or discussions could be more collaborative. Zhao (2013) further confirmed this finding by stating that participation and exposure to a comprehensible and authentic target language environment are essential in language learning.

Teachers' Attitude and Beliefs Toward the Integration of Technology

Teachers' role in combining the usage of technology to language learning and teaching is fundamental (Chamorro & Rey, 2013; Rogers, 2000). Zhao and Cziko (2001) addressed the significance of teachers' beliefs in the integration of technology into classrooms. Nowadays, technology has been a significant part in promoting language learning and teaching and also has an important influence on teachers' teaching approaches. Therefore, educators need to gain a better understanding and knowledge about educational technology in facilitating their teaching and students' learning (Pourhosein Gilakjani, 2017; Solanki & Shyamleel, 2012).

Moreover, the way technology is integrated into the education system primarily depends on the teachers (Marshall & Cox, 2008; Farjon, Smits, & Voogt, 2018). There is no doubt that teachers play an important role in how successfully technology will be integrated into education (Bruess, 2003). Thus, it is important for teachers to integrate technology into their teaching with extra care and thought since they are playing a significant role in this technology integration development (Farjon, Smits, & Voogt, 2018).

Therefore, there is a need to explore teachers' beliefs toward the application of technology in classrooms. At the same time, exploring the relationship between teachers' beliefs toward the application and usage of technology in classrooms and what they really do in their daily teaching practice is significant (Chamorro & Rey, 2013). Based on Becker (2000), most language teachers regard computers as a significant instructional instrument for language teaching since it facilitates teachers' preparation for classes, allows teachers to have some freedom in the curriculum, and provides a high-quality teaching and learning experience.

Bordar (2010) conducted a study to explore the reasons behind language instructors' application of computer technology in their classrooms and language instructors' attitudes toward technology applications. His findings showed that almost all the language teachers showed positive attitudes toward the application of computer technology in the classroom, the results further found that the factors that influence and shape language teachers' attitudes toward technology include teachers' technological skills, general perceptions of technology, and the culture of the working environment surrounding them.

Similarly, many other previous studies focusing on teachers' attitudes toward educational technology have also shown that most teachers hold positive attitudes toward technology application in education (Seraji, Ziabari, & Rokni, 2017; Aksan & Eryilmaz, 2011; Yalcin, Kahraman, & Yilmaz, 2011; Dogruer, Eyyam, & Menevis, 2010; Rostami, 2010). Moreover, Sharpe (2004) and Tsitouridou & Vryzas (2004) believe that most teachers view technology integration as a significant strategy for developing teaching and learning. However, based on related studies, most teachers refrain from integrating technology into their core curriculum and limit the technology to conduct low-level practice and free time activities (Ertmer, 2005; Hsu, Levin and Wadmany, 2008; Hsu, 2012).

Most teachers, no matter whether they have teaching experience or no teaching experience, have limited knowledge and understanding of how to apply technology into real teaching practice and promote students' learning (Ertmer, 2005). Based on the results of Cope and Ward's (2002) study, experienced teachers with little or even no professional development about how to use technology in the classroom were less likely to use technology in their classrooms, and they were also less likely to perceive the benefits of the use of technology in the classroom.

Based on the observations of several studies, most language teachers are using technology to provide low-level practice for students, such as drill practice and extra practice on the same topic. In order to answer this question, more questions need to be addressed, such as what technologies are used in classrooms, what type of activities are integrated with technologies, and what's percentage of technology included based on the whole class (Chamorro & Rey, 2013). According to Parr (1995) "The way teachers use and feel about using computers in their classrooms is influenced by both their beliefs about computers and the role of computers as well as their general educational beliefs" (p. 15). Some language teachers feel that they have to use technology, and their beliefs affect how they really use technology (Chamorro & Rey, 2013). Teachers' real beliefs toward the integration of technology in their daily classroom and what they really use technology are important in finding ways to promote language learning and teaching by the application of technology.

According to Chamorro and Rey's (2013) study, teachers do believe that the integration of technology can promote language learning and teaching: "This awareness comes from the experiences they have had as basic users of technology rather than from the conscious

learning of teaching strategies, concepts, and development opportunities to integrate technology in a proper way" (p. 63).

Chen (2008) found similar results in his study too. As he noted in his study, "During the processes of data coding and analyses, I easily identified inconsistencies between participants' expressed beliefs in survey data and practices manifested in other sources of data" (p. 69). The results collected from the survey show that most participants regard technology as an important way to achieve constructivist instruction. But the data collected from observations and interviews show that most participants only used technology to support easy tasks, they did not use technology to support high-level instructions or constructivist instructions, which can facilitate students' problem-solving ability and collaborative learning (Chen, 2008).

What is standing in the way of the use of technology in language classrooms? Richardson (1996) stated that the classroom is a complex environment, teachers' beliefs are influenced by various factors. Tabachnick and Zeichner (2003) also suggested that teachers' actual practice in the classrooms is a result of an ongoing negotiation between supports and constraints. According to Bruess (2002), teachers' motivation, personal interests and needs for technology, access to equipment, and students' capabilities of using technology would affect teachers' actual application of technology in their classrooms.

A study conducted by Hsu (2010) demonstrated a relatively strong relationship between technology training and the incorporation of technology into the classroom. Based on the results of Hsu's (2010) study, there is a positive relationship between K-12 teachers' technology integration proficiency and use of technology ($r = .56$), a higher correlation between the two parts after a measurement error adjustment. Therefore, Hsu (2010) stated that

appropriate technology training can increase teachers' integration of technology into the curriculum and classroom instruction. A study focusing on teachers' perception of the attributes that are necessary to be a proficient user of technology found that most teachers believe that a teacher has to be confident about his or her capability to use technology (Ertmer, Ottenbreit-Leftwich, & York, 2007).

Barriers in Incorporating Technology into Higher Education

Exploring what prevents teachers from applying technology to their real teaching practice is the main focus of this study. Considering the fast development of technology and the fact that technology has been part of people's daily lives, more and more educational policymakers are leaning toward investments to integrate educational technology into the education system (Muhametjanova & Cagiltay, 2016). By investing in educational technology, educational policymakers expect the integration of technology will facilitate both teachers' teaching and students' learning processes and, hence, improve the overall quality of education. The technology integration process is not always smooth, however. Indeed, teachers face various significant barriers when applying technology into a real classroom (Muhametjanova & Cagiltay, 2016; Hossain et al. 2016; Porter & Graham, 2015; Mtebe & Raisamo, 2014; Ertmer, 2001).

Ertmer (2001) divided the barriers to technology integration into two categories, the external barriers, and the internal barriers. According to Ertmer (2001), resource-related barriers, such as lack of equipment and lack of technical assistance, are categorized as external barriers; teacher-related barriers and culture-related barriers, such as teaching beliefs, teachers' attitude toward technology integration, and schools' openness to change, are categorized as internal barriers. From the perspective of external barriers, lack of time, lack of necessary

resources, and lack of training have been identified as the main barriers to educational technology integration by several studies (Al Senaidi, 2009; Larson, 2003; Beggs, 2000). Similar to the above study, Cuban (2001) identified lack of time and lack of administrative and technical support as the main barriers in the integration of technology into classrooms.

A survey conducted by Kumutha and Hamidah (2014) showed that lack of time was identified as the major barrier with many participants complaining that they were burdened with making students' assignments, preparing lesson plans and syllabus, and other administrative responsibilities. Integrating technology into daily teaching can be time-consuming for teachers and influence the completion of their other work responsibilities. In this case, technology integration will be both a challenge and a burden for teachers. Another influential factor identified by Kumutha and Hamidah (2014) is the lack of technological training. The barrier that prevents some teachers from integrating technology is that they may not attend any technological training, thus they don't have the essential knowledge and skills to integrate technology into their classrooms (Kumutha & Hamidah, 2014). Han (2010) stated that technological training and related support can improve the integration of technology gradually and can increase teachers' teaching effectiveness at the same time.

Most teachers would agree that appropriate technology will facilitate both teaching and learning processes and improve students' learning performance. But it is also undeniable that teachers are imposed new responsibilities and requirements in this technology integration process. Han (2010) stated that teachers are expected to perform well in using technology to improve the quality of teaching and learning, which is always a big challenge for most teachers and imposes extra pressure on some teachers. In order to take advantage of the existing educational technology to facilitate both teaching and learning, more technical training and

support needs to be provided by both schools and the educational system (Khodabandelou et al., 2016).

From the perspective of internal barriers, some higher education instructors are found to be incapable of integrating technology in their teaching appropriately and are reluctant to try to improve the situation. The internal reasons that underlie this phenomenon are identified as instructors' anxiety toward technology, lack of motivation, and lack of interest (Muhametjanova & Cagiltay, 2016). According to Nicolle (2005), teachers' personal attitudes toward technology integration and openness to change play a significant role in how they respond to educational technology integration into the classroom.

As explored by previous related studies, there are several factors and concerns that influence teachers' attitudes toward technology integration in their classrooms. Xu (2010) reported that most teachers feel comfortable and good in communicating with their students via various traditional classroom communication, such as body language that provides visual guidance to their students. While the application of technology, especially the use of multimedia technology will decrease this kind of communication between teachers and students where students will pay more attention to the audio and visuals provided by the computer. In this way, there will be fewer real communication opportunities between teachers and students even if they are in the same physical space since students' most attention will be attracted by the technology and the technology also can substitute part of teachers' teaching responsibilities. For language teaching, there is a concern that technology applications will turn the language learning process into an automatic courseware show, during which students will easily be inclined to be the viewer rather than the participants (Xu, 2010).

Similarly, Whelan (2008) stated that a student's overreliance on technology, such as the Internet and mobile devices, will lead to fewer interactions with their teachers and peers. In this way, students might be or feel excluded from social groups or even the world. According to Valentine (2002), students' involvement or engagement level is usually low if interactions and conversations are scanty. Therefore, building a collaborative online learning community and helping students get involved in a collaborative learning environment is essential to address the concerns mentioned above. Students will be more motivated to participate and work together when they feel they are part of a group (Valentine, 2002). Another concern brought up by Valentine (2002) is a misunderstanding in online communication because it is common for different individuals to perceive the same message differently. Some students might encounter difficulties in understanding the information conveyed by the technology and feel frustrated about that. In this case, teachers' prompt intervention and further explanation will be very significant and necessary (Valentine, 2002).

Age was also identified as an influential factor by some researchers. There is evidence that some teachers don't want to integrate or use technology in their teaching due to their relatively old age, they believe that technology integration is not necessary for their teaching and they expect younger teachers to learn and apply educational technology. Moreover, they believe they can build a student-centered and interactive classroom with traditional teaching methods. Most of them have rich teaching experiences and prefer to use traditional and manual ways of teaching to make connections with their students (Khodabandelou et al., 2016; Kumutha & Hamidah, 2014). Therefore, the generation gap is regarded as a barrier and included in the survey of the current study.

Recent research has indicated there is a positive correlation between teachers' technology proficiency and technology usage (Hsu, 2010). Ertmer (2005) stated that most teachers no matter experienced teachers or preservice teachers contain limited knowledge and understanding of how to apply technology effectively into their teaching practice and prompt students' learning. The study by Hernández-Ramos (2019) has shown that although most higher education institutions, like universities and colleges, have quality technology resources, most of the resources are underutilized. This is partly due to the fact that the instructions only use technology for reproductive or presentation tasks, like making visual presentations and managing the learning management system (Mercader, 2020). What's more, higher education instructors' technological competence level is often intermediate or even lower (Mercader, 2020; Cuhadar, 2018).

According to Alonso, Plaza, and Orfali's (2019) study, problems of access to technology were identified as the primary barrier to the acceptance of new technology for higher education instructors. Their study also revealed a significant correlation between teachers' pedagogical beliefs and their acceptance of new technology. From this perspective, we can try to explore what kind of pedagogical beliefs positively associated with the acceptance of new technology and how some pedagogical beliefs intertwined with the use of technology (Tondeur, Van Braak, Ertmer, & Ottenbreit- Leftwich, 2017; Alonso, Plaza, & Orfali, 2019).

The Technology Acceptance Model (TAM) has dominated this research area for a long time. Instead of basing on TAM, several researchers have used other ways to explore the possible factors that hold back the integration of technology in education, but most studies mainly focused on the contexts of primary and secondary education (Área-Moreira et al. 2016;

González-Sanmamed et al. 2017; Mercader, 2020). Some studies have developed classifications by area. Among these classifications, the most widespread is one proposed by the British Educational and Communications Technology Agency (BECTA, 2004), which identifies two kinds of obstacles: individual and institutional. Individual barriers include the obstacles caused by the person, while institutional barriers include the obstacles caused by the organization. Schulz et al. (2015) extended it into four parts: human factors, intrinsic values, requirements of the tool itself, and environmental factors.

Mercader (2020) classified the barriers that block the integration of technology into higher education into four areas: personal, professional, institutional, and contextual. Personal and professional barriers are regarded as internal barriers, while institutional and contextual barriers are referred to as external barriers (Mercader, 2020). Based on the results of Mercader's (2020) study, seven main obstacles were identified to digital technology incorporation in higher education: technophobia, lack of time, absence of planning, lack of incentives, lack of evaluation, work saturation, and university accreditation model. There have been few studies focusing on barriers that block the integration of technology into language teaching and language classrooms.

Wood et al. (2005) conducted a study focusing on teachers' perceptions of barriers and supports the use of technology in elementary and secondary classrooms. Based on the results of the survey of this study, Wood et al. (2005) stated that "teacher's level of experience and comfort with technology" (p. 201) is one of the most important factors for the incorporation of technology into the classroom. Based on the results of the following focus-group discussion, Wood et al. (2005) identified the supports that teachers want most were "material resources, human resources, and training and professional development" (p.189).

According to Garrett (1991), generally speaking, most teachers still do not own the power to determine what technology is chosen for their teaching and students' learning. Gilakjani (2013) conducted a study to explore the factors that contribute to teachers' use of technology in their classrooms. Based on the analysis of previous research, Gilakjani (2013) concluded that "self-efficacy influences the use of computer technology in teaching and learning, teaching experience is related with the real usage of computer technology, lack of technical support stops teachers from using computer technology in their classrooms, computer technology has this potential to change teachers' teaching methods and training helps teachers to implement computer technology and change their teaching practices" (p. 265). In other words, improving teachers' self-efficacy, providing more technical support, and offering more technology training can contribute to teachers' use of technology in the classroom (Gilakjani, 2013).

Another interesting angle to explore is the potential barriers that block teachers' from integrating technology into the classroom is based on the economic status of the country. Related studies about the integration of technology in developing countries display that the main barriers are lack of equipment (Al-Senaidi, Lin, & Poirot, 2009), lack of necessary technical support (Goktas et al., 2009; Al-Senaidi, Lin, & Poirot, 2009; Keengwe et al. 2008; Al Ghamdi & Samarji, 2016), lack of technology training (Goktas et al., 2009), lack of technological knowledge and skills (Goktas et al., 2009; Ihmeideh, 2009), lack of time (Al Senaidi, 2009; Albirini, 2006), and contradiction between the existing curriculum and technology (Albirini, 2006; Al Ghamdi & Samarji, 2016). A recent study conducted by Muhametjanova and Cagiltay (2016) in Kyrgyzstan, which is a developing country,

Frederick, Schweizer, and Lowe (2006) conducted a study to explore technology integration barriers from a different perspective, the students' point of view. According to their study, "student mobility, special needs, and anxiety over standardized test results are the main challenges associated with ICT (Information and Communication Technology) use" (p.73). Consequently, another concern held by some educators is that when students are exposed to more technology at school, they may over-rely on technology to make connections with their outside environment and get addicted to the Internet and mobile devices. Valentine (2002) argued that students' learning experiences will be compromised as a result of the lack of communication with their teachers and peers, eye contact, and body language.

Recommendations for the Integration of Technology in Language Teaching

This section presents the recommendations from the literature review for language teachers on how to integrate technology successfully in their teaching and facilitate their students' learning.

Some language instructors may struggle with how to integrate technology into their teaching, given that they do have the technical ability to use various technologies, they need more ideas about how to integrate technology and take advantage of technology to facilitate their teaching and their students' learning. Warschauer and Meskill (2000) proposed two significant ways about how to improve learning by integrating technology into the classroom, the first way is to use technology for a cognitive approach purpose, while the second is to use technology for a social approach purpose. For a cognitive approach purpose, which means that language instructors can use technology to provide learners with a more meaningful learning experience and make students' exposure to the target language meaningful; for a social approach purpose, teachers can use technology to give students more opportunities to have

more authentic social interactions and more communication opportunities to practice some real-life conversations and skills.

Despite the wide variety of different technologies available, many teachers still hold a misconception that the only available technologies they can use for teaching and learning are computers and the Internet (Lane & Lyle, 2009). In fact, educational technology is developing fast and spreading to a wide variety of different technologies, such as "design, making, problem-solving, technological systems, resources and materials, criteria and constraints, processes, controls, optimization and trade-offs, invention, and many other aspects dealing with human innovation" (Lane & Lyle, 2009, p. 35).

Therefore, a knowledge of technology is essential for every teacher (Ertmer & Ottenbreit-Leftwich, 2010). As reported by Lawless and Pellegrino (2007), for today's teachers, technology literacy has become one of the basic and essential skills of teaching. According to a previous study, one of the most significant things that schools/institutions can do to prepare teachers with basic technology skills and facilitate this technology integration process is to provide more technical training for them (Mundy, Kupczynski, and Kee, 2012). Royer (2002) found that when teachers were more involved in classroom technology environments, they were more likely to apply technology in their teaching practices. Hsu (2010) found similar results: the more training teachers received, the more likely they were to integrate technology into their teaching practices successfully.

Professional technology training is one of the most important factors in changing teachers' attitudes towards technology integration too (The United States Department of Education, 2005). Therefore, it is significant for schools/institutions to ensure that teachers

receive enough necessary technology training to facilitate the technology integration process (Decoito & Richardson, 2018; Uluyol & Sahin, 2016; Zimlich, 2015).

In another study on teachers' perceptions toward technology use, the researchers found that most teachers believe that teachers' individual confidence about their technology skills and competence was closely related to their actual use of technology in the classroom (Ertmer, Ottenbreit-Leftwich, and York, 2007). Therefore, the technology training should not only focus on instructions but also provide practical practice for teachers to improve their self-confidence about their personal technology abilities.

The studies mentioned above show us the significance of effective technology training in the technology integration process for schools/institutions and teachers. Furthermore, many researchers state that in order to effectively promote technology integration in education, teachers should not limit themselves to learn the basic technology skills but also need to explore how to actually integrate technology into their curriculum (Mundy, Kupczynski, and Kee, 2012; Roberts, 2003; Baylor & Ritchie, 2002). In addition to focusing on the amount of training provided to teachers, we should think more about what kind of technology training should be provided and in what way to deliver them. Decoito and Richardson (2018) conducted a study to explore how middle school teachers integrate technology in their teaching practices and what influences them to decide whether or not to integrate technology in practice. As they noted,

> The professional development should take different forms and focus, housed under the umbrella of a TPACK framework, including contextualizing technology integration; utilizing technology, introducing technology to students, and considering educational purposes of technology; providing opportunities to learn from peers in terms of how to

effectively integrate technology; and building confidence in and exploring benefits of using ICT rather than focusing on skills. (p. 374)

Moreover, another external factor that influences the teachers' technology integration is the school's overall socioeconomic status. In Warschauer's (2007) study, the findings showed that if a school has a higher socioeconomic status, then it would be more readily for teachers to integrate technology into the classroom since teachers believe that their students have access to technology devices, such as computers, and the Internet at home; therefore, they can complete the technology-integrated assignment or tasks. For schools with a relatively low socioeconomic status can overcome this discrepancy through some other methods, such as keeping the school computer lab open after school and providing mobile devices for students (Warschauer, 2007; Mundy, Kupczynski, and Kee, 2012).

Here listed the recommendations from previous research for language instructors about how to use technology effectively and successfully in their teaching and facilitating students' learning:

1. Language teachers should make a technology integration plan that includes integration teaching strategies and potential required devices and software (Pourhossein Gilakjani, Leong, & Hairul, 2013).
2. Technology professional development should mainly focus on helping teachers realize the benefits of technology integration and improving students' learning experience and outcomes (Pourhossein Gilakjani, Leong, & Hairul, 2013).
3. Technology professional development should also focus on increasing teachers' self-confidence for integrating technology (Ertmer & Ottenbreit-Leftwich, 2010).

4. The technology integration plan should be aligned with the curriculum guide and standards. Teachers should explore what teaching methods and strategies are effective with the integration of technology in the language classrooms (Pourhossein Gilakjani, Leong, & Hairul, 2013).
5. Educational technology should be regarded as an integral part of the language teaching and learning process by educators. Language teachers should encourage their students to take advantage of technology to improve their language skills (Ahmadi, 2018).
6. Universities should reckon educational technology as an essential part of the teaching and learning process (Ahmadi, 2018).
7. Teachers should be aware of their significance in guiding and facilitating their students' learning process. Moreover, teachers should be a model for their students in using educational technology in facilitating learning (Pourhossein Gilakjani & Sabouri, 2017; Molaei & Riasati, 2013).
8. Teachers should transfer their instruction from teacher-centered to student-centered with the integration of technology (Ahmadi, 2018).
9. Schools should provide enough technical support and assistance to teachers to facilitate the integration of educational technology into daily instruction and classrooms. A variety of technical training should be provided for teachers to learn and practice how to integrate technology into their teaching (Ahmadi, 2018).
10. Teachers should encourage students to use technology to improve their language skills (Mofareh, 2019).

11. Teachers should actively seek resources and ways to integrate technology effectively into their teaching (Ahmadi, 2018).

CHAPTER III

METHODOLOGY

This mixed-methods descriptive study explored the obstacles that prevent English as a Second Language (ESL) instructors from applying educational technology in language teaching and also tries to find out what kind(s) of support can be provided in ESL classrooms to better support English teaching and learning in the community colleges in the Bay Area. This study extended previous related studies by (a) specifically focusing on language instructors and English language learning and (b) basing it on a combination of TAM3 and MBIT instruments, and (c) focusing the mixed-method research on community college instructors, who don't have research burdens and mainly focus on teaching. This chapter includes the purpose of the current study and the research questions; describes the research design, the setting, participants, and procedures for conducting the research and protecting the participants; and discusses the instrumentation and data collection.

Research Questions

The purpose of this research is twofold: one is to identify the obstacles that prevent ESL instructors from applying educational technology in teaching English and another is to find out how to address and lessen the impacts from the obstacles and what kind(s) of support that can be provided in the language classrooms to better support English teaching and learning in the community colleges of the Bay Area. Therefore, the current study posits two research questions.

1. What prevents ESL teachers from integrating educational technology into English as a second language teaching?
2. What kind of support do ESL teachers need to incorporate educational technology into their English as a second language classrooms?

Research Design

For the purpose of the current study, an explanatory sequential mixed-methodology design (Creswell, 2018) was used within the context of a sample of Bay Area Community College ESL instructors. The explanatory sequential mixed-methods design consists of two phases. During the first phase, the quantitative data were collected through an online survey; in the second phase, the qualitative data were collected through individual semi-structured interviews. The overall purpose of this design is to use the qualitative data to help explain the initial quantitative results in more detail and to provide a deeper understanding (Creswell, 2014).

Based on the explanatory sequential mixed-methodology design, the quantitative data collection and analysis were conducted before a qualitative data collection and analysis. The quantitative data was collected through an online survey questionnaire. The survey questionnaire was conducted through Qualtrics (online).

The qualitative data was collected using semi-structured interviews since semi-structured interviews are conducive to explore participants' thoughts, perceptions, feelings, and beliefs about a particular topic. The interviews were conducted after the quantitative data analysis to fulfill the purpose of the current study. All interviews were conducted through Zoom, and all interviews were recorded and transcribed. The duration of the interview ranges from 20 minutes to 30 minutes, depending on the interviewees' availability. More details and

information are provided in the following sections. See Figure 5 for a simplified overview of the research design.

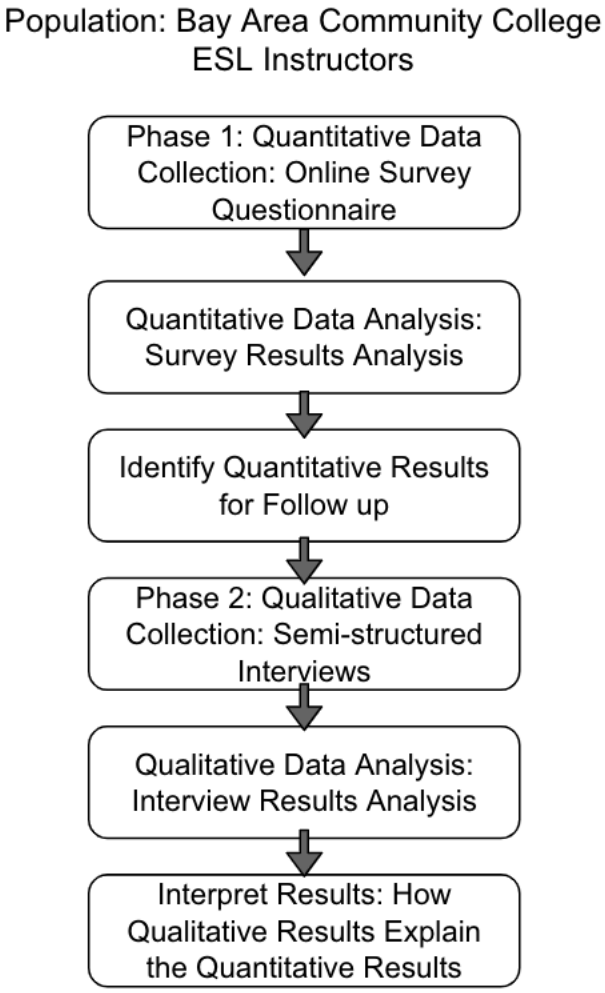

Figure 6: Research design overview

In summary, the quantitative research (Phase 1) was conducted first and revealed the possible perceived obstacles by the ESL instructors. Then the qualitative (Phase 2) research focused on in-depth exploration and explanations of quantitative results. The selection of participants for Phase 2 and the development of the interview questions were based on the data

analysis of Phase 1. The data of the two phases are discussed and integrated together in the discussion part.

Phase I --- Survey

Questionnaire Development

The survey questionnaire was conducted through Qualtrics (online). In anticipation of possible concerns from the instructors, all surveys were conducted anonymously. Due to reliability and validity concerns, a comprehensive and detailed introduction was sent to all participants individually through email before the survey research, which include the purpose of the study, definition of terminology, and the whole research design. The questionnaire consists mostly of multiple-choice questions and Likert scales. To ensure good quality measures, all questions have been reviewed by an educational technology expert panel, which contains one professor in Education Technology and two doctoral candidates in Education with rich experience in educational technology. Based on the review feedback, some questions and items have been refined or expressed in a different way. To make sure a good and quality survey response rate is obtained, the language is clear and concise, all terminologies are explained in the survey. The format of the questionnaire is clear, organized, and easy to read and follow.

The combination of the TAM3 and the MBIT was used as the foundation model for this study. The online survey instrument contains 8 content questions and 4 demographic questions. The survey questions used in the measurement of variables for the MBIT model are adapted from Mercader (2020). This question was originally designed by Mercader (2020) in Spanish, the researcher translated it from Spanish to English. A bilingual (English and Spanish) speaker was invited to check the translation and refine the final translation. The other

questions are all designed based on the TAM3 model (Venkatesh and Bala, 2008). Most questions were assessed with a 5-point Likert scale with anchors of 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). Some of the variables are measured with one single question, while some of the variables are measured with more than one question. For a certain variable, if more than one question is used, the final values will be the mean of all the questions used.

There are 12 survey questions in total, which can be broadly divided into five categories, which include demographic & background information, general opinion & attitudes toward integration of technology, TAM3 model questions, MBIT model questions, and areas of improvement & technology needs.

The first 4 questions are to gather participants' demographic and background information, like gender, teaching experience, self-reported technology skills, and school of employment. The question asking for "age" of Mercader's survey is removed since some instructors may consider this question intrusive.

The second category contains 1 question (Question 5) with four subitems to collect participants' general opinions and attitudes on technology integration. Here is what Question 5 looks like in the survey:

5. Please indicate the extent to which you agree or disagree with the following statements about educational technology integration in language teaching and learning:

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
5.1 Educational technology would improve my ability to teach					
5.2 Most educational technologies are reliable					
5.3 Educational technology integration would improve the quality of language teaching					
5.4 More technology will be used in future ESL classrooms					

The first part of the TAM3 category contains 2 questions, with 10 subitems in total to collect instructors' Perceived Usefulness (PU) toward the integration of educational technology into teaching. Question six is mainly designed on Job Relevance and Question seven is designed to explore Output Quality since these two variables are not explored enough within the MBIT survey questionnaires. The connections and overlap between the TAM3 and MBIT were discussed in Chapter One. In order to provide a clearer illustration of this, see Question 6 and Question 7 below:

6. To what extent do you agree that educational technology could work for the following statements? (Job Relevance - PU)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
6.1 Class preparation					
6.2 Providing instructions, reminders, and feedback					
6.3 Facilitating student activities					
6.4 Monitoring students' progress					
6.5 Assessment					

7. To what extent do you agree that classroom technology could improve the following areas? (PU - output quality)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
7.1 Students' engagement					
7.2 Learning motivation					
7.3 Classroom interaction					
7.4 Meaningful learning					
7.5 Collaborative learning					

The second part of the TAM3 category contains 2 questions with 9 sub items in total to collect instructors' Perceived Ease of Use (PEU) toward the integration of educational technology into language teaching. Question eight is designed to measure the variables of Computer Anxiety (item 8.1 & 8.2), Computer Self- Efficacy (item 8.3, 8.4, and 8.5), and Objective Usability (item 8.6). Question nine is designed to measure the variables of Perceived Enjoyment (item 9.1, 9.3) and Computer Playfulness (item 9.2). Perception of External Control is not measured here since it is explored deeply within the MBIT survey questions. Here are Question 8 and Question 9 of the survey:

8. To what extent do you agree or disagree with the following statements about educational technology integration in language teaching and learning: (PEU - Computer Anxiety and Computer Self-Efficacy & Objective Usability)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
8.1 I easily get nervous when facing various educational technologies					
8.2 I don't think I have the technology skills to support students in class					
8.3 I feel confident in my ability to access the available technology when I need it					
8.4 I feel confident and					

comfortable to integrate educational technologies into my teaching					
8.5 I have a good variety of ideas for integrating educational technology into my instruction and teaching					
8.6 More time needed to prepare technology-integrated classes					

9. To what extent do you agree or disagree with the following statements about educational technology integration in language teaching and learning: (PEU -perceived enjoyment & computer playfulness)

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
9.1 I believe that the integration of educational technology would make teaching process more enjoyable					
9.2 I believe that the integration of educational technology would make teaching more fun					
9.3 I enjoy applying various technologies into my teaching					

The last question (Question 10) of the TAM3 category displays a list of the representative obstacles in language teaching of each variable of the TAM3. See Question 10 below:

10. Have you ever experienced any of the following obstacles while integrating classroom technology into teaching? (please select all that apply)

a. *Lack of necessary technology skills*
b. *Lack of time*
c. *Inadequate technology equipment*
d. *Students get distracted*
e. *Does not fit my teaching objectives and philosophy*
f. *Budget or policy issues*
g. *Feeling inadequate*
h. *Tools / Technology not working as expected*
i. *Insufficient training*
j. *Have not experienced any obstacles*
k. *Other (please specify)* _____

The fourth category is all about the barriers identified by MBIT, which contains 1 question with 19 sub-items. Question 11 is adapted from Mercader (2020) and the subject "ICT" is all replaced by "educational technology". The original survey question from Mercader has 33 subitems. Based on the results of the MBIT study and the research purpose of the current questions, the researcher reduced the 33 subitems to 19 subitems to make the survey more concise and focused. The barrier of the "University Model" was removed since it

was not suitable for the current study. Some of the factors were measured more than one time in the original survey question, the researcher just kept the most direct and clearest one and deleted the others. The adapted 18 subitems correspond to the 18 barriers of the MBIT:

1. Subitem 1 corresponds to “Ineffective Leadership”;
2. Subitem 2 corresponds to “Lack of Institutional Support”;
3. Subitem 3 corresponds to “Work Saturation”;
4. Subitem 4 corresponds to “Lack of Evaluation”;
5. Subitem 5 corresponds to “Poor Infrastructure Quality”;
6. Subitem 6 corresponds to “Lack of Planning”;
7. Subitem 7 corresponds to “Inadequate Training”;
8. Subitem 8 corresponds to “Untimely Training”;
9. Subitem 9 corresponds to “Lack of Motivation”;
10. Subitem 10 corresponds to “Technophobia”;
11. Subitem 11 corresponds to “Generational Gap”;
12. Subitem 12 corresponds to “Lack of Training”;
13. Subitem 13 corresponds to “Lack of Incentives”;
14. Subitem 14 corresponds to “Lack of time”;
15. Subitem 15 corresponds to “Lack of Infrastructure”;
16. Subitem 16 corresponds to “constant Evolution of Technology”;
17. Subitem 17 corresponds to “Pedagogical Conceptions/Approaches”;

18. Subitem 18 corresponds to “Ignorance of Methods of Teaching with Digital Technology”.

The other survey questions from Mercader (2020) are not used in the current survey because they are not relevant to the purpose of the current study. Here is the adapted version of Question 11:

11. Please indicate the level of agreement for the following statements:

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
01. The implementation of technology has been achieved thanks to the effective leadership of those responsible for its incorporation					
02. The institution supports those teachers who promote the use of technology					
03. The use of educational technology would be greater if it were not for the amount of work assigned to teachers					
04. Teachers have a follow-up or evaluation by the					

institution on the use of technology in their teaching tasks					
05. The institution gives quality infrastructures for the use of educational technology					
06. For the incorporation, if technology there is strategic planning that sets the guidelines for its use					
07. The technology training that has been proposed was adequate to the needs of the teachers					
08. The technology training that has been at the right times					
09. Teachers are motivated with the use of technology					
10. Teachers who prefer not to use technology are based on strong research					

or arguments					
11. The generation gap influences the level of use of technology					
12. Sufficient training has been received on the use of technology					
13. Teachers receive incentives for using technology					
14. Teachers have enough time to incorporate new technologies into their practice periodically					
15. Sufficient infrastructure is available for the use of technology					
16. The constant evolution of technology resources prevents you from being up to date on their use					
17. The pedagogical conceptions of teachers are in favor of the use of technology					

18. Teachers know how to integrate technology in the methodological design of their classes					

The last category of the survey contains 1 question with seven sub-items, which are designed to explore ESL instructors' technology needs and how to support them better in applying educational technology into language teaching. Question 12 was designed by the researcher based on a literature review on the technology needs of higher education instructors and a focus discussion with 2 other ESL teachers. Here is the Question 12:

12. This question is designed to identify what your technology needs are and how to support ESL instructors better, please indicate to what extent that you agree or disagree with the following statements:

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
12.1 I need more time to integrate technology into my curriculum and teaching					
12.2 I need more training to use educational technology					
12.3 More support from the administration					

12.4 I want more access to technology tools to integrate in my teaching and classroom instruction					
12.5 I want more options for professional development in the areas of educational technology					
12.6 I want more ideas about how to integrate technology into my teaching					
12.7 I want more opportunities to collaborate with colleagues on how to use educational technology					

Please see Appendix B for the complete questionnaire.

Survey Population

In pursuit of the purpose of the current study and to undertake a feasible research project, four community colleges were selected as a convenience sample. The population for the current study includes 81 ESL instructors from four community colleges in the Bay Area, California. The four community colleges are two-year public institutions. Three of the four community colleges are part of a county community college district, which is a three College District located in Silicon Valley between San Francisco and San Jose. The three community

colleges are Community College A, Community College B, and Community College C. Community College D is a relatively small public school and is located in Alameda, California. All these four community colleges have an ESL program and offer different levels of ESL courses to international students.

The total population size for the current study is 81, which include 28 instructors from Community College A, 23 instructors from Community College B, 20 instructors from Community College C, and 10 instructors from Community College D. The online survey link will be sent to all 81 ESL instructors of the four community colleges via email. Before sending the survey, the researcher will contact each ESL instructor individually in advance and send the study introduction and design to all the participants.

Data Analysis

Every returned response from Phase 1 (online survey) was scrutinized carefully to determine its validity for analysis use. Returned surveys were examined to see if they are complete and if there are any obvious abnormalities in the responses.

All valid data collected from Phase 1 were entered into Microsoft Excel (2020). Different variables were converted into numerical indicators for analysis. A database codebook was created to assist in analysis. Then, all data was transferred to SPSS (International Business Machines, 2012) for further analysis. Quantitative data analysis was initially descriptive, which includes means, medians, variances, and ranges. This basic analysis allows the researcher to gain an initial understanding of the quantitative data collected from Phase 1. The interview questions of Phase 2 were adjusted based on the results of Phase 1.

Phase II --- Interview

Interview Guide Development

Guided by the research questions and the survey results from Phase 1, a semi-structured interview guide was created. All questions were adapted or created to help the researcher explore issues deeper based on the results from the questionnaire. There are seven interview questions in total. Questions 2, 3, 4, 5, and 6 were translated from Mercader's (2020) Spanish interview questions to explore deeper what obstacles are perceived by ESL instructors when integrating educational technology into their teaching and classroom instruction. A bilingual (English and Spanish) speaker was invited to check the translation and refine the final translation.

Questions 1, 7, and 8 are designed by the researcher to be in line with the survey questions and get a deeper understanding of both the general attitude of ESL instructors toward the integration of educational technology into teaching and how to support ESL instructors' technology needs better. All interview questions have been reviewed by the same expert panel as Phase 1 (online survey) to check the appropriateness. Here are the interview questions for the interview phase:

1. What's your general attitude towards the incorporation of technology into English teaching and learning? Why?
2. What do you think are the most common barriers or resistances in the integration of technology in your teaching? Why? How would you explain it?
3. Could you share a good experience of using technology in your ESL classroom? Why was it good for you?

4. Could you share a bad experience of using technology in your ESL classroom? Why was it bad for you?
5. Do you have colleagues resistant to the use of technology? What reasons do they usually give? How would you explain it?
6. Based on the questionnaire results, the top 3 most common barriers are **lack of time**, **tools/technology not working as expected**, and **inadequate technology equipment**. Do you feel like you can relate to your situation and your institution? Do you feel like you can relate to your situation and your institution? Why? How?
7. What are your technology needs in the context of your language teaching? Are you getting the support you expect? Or need?
8. What kind of technology do you think best facilitates your teaching?

Interview question 1 served as the opening question and collect the interviewee's attitude and opinion toward the incorporation of educational technology into English teaching and learning. Questions 2, 3, 4, 5, and 6 were used to explore answers for the first research question of the current study. Questions 2, 7, and 8 were used to explore answers for the second research question. The interview questions were adjusted based on the results of Phase 1 (online survey). Please see Appendix B for the complete interview guide.

Interview Sample

7 of the total participants were selected and invited to participate in the second phase (interview). The participants of the phrase two (interview) were be selected intentionally from among the participants that responded to the online survey. The selection of these instructors was made based on the following criteria to ensure the inclusion of all types of profiles:

community college, gender, years of teaching experience, and level of technical competence. The researcher hopes to get at least one instructor from each community college. The selection of the 7 interviewees was as diverse as possible and try to cover all levels of the independent variables.

Data Analysis

All data in Phase 2 were collected through individual interviews, which can provide in-depth details and descriptions of the current topic. Also, if the sample size of the questionnaire is relatively small, then the qualitative interview can provide significantly more information for the current topic than the survey alone. Each interview lasted approximately 20 to 30 minutes. All interviews were conducted through Zoom (5.3.1), and all meetings were recorded and transcribed by Zoom (5.3.1). The researcher checked on the transcriptions and revised all the interview transcriptions based on the Zoom recordings to make sure the content data are accurate. The researcher has done similar interview transcription analyses before; therefore, the transcription data from the Phase 2 should be reliable.

Content analysis was used to analyze the transcription data from Phase 2 (interview). Originally, content analysis was used to classify textual material to reduce it to more manageable and relevant bits of data (Weber, 1990). For a qualitative study, content analysis is a popular research method to make relevant and valid inferences from text data (Weber, 1990). Therefore, the researcher decided to choose content analysis to make qualitative inferences based on the results of the interviews.

The transcriptions of the Zoom interview questions were examined one by one. All interview questions were grouped into two categories to answer the two research questions. Question 1 is the opening question; questions 2, 3, 4, 5, and 6 were coded as Section 1 to

explore answers for the first research question of the current study; questions 2, 7, and 8 were coded as Section 2 to explore answers for the second research question. Answers from Section 1 were grouped according to the barriers of the combination of TAM3 and MBIT (there were 18 barriers adapted from the MBIT and 9 barriers adapted from the TAM3, removed the overlaps, there were 23 individual barriers left). If a new barrier appears in the interview, it will be marked and grouped as a new group.

Answers from Section 2 were examined to look for themes like technology needs, teaching preferences, and expectations about technology incorporation. All answers were grouped according to the 7 subitems of the last survey question (Question 12). If any new information appears related to the technology expectation or needs, they have been marked and grouped as new groups.

The coding process was completed mainly by reading the interview transcriptions, the researcher watched the recordings of the interviews again to make sure all the qualitative data are accurate. Usually, the content analysis process will be validated by another content expert, who holds an advanced degree in education and second language acquisition and has rich language teaching experience. Unfortunately, due to COVID-19 and the stresses that it created for people, it was impractical to do a reliability check at this time.

Protection of Human Subjects

The study was reviewed by the University of San Francisco Institutional Review Board for the Protection of Human Subjects (USFIRBPHS) for adherence to ethical practices. The study was approved by the USFIRBPHS as exempt research as it involves minimal risk to subjects according to 45CFR46.101(b). There were no known or anticipated risks or harms to the participant in the study. By participating in this study, ESL instructors had an opportunity

to reflect on their application of technology in their teaching and explore what obstacles they need to overcome in using technology to better support their teaching. When conducting research, the researcher observed all ethical standards and policies of the USFIRBPHS and all human research protection regulations of the American Psychological Association (2010).

Informed consent from the participants will be collected at the beginning of the research. A detailed introduction of the research purpose and research design was provided to all participants at the beginning of the survey. Another informed consent was obtained from the 7 interview participants at the beginning of phase 2. For the interview phrase, all results were kept confidential, and all participants have the option to drop the research at any time. The following steps were taken to protect the rights of instructors and address ethical considerations:

1. The researcher explained the purpose of the study and the overview of the research design in detail to all the participants via emails. All participants had multiple opportunities to express their questions or concerns and understand the role they play in the current research.
2. Consent was obtained from each instructor in this study, which includes a detailed introduction of the purpose of the study, the procedures of the study, and the data collection methods of the study (Appendix A), which was shown at the beginning of the online survey.
3. To protect each participant's confidentiality, names and identifying information didn't appear in the dissertation. The data used for this study was anonymously reported.
4. All recordings collected from the qualitative phase of the study were transcribed by Zoom automatically. All participants were asked for a consent to record and transcribe

the interviews. All recordings will be deleted immediately after the dissertation defense is completed.

CHAPTER IV

RESULTS

The purpose of the current study was to explore the obstacles that prevent ESL teachers from integrating educational technology in language teaching and to try to find out what kind(s) of support that can be provided in ESL classrooms to better support ESL instructors' teaching and students' learning in the community colleges in the Bay Area. This study used an explanatory sequential mixed-method design (Creswell, 2018), which consisted of two phases; the first phase was conducted through an online survey, and the second part was conducted through individual semi-structured interviews.

All survey data were collected via the online survey software called Qualtrics. The online survey was able to be accessed via computer, tablet, and mobile phone. 81 ESL instructors from 4 local community colleges were invited to participate in the survey. The survey link was sent directly to their school email address. 38 of 81 ESL instructors participated in the survey with 36 of 38 completing the survey. Participants who completed the survey were invited to participate in the second phase, a Zoom interview. There were 8 interview questions in total to discuss ESL instructors' attitudes toward technology integration, barriers to applying technology into their teaching, experience with technology applications, personal needs, and expectations for future technology integration. There were 7 ESL instructors who signed the consent form and participated in the interview phase.

This chapter first provides a demographic overview of the participants. Then the results are displayed according to research questions. Quantitative data are presented in tables and text, followed by qualitative interview data.

Both quantitative and qualitative data are considered individually. Survey items are grouped by TAM variables and MBIT variables when possible, in the analysis and evaluation. All reported percentages are rounded up when they were reported to be .5 or higher, therefore, occasionally resulting in total percentages not equal to 100. What's more, most table information was displayed in descending order for a better understanding of the survey data. For most tables, there is a brief description that precedes each, with an explanatory description to follow each of them. Each table starts to present data with the highest frequency items. Finally, there is a summary to conclude this chapter.

Demographics Overview

A total of 38 ESL instructors participated in the survey with 36 of them completed the survey. They all work at the four community colleges in the Bay Area. Demographic information of the participants is presented in the following tables.

Four community colleges are represented in this survey sample. All four community colleges are located in the Bay Area, California. Participation information of ESL instructors from the four schools is presented in Table 4. The percentage in the table represents the proportion of ESL instructors from each community college in the total number of participants.

Table 4.Percentage of Participation by ESL Instructors at Participating Community Colleges

Community College	Survey Invitation Sent	Responses	Percentage	Total Study Response Percentage (n=36)
CSM	28	10	28%	
CC	23	10	28%	
SC	20	9	25%	
CA	10	7	19%	
Total	81	36		44%

The number of responses per community college is relatively even, ranging from 7 to 10, which contributes to a relatively balanced sample composition. While the response rate per community college varies considerably. 70% of ESL instructors from CA completed the survey, while only 36% of ESL instructors from CSM completed the survey. Based on the research design of this study, among and between groups discrepancies are treated as irrelevant; all participants are regarded as part of the same group - ESL instructors teaching at the community colleges.

Gender reports from respondents illustrate that there were more female ESL instructors than male ESL instructors in this sample. More gender information of the participants is displayed in Table 5.

Table 5. Gender Reported by Participating ESL Instructors

Gender	Count	Percentage
Female	29	81%
Male	5	14%
Prefer not to say	2	6%
Non-binary/third gender	0	0%
Total	36	

From table 5, we can easily see that there were way more female ESL instructors who participated in this study compared to the male ESL instructors. The reason behind this may be that there are more women engaged in the ESL education area than men in general.

Teaching experience reports from ESL instructors illustrate that most participants are experienced teachers and have been teaching English for a relatively long time. Detailed teaching experience information is displayed in Table 6.

Table 6. Teaching Years Reported by Participating ESL Instructors

Teaching Years	Count	Percentage
1-3 years	3	8%
4-5 years	9	25%
6-10 years	10	28%
More than 10 years	14	39%
Total	36	

From Table 6, we can see that there 24 out of 36 participants have been teaching English for 6 years or more, which means that 67% of the participants are experienced ESL teachers, and only 8% of the participants have 3 or fewer years of teaching experience.

Technical levels reported by participants show that most ESL instructors feel moderate about their current technical skills, with only 2 of 36 respondents reported as basic level. Table 7 displays more technical level data of the participants.

Table 7. Technical Level/Skills Reported by Participating ESL Instructors

Technical Level/Skills	Count	Percentage
Basic	2	6%
Intermediate	23	64%
Advanced	11	31%
Total	36	

From Table 7, we can see that 95% of the participants identified their technical level as intermediate or above, which suggests that most participants have a relatively high level of technical proficiency in general. With this, we may infer that most of the participants have teaching experience with educational technology. Moreover, more analysis will be done with the participants who identified their technology skills as advanced later to explore their opinion toward the relationship between technology integration and time management.

Research Question 1: Quantitative Results

What prevents ESL teachers from integrating educational technology into English as a second language teaching?

Most survey items in the Potential Obstacles in Integrating Technology into English Teaching Survey were designed to explore obstacles/barriers that hamper ESL instructors in integrating educational technology into their daily teaching and to explore what's instructors' expectations/needs regarding educational technology. The first research question of this study is about the potential obstacles and barriers that ESL instructors face and experience in their daily teaching. Quantitative survey data are reported first with qualitative interview data following.

Research question 1, "What prevents ESL teachers from integrating educational technology into English as a second language?" includes data from the following survey items: questions 5, 6, 7, 8, 9, 10, and 11. Survey items measuring this research question according to the TAM 3 variables and MBIT variables respectively.

Attitude toward Educational Technology Integration

Survey item 5 measures instructors' general attitudes toward educational technology integration into English teaching. ESL instructors were asked to share their attitudes toward educational technology integration in English teaching. Participants were free to choose their attitude from a Matrix Table from strongly disagree to strongly agree regarding each subitem included in the survey item 5. In order to gain a deeper understanding of the results from survey item 5, each attitude level is weighed with a certain value, from 1 to 5. Strongly Disagree option is weighed 1, Disagree option is weighed 2, Neutral option is weighed 3,

Agree option is weighed 4, and Strongly Agree option is weighed 5. Because the midpoint value is 3, when the average value of the data is greater than 4, it is considered high, and when the average value of the data between 3 and 4 will be regarded as above average, when the mean value below 3 is considered below the average value. The descriptive statistics of the results of survey item 5 are presented in Table 8. Subitems were displayed in decreasing order according to their average value for a better reading experience.

Table 8. Descriptive Statistics for Survey Item 5

#	Subitem	Mean	Std Deviation	Variance	Count
5.4	More technology will be used in future ESL classrooms	4.44	0.86	0.75	36
5.3	Educational technology integration would improve the quality of language teaching	4.11	0.70	0.49	36
5.1	Educational technology would improve my ability to teach	4.08	0.89	0.80	36
5.2	Most educational technologies are reliable	3.33	0.91	0.83	36

From Table 8 we can see that subitem 5.4 (M=4.44) has the highest mean, which means that most participants believe that future ESL classrooms or language teaching will be integrated more with educational technology. Both subitem 5.1 (M=4.08) and subitem 5.3 (M=4.11) averaged more than 4, which means that participants relatively highly believe that the integration of educational technology can improve both their teaching ability and the overall teaching quality. The mean of the subitem 5.2 (M=3.33) is the lowest, but it is still above 3, which means that most participants are neutral about the reliability of most educational technologies, at the

same time, this also shows the ESL instructors' doubt about the quality and reliability of certain educational technologies.

Job Relevance (Perceived Usefulness)

Survey item 6 measures the research question regarding the TAM 3 variable Job Relevance (Perceived Usefulness). This survey item was designed to explore ESL instructors' views on the relevance of the use of educational technology to their work and teaching responsibilities. Participants were asked to share their opinion about to what extent they agree that educational technology could facilitate their various teaching responsibilities, such as class preparation and assessment. Instructor participants were free to choose their attitude toward each subitem from strongly agree to strongly disagree in a matrix table. The results of survey item 6 are displayed in Table 9. All subitems were displayed in decreasing order according to their average value.

Table 9. Descriptive Statistics for Survey Item 6

#	Subitem	Mean	Std Deviation	Variance	Count
6.4	Monitoring students' progress	4.31	0.62	0.38	36
6.2	Providing instructions, reminders, and feedback	4.28	0.77	0.59	36
6.1	Class preparation	4.11	0.57	0.32	36
6.3	Facilitating activities	4.11	0.61	0.38	36
6.5	Assessment	4.06	0.74	0.55	36

From Table 9 we can see that the means of all subitems under survey question 6 are higher than 4, which means that participants generally believe that educational technology has a

strong relationship with their teaching tasks and responsibilities. Among the subitems, 6.4 (M=4.31) and 6.2 (M=4.28) have the highest mean, which means that participants believe that the most helpful and relevant part about educational technology is that it can help teachers to monitor students' learning progress and provide instructions, reminders, and feedback to students. Subitem 6.5 (M=4.06) has the lowest mean among the 5 main teaching responsibilities, which can be understood that participants believe that educational technology can help with students' assessment, but not as much as it works with the other teaching tasks.

Output Quality (Perceived Usefulness)

Survey item 7 measures the research question regarding the TAM 3 variable Output Quality (Perceived Usefulness). This survey question was designed to explore ESL instructors' perceptions of how well the educational technology performs various teaching tasks. Participants were asked to express their opinion about to what extent they believe that educational technology could perform well regarding the main teaching tasks/outcomes, such as students' engagement, students' learning motivation, and classroom interaction. The results of survey item 7 are displayed in Table 10. All subitems were displayed in decreasing order according to their average value.

Table 10. Descriptive Statistics for Survey Item 7

#	Subitem	Mean	Std Deviation	Variance	Count
7.1	Students' engagement	3.94	0.66	0.44	36
7.5	Collaborative learning	3.92	0.95	0.91	36
7.4	Meaningful learning	3.83	0.90	0.81	36
7.3	Classroom interaction	3.78	0.85	0.73	36
7.2	Learning motivation	3.53	0.73	0.53	36

From Table 10, we can see that the means of all subitems under survey question 7 are between 3 and 4, which means that participants generally recognize that educational technology can facilitate the five main teaching tasks/goals in language learning and teaching. Subitem 7.1 (M=3.94) has the highest average value, which means that participants feel most positive about educational technology's performance in improving students' engagement in learning. Subitem 7.2 (M=3.53) has a relatively low average value, which means that participants think that educational technology may not work very well in increasing students' learning motivation.

Computer Anxiety, Computer Self-Efficacy, and Objective Usability (Perceived Ease of Use)

Survey item 8 measures the research question regarding three TAM 3 Perceived Ease of Use (PEU) variables, Computer Anxiety, Computer Self-Efficacy, and Objective Usability. Subitem 8.1 was based on the variable, Computer Anxiety, which was designed to explore ESL instructors' level of apprehension when faced with the possibility of applying educational technology. Subitem 8.2 to 8.4 were based on the variable, Self-Efficacy, which were designed

to explore to what extent that ESL instructors believe that their individual ability to perform the language teaching task using educational technology.

Subitem 8.5 and 8.6 were based on the variable, Objective Usability, which was aimed to explore ESL instructors' perceptions of educational technology based on their actual effort required to perform their teaching tasks. Similar to prior survey items, survey 8 was also displayed through a matrix table, and participants were asked to share to what extent they agree or disagree with the subitems. The results of survey item 8 are displayed in Table 11. All subitems were displayed in decreasing order according to their average value.

Table 11. Descriptive Statistics for Survey Item 8

#	Subitem	Mean	Std Deviation	Variance	Count
8.6	More time needed to prepare Technology-integrated classes	4.36	0.82	0.68	36
8.4	I feel confident and comfortable to Integrate educational technologies into my teaching	3.61	0.98	0.96	36
8.3	I feel confident in my ability to access the available technology when I need it	3.50	0.90	0.81	36
8.5	I have a good variety of ideas for integrating educational technology into my instruction and teaching	3.17	1.12	1.25	36
8.1	I easily get nervous when facing various educational technologies	2.64	1.08	1.18	36
8.2	I don't think I have the technology skills to support students in class	2.56	1.23	1.52	36

From Table 11, we can see that the average value of both subitem 8.1 (M=2.64) and subitem 8.2 (M=2.56) is lower than the middle point, which means that most of the participants don't agree with the statements conveyed by subitem 8.1 and 8.2. Subitem 8.1 was designed to measure ESL instructors' Computer Anxiety, therefore the results of subitem 8.1 show that the general level of Computer Anxiety of most ESL instructor participants is relatively low, even in this COVID-19 pandemic period.

Subitem 8.2 to 8.4 were designed to measure ESL instructors' Computer Self-Efficacy. Combined with the results of these three subitems, most participants have a moderate attitude toward their self-efficacy of computers. Based on subitem 8.2, we can include that most participants believe that they have the technology skills to support students in class. The average value of both subitem 8.3 (M=3.50) and subitem 8.4 (M=3.61) is above average, which means that most participants have the confidence to access the available technologies and integrate them into their language teaching. Subitem 8.6 (M=4.36) has the highest mean, which means that most participants relatively highly agree with this statement, that they need more time to prepare technology-integrated classes.

Perceived Enjoyment and Computer Playfulness (Perceived Ease of Use)

Survey item 9 measures the research question based on two TAM 3 PEU variables, Perceived Enjoyment and Computer Playfulness. Subitem 9.1 and 9.2 were based on Perceived Enjoyment, which was designed to explore to what extent that ESL instructors believe the activity of using educational technology in language teaching is enjoyable. Subitem 9.3 was based on Computer Playfulness, which was designed to measure ESL instructors' "cognitive spontaneity" (Venkatesh & Bala, 2008) of educational technology interactions. Participants

were free to choose their attitude toward each subitem from strongly agree to strongly disagree in a matrix table. The results of survey item 9 are displayed in Table 12.

Table 12. Descriptive Statistics for Survey Item 9

#	Subitem	Mean	Std Deviation	Variance	Count
9.1	I believe that the integration of educational technology would make teaching process more enjoyable	3.75	0.79	0.63	36
9.2	I believe that the integration of educational technology would make teaching more fun	3.69	0.75	0.56	36
9.3	I enjoy applying various technologies into my teaching	3.46	1.02	1.05	36

The average value of all the three subitems of the survey question 9 is between 3 and 4, which is above average. Subitem 9.1 (M=3.75) has the highest mean among the three subitems, which shows that most participants agree with the statement that the application of education technology can make language teaching more enjoyable. Subitem 9.3 (M=3.46) has a relatively low mean, which suggests that most participants do admit that educational technology can make the teaching process more interesting, but the feeling is not strong or obvious.

Current Identified Obstacles

Survey question 10 was designed to explore the obstacles and barriers that the ESL instructors had experienced and identified already. There are 10 obstacles/barriers listed with an entry space for ESL instructors to enter any obstacle that is not listed above. Participants were asked to select all the listed obstacles and barriers that apply to them. Detailed

information and results about survey question 10 are displayed in Table 13. All subitems were displayed in decreasing order according to their frequency.

Table 13. Descriptive Statistics for Survey Item 10

#	Subitem	Count	Percentage
h	Tools / Technology not working as expected	30	83%
b	Lack of time	29	81%
c	Inadequate technology equipment	26	72%
i	Insufficient training	20	56%
a	Lack of necessary technology skills	20	56%
g	Feeling inadequate	16	44%
f	Budget or policy issues	14	39%
d	Students get distracted	12	33%
e	Does not fit my teaching objectives and philosophy	6	17%
j	Have not experienced any obstacles	1	3%
k	Other (please specify)		
k-1	Specific limitations in different countries	1	3%
k-2	Concern about how to train students to use the same technology	1	3%

*Percentage area is calculated by dividing the count by the total participants (N=36)

From Table 13, we can see that the top two obstacles identified by the participants are Tools/Technology not working as expected (P=83%) and Lack of time (P=81%), which means that most participants had unsatisfied experiences with certain technologies and technical

tools, and most participants had faced a shortage of time when integrating educational technology into their teaching. Another high-vote obstacle is Inadequate technology equipment (P=72%), which suggests that most participants have experienced a shortage of technology equipment or felt inadequate about technology equipment. This inadequateness may be due to budget constraints or school policy or other causes. Hopefully, the qualitative data will help further explain the causes behind this inadequateness. 20 out of 36 participants picked Lack of necessary technical skills and Insufficient training as the obstacles they have met in their working, which means that most participants still need more technical training to improve their technical skills and ability.

Only 1 out of 36 participants stated that he or she has never experienced any obstacles when using technology in his or her teaching, which suggests that almost all participants have experienced one or more obstacles when using technology in their work and teaching. The two obstacles that were entered by the participants are very inspiring and provide a new viewpoint to explore the current situation about technology integration into language teaching. “Concern about how to train students to use the same technology” helps widen the perspective of the current technology acceptance model. It is true that students’ technology skills will definitely influence the integration of educational technology in a language classroom. Hopefully, the interview data will provide more information regarding the students’ perspectives and about students from other countries.

Barriers Identified by Model of Barriers to the Incorporation of Digital Technologies (MBIT)

Survey question 11 measures the research question based on the barriers and obstacles identified by the MBIT. The 18 subitems were used to explore the 18 barriers from the MBIT.

For detailed information on the MBIT barriers, please refer to Chapter 3. More detailed information and results about survey question 11 are displayed in Table 14. All subitems were displayed in decreasing order according to their Mean value.

Table 14. Descriptive Statistics for Survey Item 11

#	Subitem	Mean	Std Deviation	Variance	Count
11.3	The use of educational technology would be greater if it were not for the amount of work assigned to teachers	4.28	0.73	0.53	36
11.11	The generation gap influences the level of use of technology	4.25	0.43	0.19	36
11.16	The constant evolution of technology resources prevents you from being up to date on their use	3.61	1.09	1.18	36
11.2	The institution supports those teachers who promote the use of technology	3.39	0.92	0.85	36
11.17	The pedagogical conceptions of teachers are in favor of the use of technology	3.36	0.71	0.51	36
11.5	The institution gives quality infrastructures for the use of educational technology	3.14	0.85	0.73	36
11.7	The technology training that has been proposed was adequate to the needs of the teachers	3.14	0.95	0.90	36
11.8	The technology training that has been at the right times	3.11	0.77	0.60	36

11.12	Sufficient training has been received on the use of technology	3.06	0.85	0.72	36
11.15	Sufficient infrastructure is available for the use of technology	3.06	0.85	0.72	36
11.9	Teachers are motivated with the use of technology	3.03	0.76	0.58	36
11.6	For the incorporation of technology, there is strategic planning that sets the guidelines for its use	2.97	0.77	0.60	35
11.1	The implementation of technology has been achieved thanks to the effective leadership of those responsible for its incorporation	2.94	0.78	0.61	36
11.18	Teachers know how to integrate technology in the methodological design of their classes	2.75	0.79	0.63	36
11.10	Teachers who prefer not to use technology are based on strong research or arguments	2.72	0.90	0.81	36
11.4	Teachers have a follow-up or evaluation by the institution on the use of technology in their teaching tasks	2.50	0.99	0.97	36
11.13	Teachers receive incentives for using technology	2.47	0.85	0.75	36
11.14	Teachers have enough time to incorporate new technologies into their practice periodically	2.11	0.66	0.43	36

All subitems were sorted by their average value to make it easier for readers to find the subitems with the extremist mean values. From Table 14, we can see that there are only two

subitems' mean value that exceeds 4. Subitem 11.3 (M=4.28) has the highest mean value, which suggests that most participants believe that the integration of educational technology would be more beneficial if there would be less amount of work assigned to them. Mercader (2020) has identified this barrier as "Work Saturation", which means that most participants' current workload has occupied a lot of their time and energy, thus hindering their action of integrating technology into their teaching practice. Subitem 11.11 (M=4.25) has the second-highest mean value, which means that most participants agree that the generation gap can influence ESL instructors' level of use of technology. Subitem 11.14 (M=2.11) has the lowest mean value, which suggests that most participants don't agree with the statement that "teachers have enough time to incorporate new technologies into their practice periodically". To put it more straightforwardly, most participants don't think they have enough time to integrate technology into their teaching practice.

Research Question 1: Qualitative Results

What prevents ESL teachers from integrating educational technology into English as a second language teaching?

7 ESL instructors participated in the interview phase, all of them also participated in the survey phase. The interview sample includes 2 male ESL instructors and 5 female ESL instructors. They come from 4 community colleges in the Bay Area, California. Their teaching experience ranges from 6 to more than 25 years. They were given different pseudonyms in order to better present the results of the interviews. More information about the 7 interviewees is displayed in Table 15.

Table 15. Interviewee Information

#	Pseudonym	Gender	Years of Teaching Experience
1	Alice	Female	25+
2	Snow	Female	20-25
3	Fiona	Female	15+
4	Daisy	Female	16
5	Mona	Female	14
6	Peter	Male	7-8
7	Christopher	Male	6

From Table 15 we can see that there were 5 female ESL instructors participating in the interview, accounting for around 71% of the interview sample, which is not much different from the proportion of female participants in the survey (P = 81%). Interviewees' teaching experience ranges from 6 to more than 25 years, which is relatively different from the whole survey sample, in which, only 68% of respondents have 6 or more years of teaching experience. For readers' reference, here listed all the 8 interview questions used in the interviews:

1. What's your general attitude towards the incorporation of technology into English teaching and learning? Why?
2. What do you think are the most common barriers or resistances in the integration of technology in your teaching? Why? How would you explain it?
3. Could you share a good experience of using technology in your ESL classroom? Why was it good for you?

4. Could you share a bad experience of using technology in your ESL classroom? Why was it bad for you?
5. Do you have colleagues resistant to the use of technology? What reasons do they usually give? How would you explain it?
6. Based on the questionnaire results, the top 3 most common barriers are **lack of time**, **tools/technology not working as expected**, and **inadequate technology equipment**. Do you feel like you can relate to your situation and your institution? Why? How?
7. What are your technology needs in the context of your language teaching? Are you getting the support you expect? Or need?
8. What kind of technology do you think best facilitates your teaching?

All interview participants were asked all eight interview questions. All interviews were recorded, transcribed, and checked by the research herself. Under regular conditions, the researcher would have one or two other people to also look at the qualitative interview data. Unfortunately, due to COVID-19 and the stresses that it created for people, it was impractical to do a reliability check at this time.

Interview questions 1, 2, 4, 5, and 6 measure the first research question and explore ESL instructors' general attitudes toward technology integration into English teaching and learning. The big themes that emerged in the interviews are consistent with the themes that emerged from the survey with one exception, a perspective from the students' part. The themes will be discussed in the following order: technology integration trend in language teaching, lack of time, tools/technology not working as expected, inadequate technology equipment, workload, generation gap, and technology integration & students' perspective.

Technology Integration Trend in Language Teaching

According to the responses to survey item 5, most participants responded positively to the statements that there will be more technology incorporated in the future ESL classrooms (M=4.44) and the use of technology will improve the quality of language teaching (M=4.11; see Table 8), which suggest that most ESL instructor participants believe that more educational technology will be integrated into the language teaching process in the future and realize the important role that technology can play in language teaching. This was echoed by the data of the interviews. All interviewees recognized the importance of technology use in language teaching and believe that more technology will be incorporated into future language teaching and learning. Snow, an experienced ESL instructor with more than 20 years of teaching experience, explained the reasons why she thinks technology is important and what benefits can technology bring to the language classrooms:

> Obviously, I believe it's very important to incorporate technology. I think the way the classroom looked in the 80s and 90s, for sure, it was quite boring. It was the grammar-translation method used in the classroom, it was just very robotic and repetitive and not interesting. So when you bring technology and you're able to show your students something in any language classroom. I think that's a tremendous benefit.

Another experienced ESL instructor, Alice, who has been teaching English for more than 25 years, expressed an even stronger positive attitude to technology use in the language classroom and the role that technology can play in future teaching and learning:

> I think technology has a big part to play in teaching. I think it is a very, very useful tool, and I think that tool is getting better and better all the time. Just the variety of options available, even during the pandemic, you know, Zoom I think has, in some ways, revolutionized what online teaching can be. And that's only one form of technology, of course, there are many other ways that technology can be used in the classroom, not just in terms of online teaching, but in-class teaching as well.

All interviewees affirmed the significant role that technology has played or will play in the language classrooms, especially during this COVID-19 pandemic period. Fiona, another experienced ESL instructor with more than 15 years of teaching experience, shared the changes in her attitude toward technology integration over the last year (since the pandemic):

> For our teaching at the college level, technology, at least initially, it was like a supplementary piece, a backup for our face-to-face teaching. Like an extra piece, maybe you can look on Canvas to see some handouts that you might have missed in class. It was a reference, a depository of information. But since last Spring, a year ago, I went from teaching face-to-face classes at the Community colleges to fully emergency online teaching. And so, this is the learning curve, for that was very, very different and so….Utilizing technology to teach English during this global pandemic environment is essential, it is our only way that we can keep English learning continuing. It's the only way. We need Zoom, we need Canvas or other tools, we need some way to connect with our learners.

What's more, Mona, who has been teaching English for about 11 years, clearly described how different technologies facilitate her teaching and make her a better teacher:

> I love technology and I think it is a great thing and a great platform for us to reach more students. We have so many different students with different learning modalities, some of them are visual learners and some of them are auditory learners. With having technology and incorporating the technology in our classes, we are reaching more students and we can help more students to reach their goals. I feel like after this pandemic that forced me to learn how to work with Canvas models, Google classrooms, and everything that's out there for me to teach. I have been creating classrooms for each of these platforms, for this, it made me a better teacher. And I became more in touch with my students' needs because of technology.

While the ESL instructors affirmed the importance of technology in language teaching, some of them also demonstrated some concerns about the potential excessive use of technology at the same time. A very experienced ESL instructor with more than 25 years of experience, Alice, expressed her concern about technology use:

> So I think my attitude in one sense is that I am very positive about technology integration, I think there's a lot to be gained. I also have a certain concern sometimes that technology can start to become the goal rather than the tool. And I feel like, because we

> live in a society where corporations have a lot of power, I feel like sometimes there's a lot of pressure to use technology when it's not really that necessary and maybe not even that helpful, and at times, it can be a negative thing.

Lack of Time

From the survey results, we can easily see that the time issue is a big concern for most participants. The high mean value of subitem 8.6 (more time needed to prepare technology-integrated classes; see Table 11) states that most participants feel and believe that they need more time to integrate technology into their classes. Moreover, 81% of participants picked "lack of time" as the main barrier for them to integrate technology into the teaching process in the survey. The interview data helps us explore why ESL instructors need more time to integrate technology into their teaching. Six out of seven interviewees clearly expressed that lack of time is an important concern for them to actually integrate technology into their teaching. Daisy, an ESL instructor with 16 years of English teaching experience, plainly stated that lack of time is a big concern for her and explained why:

> Yes, so I think lack of time is a big thing because integrating technology requires two things. First, you have to be familiar with the technology yourself. So it takes time to train yourself about how to use that technology. And the second thing is that this is not enough. Because you have to train your students about how to use the technology as well.

Daisy's sharing helps us unlock a new perspective on the current problem of this study, that is, the students' perspective and reaction toward technology integration. More interview data will be analyzed based on this perspective later. Another ESL instructor Mona shared her reasons and concerns about why teachers need more time to integrate technology from a slightly different perspective:

> So many different things to do to just become an online teacher… the only thing I would say is lack of time. What people forget is that creating something and putting it online, for teachers, takes a lot of time. And yes, I can just paste everything but they don't understand, some people don't understand that. Creating one Canvas module could take

> hours. I have to think about the topic, and what I want, and what I don't want to include, all of that comes together to make a good module that I am satisfied with. So the lack of time is a really big deal because I feel like people should start thinking about paying teachers for their online teaching prep time. For example, taking myself as an example, in order to become a better online teacher, I took so many courses this year from instructional design courses to how to create modules and Canvas courses. The time and energy spent should be valued, so the institutions have to think about a payment for the teachers, for the time they put in it.

Similarly, Fiona also expressed her concerns about the time issue in learning new technologies and preparing for online courses:

> First of all, it takes a substantial amount of time on the instructors' part to learn the new tools to build your classes in the online environment, then to reach your students. It takes a lot of work, an endless amount of hours for me… It takes an exorbitant amount of time for me.

However, what is interesting is that one ESL instructor, Peter, who has about 7-8 years of teaching experience, surely stated that time is not a concern for him at all. He identified his technical skills as advanced and he believes that technology helped him to teach more effectively and did not take him too much time. He expressed that if a teacher is not very good with technology, then lack of time could be a problem; but if a teacher is doing good with technology, then lack of time would not be an issue:

> I think that lack of time is not really a thing for me. I mean that's for sure everybody is different. Maybe I'm different because I got an emphasis in my degree for technology, like using effective technology tools. So for me, it's not a lack of time. I think it's just you have to know how to incorporate it into your lesson planning ahead. Maybe that's just for me, I love technology, so for me, I find ways to try to use it as much as possible. So I don't look at it as a lack of time, but I see if you are not very good with technology, then it definitely would be a lack of time, because you have to learn a lot about like what are you doing and how are you going to incorporate it into the classroom, especially if you are not very savvy with technology yourself then it's going to be a problem. For me, I love technology, so I don't have a problem with that.

Tools/Technology not Working as Expected

Based on the survey results, most participants believe that technology not working as expected (83% of participants agreed; see Table 13) a problem when it comes to the technology integration in the language classrooms. This was echoed even by the instructor with a high technical level. Peter, an ESL instructor with 7-8 years of teaching experience and identified his technical level as advanced, expressed that technology not working as expected is the biggest barrier for him when using technology in the classroom:

> A lot of the times that I think the biggest barrier for me and for, I think, many people in my career is that the technology sometimes doesn't work as expected. And so that's when situations happen. But I think that when that happens, we have to find a way to be able to incorporate it right, so we have to make sure we're also looking at the right tools to make sure it works.

In addition to expressing his concern about technology not always working as expected, Peter also shared about how to address this problem in the teaching process based on his experience and perspective:

> What I like to call efficient and which means that, basically, what you do is when you get into technology you just need to know how to utilize it right to make sure that it makes sense and why we are using it. But you always also have to have like plan B and plan C, in case of technology fails you because sometimes there's situations where wifi or other elements don't work.

Another very experienced ESL instructor Alice also manifested her concern about technology not working as expected in teaching. What's more, she mentioned that if technology or tools don't work as expected, that would make the lack of time problem become more serious:

> If you've set something up and then it doesn't work the way you want or you're trying to do something and it's not working. That is very frustrating and again that goes back to the lack of time. If you are feeling the pressure with time and then the tool isn't really working well, it's a real drag.

Inadequate Technology Equipment

According to the responses to the survey, many participants stated that inadequate technology equipment (P=72%; see Table 13) could be a barrier for them to integrate technology into their language teaching practice. Daisy, an ESL instructor with about 16 years of experience, agreed that inadequate technology equipment was a barrier for her when integrating technology in her classes from a students' perspective:

> So sometimes you want to try something but it's you know either you don't have the equipment or students don't have them. So, for example, Kahoot game is one of the things that you have to make sure that all your students have cellphones in class. So that they can respond to the Kahoot questions. But if not all your students have smartphones, you can not use it. I, to be honest, quit using Kahoot. Because I realized that some of my students couldn't join because they didn't have a smartphone. I didn't know that before and it took me some time to realize that. But when I realized that, I felt so bad. I felt so bad because it's kind of discrimination. You don't even realize some students don't have cell phones or smartphones and you're asking them to join an activity using it. So I think inadequate equipment is a big problem absolutely.

While, interestingly, this concern was not addressed much by other interviewees from an instructors' perspective. For example, Alice, who is an experienced ESL instructor with a lot of experience, described:

> For inadequate technology equipment, I haven't felt that much at my campus, maybe because you know for ESL teaching, our equipment generally at this point only involves a laptop. And we are provided with a laptop. And, once if our laptop starts getting outdated and then it is replaced in a timely manner. But I bought myself a tablet this summer because I wanted to grade essays on a tablet not using Canvas. And I tried to convince my Dean to buy one for my colleagues. I didn't push very hard, but they said well you don't really have to have it so. Anyway, I bought it for myself, so it was fine, but you know, some people might argue that it was inadequate technology equipment.

Even though some instructors didn't say that inadequate technology equipment is a big problem, they also made some suggestions. Peter, a high-level technical ESL instructor, made the following suggestion and concern:

> We need more modern buildings and things like that and more use of technology, so money being invested in technology could be an issue as well.

Lack of Necessary Technology Skills

According to the results of the survey, it seems that lack of necessary technology skills is not a big problem for ESL instructor participants (56% of participants agreed; see Table 13). However, a lack of necessary technology skills was mentioned many times in the interviews. When asked what was the biggest obstacle he encountered in the process of using technology, Christopher, an ESL instructor with 6 years of teaching experience, described:

> Me personally, I'm just not the most technologically savvy person. I need more rules. Also, you know, it's not useful to me to watch training videos. I can't just watch a video and watch people push a bunch of buttons. I need to sit there and do it myself. So if you're going to be creating something like this, integrating technology into the classroom, by every means possible I can sort of follow along with the video, but I much prefer if somebody can make me do it. For example, an experience with some of the more recent technology, Canvas, I don't know how to create Canvas pages, I know how to create Canvas module, I know how to upload files and you know I can make a pretty interesting looking Canvas classroom, but I don't have a lot of experience creating actual pages and links. So those are my barriers, inexperienced with the technology.

Another very experienced ESL instructor Snow also expressed similar concern about the lack of necessary technology skills in her own teaching:

> For me personally, because this is obviously, growing up under a completely different system and there was absolutely no technology, you know I had to make that transition into understanding technology and learning how to use it and trying to integrate it as a teacher, but also try to understand as a student. I don't have any resistance to it. I would say I am open-minded and I hope that I will be able to integrate as much technology as possible. I just think that I probably am a little bit, I don't want to say behind, but I am still struggling a little bit with understanding everything that's out there and wanting to learn how to use it properly. And for example, in the classroom, when we are teaching I don't want to be embarrassed and, you know, fumble with something and not be able to open something quickly enough. And, you know, I have been in situations like that.

Similar to Snow's concern, Alice also shared her concern about her own technology skills and competence:

> I am not very confident about my ability to use technology well. For example, you know, in our move to online teaching. I had to learn a lot in order to be able to use Canvas and Zoom appropriately and I feel like I still use Canvas on a very basic level. I mean I've improved a lot and I did receive a lot of professional development time and support this past summer to get better. But I still feel like I'm not very good and I make mistakes, and you know I think there are many people at my campus, who use technology a lot more comfortably than I do. So that's definitely a barrier resistance for me.

After expressing her concerns about the lack of necessary technology skills, Alice also shared her thoughts about how to address this concern:

> As I mentioned, I did get support last summer to learn, you know, to get professional development, in terms of using technology to teach online. However, you know, I feel like there's a continual need for that. For me to continue to work on the technology, because things come up all the time and technology, you know, using it better and using it more effectively and using new tools, I think there's a constant need.

Generation Gap

Based on the responses to the survey, many ESL instructor participants believed that the generation gap can influence the level of use of technology (M=4.25; see Table 14) when integrating technology into the language teaching process. This was consistent with the results of the interviews. For example, Snow, a very experienced ESL instructor, expressed that she believed young people can adapt to and learn technology very quickly:

> And it's so natural to the young generation, this is just so incredible to notice that. I mean I feel like when I'm looking at my kids and how they use technology, it's almost like a continuation of their arms and the brains with everything just right. It's just not intuitive to me that's all.

Daisy, an ESL instructor with 16 years of teaching experience, showed a clear concern about the generation gap in her response:

> I don't want to say, young and old, I don't want to use these adjectives, but, if they are experienced teachers, who started teaching long, long time ago and who are used to classroom contacts, they really don't want to use technology in their classrooms. Or even they don't want to teach online so, for example, in a face-to-face environment we have smartboards. I have experienced some teachers they don't like and they're not using the

> smartboard, because you have to click on something you know. You need to turn it on and then you use different things, and they don't like it. They are so scared that they are going to break it down. Okay, they don't want to use it. And also like some teachers don't want to use PowerPoint, because they think it's so complicated, it's really hard to use a PowerPoint so they prefer to make copies of worksheets and give them to their students and then they go over the worksheets together. I don't know if their minds changed after, but that was the experience I had before.

Similarly, Christopher, an ESL instructor with 6 years of teaching experience, mentioned his concern about the generation gap:

> I am one of the few people who actually like teaching via Zoom and who's actually relatively positive about it, but a lot of the older teachers are having serious issues.

Christopher also used himself as an example to express that the generation gap could be a potential problem when it comes to technology using:

> People like my wife, who was also an instructor, who was, you know, 15 years younger than me. She takes to the new technology very quickly, like the spreadsheets and PowerPoints. I need a little extra time and support.

Technology Integration and Students' Perspective

All survey questions were designed to explore ESL instructors' perspectives; therefore, no survey questions focus on the students' perspective. But the interesting part is that students' perspectives and reactions to technology were mentioned many times during the interviews and seem to play a relatively significant role in the process of technology integration in the language classrooms. ESL instructors' discussions and concerns regarding students' part are mainly divided into the following two areas: lack of necessary technology skills and inadequate personal technology equipment.

Fiona, an ESL instructor with more than 15 years of teaching experience, comprehensively described the barriers that new ESL students face during this challenging pandemic period:

> I'd like to definitely talk about the barriers for my students. So we talked a lot about access, access to education, access to resources, access to knowledge, and access to every resource in our college. We're really working on equity and narrowing equity gaps and trying to understand what students may need and allowing them to have access to the tools they need when they need them right and so. The barriers for technology, a lot of my local immigrants as well as students, they're not the most tech-savvy people. But now, they have habitually come over for economic reasons, they are here to support their families. Maybe they have jobs, maybe they've come here to focus on their work which is raising their families. They are working really hard, they have service jobs, it's not always technology-related. They are not always on a laptop doing their job. They are, you know, delivering things, working service jobs, and so technology is not really necessary. In our ESL program, we were attuned to this that these new ESL students have language barriers. And then they have technology barriers. How are we going to get them through all these barriers to keep moving forward and learning the language, and then meeting their goals and getting careers and having other things that open up for them?

In addition to describing in detail the barriers that the students face in the technology integration process, Fiona also detailed how her program and college helped students overcome this barrier and become successful online students:

> So we started a program. We developed a tech boot camp, kind of like this, an online technology-intensive training at the beginning of the semester, one or two weeks before classes start. Where students will go in and do a virtual workshop, and they would be taught step by step, all the tech tools that they need to be an online student because they were not all students before. And that was huge for them, and so this semester we were able to do what we couldn't do last semester. We didn't do it last semester because we didn't know. We were just trying to get it all together. So this semester we had the tech training for the students and it's made a huge difference, huge.

Alice, another very experienced ESL instructor, shared the same concern regarding students' perspective and her own challenging experience with a student who is very inexperienced and uncomfortable with technology:

> You know, because of the digital divide, for example, right now, some students can use technology, have access to technology, are comfortable with technology, but other students do not. Again, in terms of digital divide, I have some students who are very inexperienced in terms of using techno the logy. For example, I have one student this semester, who doesn't use Word. She uses Google. She had a problem with even sending emails, trying to upload or record a video on Canvas even with what I consider to be very clear directions. And I was trying to help her get through it. She was never able to make the video, she can't read any of my word documents, so I have to make everything into

> Google docs, which is not a huge deal, but it is a thing. She had a hard time figuring out how to upload documents and even though, you know, I talked her through it or instructions that tried to help her with it. She's just very inexperienced and very uncomfortable with technology. To work with people who are much less comfortable with technology than I am and much less experienced than I am, then it's really hard to help someone, especially online, kind of overcome that.

Another ESL instructor, Daisy, who had shared a bad experience when she didn't recognize that some of her students that didn't have access to her class activities, also expressed more concerns regarding barriers for students in the technology integration process:

> ESL students are coming from different places, most of them are coming from, in my situation, underdeveloped countries. And their relationship with technology is different. They don't want to try new things, they're kind of scared of using new technology. And language is a barrier for them, for example, a student who has grown up here can go search YouTube videos to watch and learn how to do something. But for ESL students, I'll see this is not the case. All students either don't understand YouTube videos, that's why they don't want to watch them, or they're too scared to try new things because this is not how they grew up. So I think this is the biggest barrier or resistance for my students.

Research Question 2: Quantitative Results

What kind of support do ESL teachers need to incorporate educational technology into their English as a second language classrooms?

The second research question of this study is all about what's instructors' expectations/needs regarding educational technology. Research question 2, "What kind of support do ESL teachers need to incorporate educational technology into their English as a second language classrooms?" includes data from survey item 12, survey item 6, and two interview questions. Quantitative survey data are reported first with qualitative interview data following.

Survey item 6 was designed on TAM 3 variable Job Relevance and was used to explore ESL instructors' perspectives on the relevance of the use of technology in the language

teaching process. Based on the results of survey item 6 (see Table 9), we can see that the average value of all the 5 subitems is higher than 4, which suggests that most participants believe that education technology can facilitate their teaching tasks. The 5 subitems in the survey are monitoring students' progress, providing instructions, reminders, and feedback, class preparation, facilitating activities, and assessment. Among the 5 things that technology can facilitate, monitoring students' process (M=4.31) and providing instructions, reminders, and feedback to students (M=4.28) have the highest mean, which means that most participants believe that the most helpful part about educational technology in language teaching is that it can help teachers to monitor students' learning progress and provide instructions, reminders, and feedback to students. This is echoed with the qualitative data, which will be presented later in this part.

Survey item 12 measures the research question 2 using 7 subitems, all of them were designed to explore ESL instructors' technology needs and expectations. Participants were asked to share their opinion about to what extent they agree with each subitem, such as more preparation time needed and more support from the administration. Participants were free to choose their attitude toward each subitem from strongly agree to strongly disagree in a matrix table. The results of survey item 12 are displayed in Table 16. All subitems were displayed in decreasing order according to their Mean value.

Table 16. Descriptive Statistics for Survey Item 12

#	Subitem	Mean	Std Deviation	Variance	Count
12.1	I need more time to integrate technology into my curriculum and teaching	4.42	0.76	0.58	36
12.6	I want more ideas about how to integrate technology into my teaching	4.31	0.97	0.93	36
12.7	I want more opportunities to collaborate with colleagues on how to use educational technology	4.25	0.83	0.69	36
12.5	I want more options for professional development in the areas of educational technology	4.03	1.07	1.14	36
12.2	I need more training to use educational technology	3.97	1.04	1.08	36
12.3	More support from the administration	3.83	0.87	0.75	36
12.4	I want more access to technology tools to integrate in my teaching and classroom instruction	3.83	0.87	0.75	36

From Table 16, we can see that the average values of all 7 subitems are all above 3 and close or over 4, which suggests that most participants generally agree with all the statements in the survey question 12. Subitem 12.1 has the highest mean (M=4.42), which suggests that most participants have a strong need for more preparation time to integrate technology into their curriculum and teaching, which is aligned with the results from survey questions 10 and 11. Subitem 12.6 (M=4.31) has the second-highest average value, which shows that ESL instructors not only need more technology training but also need more technological thinking

and integration ideas. Moreover, subitem 12.7 (M=4.25) indicates that most participants have a willingness to have more opportunities to collaborate with their colleagues on how to integrate and use educational technology in their classrooms.

Research Question 2: Qualitative Results

What kind of support do ESL teachers need to incorporate educational technology into their English as a second language classrooms?

Interview questions 3, 7, and 8 measure the second research question and explore ESL instructors' technology needs and expectations in the language teaching process.

Some of the big themes that emerged from the conversations echo the results of the survey, but a deeper understanding of these themes emerged from the interviews. All themes are grouped into two categories: technology needs and technology expectations. The themes under the technology needs are individualized technology support and necessary technology training for students. The themes under the technology are summarized into two parts: more user-friendly technology for educators and more technology to facilitate collaborative learning.

ESL Instructors' Technology Needs

Three of the seven interviewees, Alice, Fiona, and Peter expressed that their technology needs were covered by their institutions. Peter, an ESL instructor with about 7 years of teaching experience, further explained that since the pandemic, his school began to invest more to support teachers' technological needs and provide more professional development:

> We have like professional development days and I think things are getting a little bit better. Because of the pandemic, I think it showed us a lot. Administrators and things like

> that, there is a sense of providing more professional development and trying to get a better understanding of technology and knowing how to use it more effectively in a classroom. So I think we're starting to get more support right now. But I think before the pandemic, there was not a lot of support for that. So I think this is really interesting, so the times have changed so now we're getting more support. So I think it's going in the right direction for sure, it's getting better, but it wasn't before.

Individualized Technology Support

Several ESL instructors, who feel inadequate about their technology skills, expressed a clear need to get more individualized technology support and training. Christopher expressed that he wants more individualized technology support and hands-on practice:

> I think I am okay, I would probably require that, I would like someone to actually come in and teach me hands-on how to create a Canvas class. That would be good to have individualized training, specific individualized training.

Snow, a very experienced ESL teacher, clearly showed her willingness to get more individualized and personal support:

> Honestly, I wish somebody would do this with me. I mean, I like to go and take a class. You know, some teachers are very comfortable with technology, and you know some are not comfortable with technology. So we don't feel adequate as teachers, it has nothing to do with our teaching ability, just has to do with the tools that we use and you know, some of us are less inclined to use technology, naturally. Sometimes I wish I had someone to count on and call on. For example, I know I am comfortable with this particular teacher, then I can ask can you please help me with this or can we just all go and take some technology class together.

Technology Training for Students

Several instructors mention the importance of providing technology training for students and the problems caused by students' relatively low level of technical skills. Fiona's school has started to provide essential technology training for students. The other 3 community colleges seem to have not started any training for ESL students yet. Daisy emphasized that it is

significant to train the students if teachers want to integrate more technology into their classrooms and detailed what she needs for her students' technology training:

> My technology needs in terms of language teaching is having enough training videos and tools or materials to train my students so that they can use technology. That is my biggest challenge. I can watch YouTube videos to learn more, but my students can't. I need simplified materials or materials with simplified language so that our ESL students can understand. With more visuals or use very simple non-technical language. They should not say things like change your browser from Chrome to Firefox. If I have more support for my students, then I would use more technology for sure. I would just integrate more new tools because I will know that my students will be comfortable when using them. So you see children here growing up with iPad and laptops. But I have students from Syria, I have students from Yemen, they come to this country without these opportunities and I cannot expect them to have Wi-Fi or laptop 24 hours 7 days so that they can watch YouTube videos and learn how to do things.

ESL Instructors' Technology Expectations

In this part, ESL instructors expressed their individual expectations for the future development of educational technology. All expectations can be generalized into two parts: more user-friendly technology for educators and more collaborative technology.

User-Friendly Technology/Tools for Educators and Students

Four of the interviewees expressed an expectation to have more user-friendly technology and tools for educators and ESL students in the future. They feel that some of the current technologies are too complicated and time-consuming to use for teachers and especially ESL students, who have a language barrier. Alice, an ESL instructor with more than 25 years of teaching experience, complained that the current assessment software is very time consuming:

> Because I am not, though, you know, hugely comfortable with a lot of technology. I am doing what I need to do, but I think there's a lot out there. For assessment, you know I just told you that I bought a tablet so that I could give feedback to my students more

> comfortably. I was using Speed Grader last March, when we went, you know, overnight into online teaching, and Speed Grader turns very clunky. It's not a very good way of being able to respond to students. Because as ESL teachers, you know, we give some sentence-level feedback and it's not a very good program. A good program that I could use on Canvas should allow me don't need to download essays into a PDF version on my tablet and then back them up to Canvas. What I want is basically sort of a table option, a way to use a stylus on Canvas, or on whatever learning management system. That would totally make things a lot easier and the same thing with Zoom, you know. If we're in an online environment, I can use my tablet to teach on, and my regular laptop to mark. A lot of teachers have talked about wanting a document camera and using your phone as a document camera. Something like that, just more functions incorporated into the learning system, an easier way to do some work.

Fiona, another very experienced teacher described how long she needs to make an instructional video for her students and expressed a similar expectation for future technology:

> You know when I am making an instructional video to review our vocabulary words for the week, and that's usually a 20-minutes recording, takes me like two hours to record it, then transition to Screencast-O-Matic, then transition to YouTube, and then I need to make sure I have the subtitles. It's just like a 20-minute video but it takes me like two and a half hours. So it's time-consuming and part of it is probably the learner's error. I'm not a technologist, I am an educator okay. I am using technology as a tool so I can do my other main job, my main job is teaching. It just takes a lot of time to transition from one place to another space. I didn't want to be a video editor or the director, I am a content creator.

Collaborative Technology/Tools for Students' Learning

Several ESL instructors shared how technology facilitates their collaborative classroom activities and they really like it and believe this kind of technology can improve both language teaching and learning. Fiona shared how she used Google Sheet to facilitate her students' grammar learning and she regarded it as a very good teaching experience with technology:

> I created a Google Sheet for them and then I showed them how to use it. It was a sheet and it had all their names on the left-hand column. They each had a couple cells for them to put their sentences. I did a screen share and showed them how it works and I showed them an example… They were able to do it really well. And I thought wow, you guys are not just doing English grammar and your own sentences, you are now using these collaborative online tools. It's cool, it's a simple thing but it allows us as a class online to collaborate, and also, I think it helps them build their confidence with these tools.

Peter, an ESL instructor with a relatively high technology level, clearly expressed a strong interest in using more educational technology that can support collaborative activities and learning in his teaching:

> For me, I try to use it more as a collaborative tool. To try to get my students to work together and discovering those learning objectives so that we could kind of use it as scaffolding so that they have a way to be able to incorporate their work and get more newfound knowledge, so that they can incorporate it (collaborative technology) into their learning, so for me, I think. It just makes it easier if the technology knows how to establish a situation where students are working together. Then I think that a lot of times when they work together they learn from one another and they not only learn from technology but they're learning from each other, and I think that helps them to promote their language learning.

Summary

The results of a mixed-methods descriptive study of the obstacles and needs in the ESL instructors' technology integration process are presented in this chapter. The responses of the survey items were relatively similar for the 36 participants, who represented a range of teaching experiences and technical levels. Interviews were conducted with 7 ESL instructor participants, also representing a range of teaching experiences and technical levels. All ESL instructor participants are from four local community colleges in the Bay Area. The researcher used two research questions to guide this study and a summary for each research question follows.

Research Question 1: What prevents ESL teachers from integrating educational technology into English as a second language teaching?

Most participants hold a relatively positive attitude toward technology integration in language teaching and learning. Most participants believe that more technology will be integrated into future ESL classrooms. Participants indicated that educational technology

integration can improve their teaching ability and teaching quality to some extent. Furthermore, most participants believe that technology integration can help teachers regarding monitoring students' progress and providing instructions, reminders, and feedback to students. Most participants agree that technology integration can improve students' engagement and collaborative learning. Even in this COVID-19 pandemic period, most participants showed a relatively low level of Computer Anxiety in this survey. Most participants hold a moderate attitude toward their self-efficacy of computers and believe that they have the basic technology skills to support students in class. Also, most participants believe that technology integration can make their teaching process more enjoyable and fun. Participants indicated that they need more time to prepare for technology-integrated classes. The top three obstacles that most participants have experienced are tools/technology not working as expected, lack of time, and inadequate technology equipment. Most participants don't think they have enough time to integrate technology into their language teaching process. Workload and generation gap are also identified as barriers in the technology integration process by most participants.

The big themes that emerged from the interviews are relatively similar to the results of the survey. There was only one exception, a perspective from the students' part. Most ESL instructors expressed a positive attitude toward technology integration into the language teaching and learning process in the interviews. One ESL instructor expressed her concern that "technology can become the goal rather than the tool", which could be a negative thing in the teaching process. 6 out of 7 ESL instructors clearly expressed that lack of time is an issue for them to integrate technology into their teaching. However, one ESL instructor with high technical skills said that technology integration not only didn't consume him a lot of time but helped him save a lot of time. In addition to the three obstacles identified by the survey, 3 of 7

interviewees clearly expressed that the biggest challenge for them to integrate technology was the lack of necessary technology skills. The most interesting and inspiring theme that emerged from the interviews is a students' perspective on technology integration. 3 of 7 ESL instructors clearly expressed that students' low technology skills and inadequate equipment can be big obstacles for them to integrate technology in their teaching.

Research Question 2: What kind of support do ESL teachers need to incorporate educational technology into their English as a second language classrooms?

Most participants believe that technology has a strong relationship with their role as ESL instructors. Most participants expressed that the most helpful part that educational technology can provide is to monitor students' learning progress and provide instructions, reminders, and feedback to students. Participants clearly expressed a strong need for more preparation time to integrate technology into their teaching, which is aligned with the interview results. Moreover, many participants also expressed a need for more technology integration ideas and a willingness to collaborate more with their colleagues in integrating technology into their classrooms.

Several new themes emerged from the interviews. 2 of the 7 interviewees clearly described their needs for more individualized technology support and personal coaching. 3 of 7 ESL instructors clearly expressed their concerns about some students' low technology skills and inadequate equipment. Regarding expectations for educational technology, 4 of the 7 ESL instructors expressed an expectation to have more user-friendly technology and tools for educators and ESL students in the future. Moreover, several ESL instructors expect to use technology to support more collaborative activities in their classrooms.

CHAPTER V

SUMMARY, LIMITATIONS, DISCUSSION, AND IMPLICATIONS

This descriptive study investigated what obstacles that prevent ESL instructors from integrating technology into their language classrooms and explored ESL instructors' needs and expectations in the technology integration process.

The current study extended previous related studies by (a) specifically focusing on language teaching and using language instructors as the research participants, (b) basing on a combination of two technology incorporation models, which include TAM3 and MBIT, and (c) conducting an explanatory sequential mixed-methodology design (Creswell, 2014) focusing on community college instructors instead. Moreover, this study extended previous studies by exploring language instructors' perceptions of good educational technology and expectations of future technology support in language teaching. Understanding the perceptions of language teachers can provide a way to address the barriers and provide support to teachers more effectively.

This chapter includes a summary, a summary of findings, limitations, a discussion of the findings, implications for research and practice, and a final self-reflection. The summary of findings was grouped by the two research questions. In the discussion of findings there are three subsections: attitudes and perspectives, obstacles and barriers, and needs and support. The implications for practice were organized by the main obstacles and ESL instructor participants' needs identified by the study. A final self-reflection wrapped up the final chapter.

Summary

For the education and schooling system, this is a significant time. We are in the midst of a transition time to define the relationship between education and technology integration. What technology will bring to education and how to use technology appropriately in teaching and learning has been a heated topic for many years. Starting from the 1960s and 1970s, educators began to be relatively optimistic about the future and prospects that technology can bring to education, especially for language education (Cioffari, 1967; Perren et al, 1970). Many linguists believe that with the help of technology, the two challenging issues of language education can be resolved: the difficulty of building an authentic language environment for students and finding a more effective way to do language drilling practice with language learners (Cioffari, 1967; Perren et al, 1970).

Nowadays, technology plays a significant role in language teaching and learning, inside or outside the classroom (Ahmadi, 2018). There is a consensus among many educators that the integration of technology can improve the teaching and learning process in general (Davies and West, 2014; Chandler-Olcott & Mahar, 2003; Lam, 2009; International Society for Technology in Education, 2007; U.S Department of Education, 2010). The number of students who were identified as English language learners (ELLs) was nearly 5 million in the U.S. in Fall 2016 (National Center for Education Statistics, 2019). Based on NCES (National Center for Education Statistics), California has the most ELLs students in its public school system, with a percentage of 22.2% of the total ELL population. How to better facilitate these ESL students in overcoming their language barriers and then achieving academic success is a big concern for many ESL instructors.

Based on many previous studies and survives, most language educators hold a relatively positive attitude towards technology integration in language learning and teaching (Lam, 2009; Kern, 2006; Chandler-Olcott & Mahar, 2003). But there is an incompatibility that has been uncovered between teachers' attitudes toward technology integration and language teachers' actual use of technology in the classroom. This incompatibility needs to be addressed and explored to provide institutions with models to identify the obstacles that influence their teachers and ways to facilitate technology integration in the language classroom. The purpose of this mixed-methods descriptive study was to describe and provide examples of the obstacles that prevent community college ESL instructors from using technology in their teaching and what kinds of support and technology can be integrated into the language classrooms to better support English language teaching and learning.

In order to develop an understanding of the obstacles that ESL instructors face with technology integration, a framework was required for analyzing the data collected. As this mixed-method study focused on obstacles and barriers in the technology integration process, a combination of the Technology Acceptance Model (TAM) and the Model of Barriers to the Incorporation of Digital Technologies (MBIT) was used as a foundation for the interpretation of the results. TAM was first developed by Davis in 1989 to use cognitive factors to analyze technology acceptance and use in a specific context. In the past three decades, TAM has developed from an initial model that only containing two determinants, perceived usefulness and perceived ease of use, to several extended models that explore more determinants of technology acceptance. TAM3 is one of the most influential extended versions of the initial TAM. MBIT is an explanatory model to explore both barriers and factors that influence the integration of technology into higher education teaching and learning (Mercader, 2020).

Compared to TAM3, MBIT has a focus on higher education instructors and explores more detailed factors, while TAM3 explores at a more cognitive level. A combination of both TAM3 and MBIT can help the research to interpret the survey and interview data from a more comprehensive level.

At this time, the whole world is experiencing an unprecedented pandemic, the COVID-19 pandemic, which is a severe global health crisis for us right now. The new virus has spread to every continent (except Antarctica) since its emergence in 2019. The COVID-19 is much more than a global health crisis, it is also a severe global socio-economic crisis. Everyone is under the stress brought by the pandemic without knowing when normality will come back. People have to adapt to working from home, homeschooling their children, and keeping social distance from other people. All public schools in California had transferred to online teaching since March 2020. All ESL instructors in the community colleges had to transfer to online teaching with very short notice last March.

The current study built on previous studies that focus on exploring the obstacles that teachers faced when integrating technology into their teaching, technology integration literacy, and a combination of TAM3 and MBIT frameworks. This study is a mixed-methods descriptive study. A mixed-methods design was used to address the complication of teachers' potential obstacles and barriers when implementing technology into the classroom and widely explore what support and technology can support language teaching and learning better from the ESL instructors' perspective.

This study was conducted on an explanatory sequential mixed-methodology design, which consisted of two phases (Creswell, 2018). The main purpose of this design was to use the qualitative data to provide more detailed information and examples to help explain the

qualitative data more deeply and augment the study. The quantitative data were collected through an online survey designed using questions and items from both the TAM3 framework and the MBIT survey (Mercader, 2020), and developed by the researcher. The survey was named "Potential Obstacles in Integrating Technology into Language Teaching." The survey consisted primarily of quantitative items such as multiple choice, Likert-type, and matrix table. The qualitative data were collected through 7 individual semi-structured interviews.

In January 2021, the researcher sent out an email study invitation and a study introduction to 7 head ESL instructors in 4 community colleges in the Bay Area. After receiving a positive reply from all the 7 head ESL instructors, the researcher sent another email which contained the survey link, study introduction, and purpose of the study to the 7 head teachers and kindly asked them to forward this email to their colleagues. A total of 81 ESL instructors had received this survey invitation. The survey was conducted through Qualtrics and it was active online from January 2021 to the end of February 2021. During this period, there were 38 individuals who attempted to participate in the survey with a total of 36 individuals who completed the survey.

Demographic information about gender, years of teaching, community colleges, and the technical level was gathered at the beginning of the survey. Multiple choice questions, Likert-type items, and matrix tables, grouped by TAM3 and MBIT variables, were primarily used in the survey to collect quantitative data.

Two research questions guided the whole study and data collection:

1. What obstacles or barriers do ESL teachers perceive for integrating classroom technology into English as a second language teaching?

2. What kind of support do ESL teachers need to incorporate classroom technology into their English and a second language classroom?

Summary of Findings

The survey data were collected using Qualtrics with multiple choice questions, Likert items, and matrix tables. These data provided an understanding of the obstacles that ESL teachers face in the integration of technology into language classrooms. Although the participants represented a range of teaching experiences and technical levels, the responses on the survey items were more similar than different for the 36 participants. 7 ESL instructors participated in the interview phase, representing a range of years of teaching experience and technical levels, in the interview phase. All ESL instructor participants were recruited from four community colleges near San Francisco. All findings were grouped by the two research questions.

Research Question 1: *What prevents ESL teachers from integrating educational technology into English as a second language teaching?*

According to the results of the survey, most participants hold a relatively positive attitude toward technology integration in the language teaching process. A large majority of participants believe that more technology will be integrated and used in future ESL classrooms. Most participants indicated that educational technology integration can improve both their teaching ability and teaching quality to some extent. However, participants indicated that they hold a moderate attitude toward the reliability of most educational technologies.

Most participants indicated that technology integration can help in monitoring students' progress and providing instructions, reminders, and feedback to students. Compared with the other possible outcomes of technology integration, such as improving students'

learning motivation and increasing classroom interaction, most participants agreed that technology integration can increase students' engagement and facilitate collaborative learning.

Moreover, even in this COVID-19 pandemic period, the survey results show that most participants have a relatively low level of Computer Anxiety. Most participants hold a moderate attitude toward their self-efficacy of computers and believe that they have the basic technology skills to support students in class. A large majority of participants indicated that they need more time to prepare for technology-integrated classes. Most participants expressed a neutral attitude to the statement "I have a good variety of ideas for integrating educational technology into my instruction and teaching." Most participants indicated that technology integration can make the teaching process more enjoyable and fun.

The top three obstacles that most participants have experienced are tools/technology not working as expected, lack of time, and inadequate technology equipment. Only a few participants indicated that technology integration didn't fit their teaching objectives and philosophy. Only 1 out of 36 participants indicated that he or she had never experienced any obstacles in the technology integration process. Most participants believe that they don't have enough time to integrate technology into their language teaching process. Workload and generation gap were also identified as barriers in the technology integration process by most participants.

The big themes that emerged from the interviews are relatively consistent with the results of the survey with one exception, a perspective from the students' part. According to the interviews, all ESL instructors expressed a relatively positive attitude toward technology integration into the language teaching and learning process and believe that more technology will be incorporated into future ESL teaching and learning. But at the same time, one ESL

instructor showed her concern that "technology can become the goal rather than the tool," which could be a negative thing in the teaching process.

6 out of 7 ESL instructors clearly expressed that lack of time is an issue for them in integrating technology into their teaching. However, one ESL instructor with high technical skills said that technology integration not only didn't consume a lot of time but helped him save a lot of time. Most interviewees addressed their concerns about tools/technology not working as expected and inadequate technology equipment, even for the ESL instructor with a high technical level. 3 participants shared their concerns about the generation gap in the technology integration process. Moreover, 3 of 7 interviewees clearly expressed that the biggest challenge for them to integrate technology was the lack of necessary technical skills. The most interesting and inspiring theme that emerged from the interviews is a students' perspective on technology integration. 3 of 7 ESL instructors clearly expressed that students' low technology skills and inadequate equipment can be big obstacles for them in integrating technology in their teaching.

Research Question 2: What kind of support do ESL teachers need to incorporate educational technology into their English as a second language classrooms?

Based on the results from the survey, most participants believe that technology has a strong relationship with their teaching responsibilities and tasks. Most participants expressed that the most helpful part that educational technology can provide is to monitor students' learning progress and provide instructions, reminders, and feedback to students. A large majority of participants clearly expressed a strong need for more preparation time to integrate technology into their teaching, which aligned with the interview results. Many participants also expressed a need for more technology integration ideas regarding language learning and

teaching. Moreover, most participants expressed a willingness to have more opportunities to collaborate with their colleagues on how to use educational technology.

Through the interviews, several new themes emerged. 2 of the 7 interviewees surely described their need for more individualized technology support and personal coaching. 3 of 7 ESL instructors plainly expressed their concerns about some students' low technology skills and some students don't have the necessary technology equipment. They also explained and addressed the importance of necessary technology training for ESL students, who have a language barrier and technology barrier at the same time. Regarding expectations for educational technology, 4 of 7 ESL instructors expressed an expectation to have more user-friendly technology and tools for educators and ESL students in the future. Moreover, several ESL instructors expect to use technology to support more collaborative activities in their language classrooms.

Limitations

This study contains a voluntary self-administered online survey and 7 voluntary semi-structured interviews. Participants were limited by the purposeful selection of ESL instructors working at community colleges. Compared to the faculty members working at universities or other higher education institutions, these ESL instructor participants don't have any research responsibility. Although participants in the study were ESL instructors, they may not represent all ESL instructors. Participation in the study was voluntary, which could be a limitation for generalizability to a greater ESL instructor population. The sample size of this study was small (n = 36), which may also limit the generalizability of this study. These are the reasons that the study was conducted as a mixed-methods design to augment the quantitative survey data with qualitative interview data.

Additionally, the sample of this study was not a random sample of the general ESL instructor population due to the constraints of recruitment from community colleges and the COVID-19 pandemic. All participants were recruited from four local public community colleges in the Bay Area, California. Therefore, the geographical restriction could also be a limitation for this study. Future research should recruit participants from a wider geographic area to make sure that ESL instructors from schools in different economic levels are involved.

Furthermore, the survey instrument could be a limitation of this study, because some of the MBIT survey questions leave room for participant interpretation. Therefore, some participants may have misinterpreted the intent of some survey items. The online delivery of the survey could also be a limitation, since some ESL instructors may not like doing an online survey. Time could also be considered a limitation of this study. All 7 interviews were conducted for no more than 35 minutes. In order to honor the busy lives of the ESL instructor participants in this COVID-19 pandemic period, the researcher limited the amount of time of each individual interview, which also limited the amount of information that could be collected.

Finally, this study applied a descriptive research design, which was useful in gaining a deeper understanding of ESL instructors' attitudes and perspectives on technology integration, but this descriptive design did have limitations. Based on this design, it was not feasible to make statistical inferences about the survey data; only the average value and standard deviation were reported for each survey item.

Discussion of Findings

The findings of this study shed light on obstacles that ESL instructors faced and the support that they need to integrate technology into the language teaching process. The

following discussion explores the connections between the literature on previous research regarding technology integration in teaching and the findings of this study. The findings are discussed within a broader context of ESL instructors' perceptions and attitudes toward technology integration as well as obstacles and needs in the technology integration process.

Attitudes and Perspectives

Bordar (2010) conducted a study to explore the reasons behind language instructors' application of computer technology in their classrooms and language instructors' attitudes toward technology applications. His findings showed that almost all the language teachers showed positive attitudes toward the application of computer technology in the classroom. Many previous research studies on teachers' attitudes toward educational technology suggest that most teachers hold positive attitudes toward technology application in education (Seraji, Ziabari, & Rokni, 2017; Aksan & Eryilmaz, 2011; Yalcin, Kahraman, & Yilmaz, 2011; Dogruer, Eyyam, & Menevis, 2010; Rostami, 2010). The findings of this study are consistent with previous research. According to the survey data of the study, most ESL instructor participants hold a relatively positive attitude toward technology integration in language teaching and learning in general. A large majority of ESL instructor participants believe that more technology will be integrated and used in future ESL classrooms. Most participants indicated that educational technology integration can improve both their teaching ability and teaching quality to some extent.

The interview data of this study further demonstrates ESL instructors' positive attitudes toward technology integration in the language teaching process. All interviewees demonstrated their recognition of the importance of technology and a positive attitude towards technology integration and use in teaching. For example, Snow, an experienced ESL instructor with more

than 20 years of teaching experience, surely expressed “Obviously I believe it’s very important to incorporate technology”; Mona, an ESL instructor with about 11 years of experience said, “I love technology and I think it is a great thing and a great platform for us to reach more students”. However, Alice, a very experienced ESL instructor with more than 25 years of teaching experience, who affirmed her positive attitude towards technology integration in the language classrooms but also expressed her concerns about technology integration, said “So I think my attitude in one sense is that I am very positive about technology integration, I think there’s a lot to be gained. I also have a certain concern sometimes that technology can start to become the goal rather than the tool.” Her concern should be addressed seriously especially for some technology-oriented institutions.

Some researchers have found that most teachers viewed technology integration as a significant strategy for developing teaching and learning (Sharpe, 2004; Tsitouridou & Vryzas, 2004). Based on Becker (2000), most language teachers regard computers as a significant instructional instrument for language teaching since it facilitates teachers’ preparation for classes, allows teachers to have some freedom in the curriculum, and provides a high-quality teaching and learning experience. The current study also found similar results. According to the survey results, ESL instructor participants believe that educational technology has a positive and significant impact on various teaching tasks. For example, Alice, an ESL instructor with more than 25 years of teaching experience, reflected: “I think technology has a big part to play in teaching. I think it is a very, very useful tool, and I think that tool is getting better and better all the time.” Moreover, most ESL instructor participants indicated that they strongly believe that technology integration can help teachers to monitor students’ learning progress and provide instructions, reminders, and feedback to students very well.

Ertmer, Ottenbreit-Leftwich, and York conducted a study in 2007 to explore teachers' perception of the attributes that are necessary to be a proficient user of technology; they found that most teachers believe that a teacher has to be confident about his or her capabilities to use technology in the classroom. The qualitative data of the current study confirms this finding. According to the interviews, ESL instructors indicated that the premise of using technology in their classrooms is that they have the necessary technical skills and feel adequately prepared. Based on ESL instructors' comments, the reason why self-confidence in technology is so important is that teachers don't want to seem unskilled and embarrassed in front of their students. Therefore, an inference may be made that helping teachers build self-confidence in technology use is as important as technology training.

Obstacles and Barriers

External Barriers

Exploring what prevents teachers from integrating technology into their teaching practice is the main focus of this study. Ertmer (2001) divided the barriers to technology integration into two categories, the external barriers, and the internal barriers. According to Ertmer (2001), resource-related barriers, such as lack of equipment, lack of time, and lack of technology training, are categorized as external barriers; teacher-related barriers, such as teaching beliefs and teachers' attitude toward technology integration are categorized as internal barriers.

From the perspective of external barriers, lack of time, lack of necessary resources, and lack of training have been identified as the main barriers to educational technology integration by several previous studies (Al Senaidi, 2009; Larson, 2003; Beggs, 2000). As in the above studies, Cuban (2001) identified lack of time and lack of administrative and technical support

as the main barriers in integrating technology into classrooms. Moreover, a survey conducted by Kumutha and Hamidah (2014) showed that lack of time was identified as the major barrier with many participants complaining that they were burdened with making students' assignments, preparing lesson plans and syllabus, and other administrative responsibilities.

The findings of the current study are largely congruent with the studies mentioned above. The three main external obstacles identified by the results of the survey are lack of time, tools/technologies not working as expected, and inadequate technology equipment. According to the survey data, lack of time is a big concern for most ESL instructor participants in the technology integration process. Given the workload of the ESL instructors, integrating technology into daily teaching can be time-consuming for teachers and influence the completion of their other work responsibilities. In this case, technology integration will be both a challenge and a burden for teachers.

The interview data further confirmed the external obstacles mentioned above and provided new perspectives for this exploration of obstacles in the technology integration process. 6 of 7 ESL instructors stated that lack of time is a huge problem for them in integrating technology into their language classrooms. According to the interview data, the main reasons behind the lack of time can be summarized as the following: it takes too long to learn new technologies, excessive workload, and most of the current educational technology is too time-consuming. For example, Fiona, an ESL instructor with more than 15 years of teaching experience, certainly demonstrated her concern on lack of time "First of all, it takes a substantial amount of time on the instructors' part to learn the new tools to build your classes in the online environment, then to reach your students. It takes a lot of work, an endless amount of hours for me." However, one ESL instructor, Peter, who has been teaching for

about 7 years, noted that lack of time was not a problem for him in integrating technology into his teaching; instead, he stated that the use of technology helps him save a lot of time with his teaching responsibilities. He had an emphasis in his degree for technology and he identified his technical level as advanced. Based on Peter's experience, we may positively infer that if teachers' technology skills are improved to some extent, then lack of time will not be an issue in the technology integration process.

Similar to these studies (Al Senaidi, 2009; Larson, 2003; Beggs, 2000), the findings of this study also identified lack of necessary resources as a barrier for most ESL instructors in integrating technology into the language teaching process. This study also found that if students lack the necessary technical equipment, it is difficult to integrate technology into the language classrooms. In the interview, Daisy, an ESL instructor with about 16 years of teaching experience, clearly explained how students' lack of necessary technology equipment hinders the integration of technology into the classroom, "So, for example, Kahoot game is one of the things that you have to make sure that all your students have cellphones in class. So that they can respond to the Kahoot questions. But if not all your students have smartphones, you can not use it. I, to be honest, quit using Kahoot. Because I realized that some of my students couldn't join because they didn't have a smartphone."

A difference between the findings of the current study and the previous studies (Muhametjanova & Çağıltay, 2012; Al Senaidi, 2009; Goktas, 2004; Larson, 2003; Beggs, 2000) is that lack of training was not identified as a barrier by most ESL instructor participants in both the survey and interviews. Through interviews, the researcher learned that due to the pandemic (COVID-19), most schools switched to online teaching in March 2020. Therefore, schools provided a lot of professional development and various technological training for

teachers during the Summer of 2020, which can be why the lack of training is not regarded as an obstacle by most participants in this study.

Internal Barriers

Recent research has indicated there is a positive correlation between teachers' technology proficiency and technology usage (Hsu, 2010). Based on his study, Ertmer (2005) found that most teachers, no matter whether they are experienced teachers or preservice teachers, have limited knowledge and understanding of how to apply technology effectively into their teaching practice and prompt students' learning. Some researchers found a similar phenomenon that most higher education instructors' technological competence level is often intermediate or even lower (Mercader, 2020; Cuhadar, 2018). While, according to the survey results of the current study, 95% of the participants identified their technical level as intermediate or above, which suggested that most participants believe they have a moderate or higher level of technical proficiency in general. This difference may also be due to the pandemic, which forced all ESL instructors to teach online since March 2020.

But lack of necessary technology skills is still an obstacle in the process of integrating technology into teaching. Previous studies have shown that the lack of technical proficiency makes many faculty members unable to take advantage of new technologies and bring technologies into the classroom (Hossain et al. 2016; Gichoya & Muumbo, 2015; Mundy, Kupcznski, and Kee, 2012; Goktas, 2004). The interview data of the current study is congruent with the finding mentioned above. When asked what was the biggest obstacle they encountered in the process of using technology, lack of necessary technology skills was mentioned many times in the interviews. Of the seven interviewees, three clearly expressed

that lack of necessary technology skills is an obstacle for them to use or integrate technology into their daily teaching.

Xu (2010) reported that most teachers feel comfortable in communicating with their students via various traditional classroom communication, such as body language that provides visual guidance to their students. The application of technology, especially the use of multimedia technology will decrease this kind of communication between teachers and students; but students will pay more attention to the audio and visuals provided by the computer. In this way, there will be fewer real communication opportunities between teachers and students even if they are in the same physical space since students' most attention will be attracted by the technology and the technology also can substitute part of teachers' teaching responsibilities. For language teaching, there is a concern that technology applications will turn the language learning process into an automatic courseware show, during which students will easily be inclined to be the viewer rather than the participants (Xu, 2010). Valentine (2002) argued that students' learning experiences will be compromised as a result of the lack of communication with their teachers and peers, eye contact, and body language.

A similar concern was found in this study too. Fiona, an ESL instructor with more than 15 years of experience, expressed in the interview that she felt the screen was a barrier for her and she preferred to have more direct interaction and communication with her students; she believed that in this way she can better understand her students and support their learning. She also mentioned that as a teacher, we are competing with different technologies, such as cell phones and tablets, to see who can win the students' attention.

Frederick, Schweizer, and Lowe (2006) conducted a study exploring technology integration barriers from a different perspective, the students' point of view. According to their

study, “student mobility, special needs, and anxiety over standardized test results are the main challenges associated with ICT (Information and Communication Technology) use” (p. 73).

Actually, there were few studies with a focus on the perspectives of students concerning technology integration into the ESL classrooms. But in the current study, students’ perspectives and reactions to technology integration were mentioned many times by different ESL instructors in the interviews. In this study, ESL instructors’ discussions and concerns regarding students’ part are mainly divided into two parts: lack of necessary technical skills and inadequate personal technology equipment.

Based on the findings of this study, ESL students seem to play a significant role in the process of technology integration into the language classroom. Different from other students, most ESL students have a language barrier in their learning process. Learning using new technology in a second language can be a challenge for them. Three ESL instructors plainly pointed out that students’ low technology level was a huge obstacle for them to integrate technology into their teaching. A combination of language barriers and technology barriers makes the teaching and learning process extremely difficult. Therefore, technology training for ESL students is very important in the technology integration process.

Age was also identified as an influential factor by some researchers. There is evidence that some teachers don’t want to integrate or use technology in their teaching due to their relatively old age, they believe that technology integration is not necessary for their teaching and they expect younger teachers to learn and apply educational technology. Moreover, they believe they can build a student-centered and interactive classroom with traditional teaching methods. Most have rich teaching experiences and prefer to use traditional and manual ways of teaching to make connections with their students (Khodabandelou et al., 2016; Kumutha &

Hamidah, 2014). Therefore, the generation gap is regarded as a barrier and included in the survey of the current study.

Similar to the studies mentioned above, the generation gap was identified as a barrier in both the quantitative and qualitative data of the current study. Based on the responses to the survey, most of the respondents believed that the generation gap can influence the level of teachers' use of technology when integrating educational technology into the language teaching process. This was further complemented by the interview data. Three of seven ESL instructors surely indicated that they believe the generation gap is an important factor in the technology integration process. Daisy, an ESL instructor with 16 years of experience, said "I don't want to say, young and old, I don't want to use these adjectives, but, if they are experienced teachers, who started teaching long, long time ago and who are used to classroom contacts, they really don't want to use technology in their classrooms." Another ESL instructor with about 6 years of teaching experience, Christopher, used his own experience to show the influence of the generation gap: "People like my wife, who was also an instructor, who was, you know, 15 years younger than me. She takes to the new technology very quickly, like the spreadsheets and PowerPoints. I need a little extra time and support." Therefore, schools and institutions should consider the generation gap when providing professional development for teachers.

Needs and Support

Most of the previous related studies focused on how to help teachers integrate technology into teaching; few focused on exploring teachers' personal needs and expectations in this technology integration process.

According to previous studies, one of the most significant things that schools/institutions can do to facilitate this technology integration process is to provide more technical training for teachers (Mundy, Kupczynski, and Kee, 2012). Hsu (2010) found similar results: the more training teachers received, the more likely they were to integrate technology into their teaching practices successfully. However, in this study, lack of training was not identified as a barrier to the integration of technology in the survey by the ESL instructor participants. But in the interviews, several ESL instructors expressed their need for constant training and more individualized technology support. Instead of general technology training, one ESL instructor clearly expressed her need for personal coaching. This suggests that more personal and individualized technology training and support should be provided, not just use one regular general technology training to support all teachers.

As mentioned before, there are few related studies with a focus on the perspectives of ESL students. But in the current study, ESL students' role in the technology integration process was mentioned many times. Three ESL instructors clearly expressed and explained the need to provide necessary technical training for the ESL students. They explained the reason why training for ESL students is necessary is that most ESL students have a language barrier, thus, it's less likely for them to learn the technology by themselves. Fiona, an ESL instructor with more than 15 years of teaching experience, shared how much the technology integration process improved after her school provided basic technology training for her ESL students. This suggests that in order to facilitate the process of technology integration, schools and institutions cannot just train the teachers, providing necessary technical training for the ESL students is also very important.

Alhamami and Costello (2019) conducted a study to explore EFL preservice teachers' needs, expectations, and challenges in a language and technology course. Based on the results, they reported that most EFL teachers expressed a strong preference for user-friendly technology. The interview data of the current study found similar results. Four of the seven interviewees clearly expressed their expectations to have more user-friendly technology and tools for educators and ESL students in the future. They feel that some of the current educational technologies are too complicated and not language friendly for the ESL students, who have a language barrier and a relatively low English proficiency. Also, they explained that some current video-related technology can be too complicated and time-consuming for educators to create teaching materials. Fiona, an ESL instructor with more than 15 years of teaching experience, clearly stated "I didn't want to be a video editor or the director, I am a content creator" to express her strong need for more user-friendly technology tools for teachers. Therefore, more user-friendly and simpler technology tools should be designed for education and teaching purposes in the future.

Conclusions

This descriptive study was designed to explore the obstacles that prevent ESL instructors from integrating technology into their teaching practice and gain a deep understanding of ESL instructors' needs and expectations for technology use in the language classrooms. Findings suggest that most ESL instructors hold a relatively positive attitude toward integrating technology into language teaching, but at the same time they did encounter many obstacles and difficulties in the technology integration process.

This study's quantitative and qualitative data provide insight to facilitate the integration of technology into language teaching and learning better. Lack of time, tools/technology not

working as expected, and inadequate equipment were three main obstacles identified by the survey data. The qualitative interview data further confirms and explains the results of the survey, and at the same time brings new findings and a deeper understanding of the reasons behind the surface problems. Lack of necessary technology skills, generation gap, and neglect of ESL students' perspectives were brought up in the interviews. At the same time, ESL instructors' needs and expectations for technology in their classrooms were well discussed in the interviews.

One of the most important findings of this study is the discovery of the significant role of ESL students in the technology integration process. Due to a language barrier and cultural differences, ESL students need more support and help to achieve academic success compared to other students. Future research is needed into ESL students' perspectives and experiences in the educational technology integration process. Stakeholders in higher educational institutions and educational technology companies should consider how they can better support both educators and ESL students in the technology integration process.

Implications for Research

This study is distinctive in some respects that may inspire future researchers. This study is one of few studies that contain ESL students' perspective on the technology integration process, one of few studies that explore ESL instructors' technology personal needs and expectations during the technology integration process, one of few studies that focus on language teaching and technology integration during an online teaching period due to the pandemic (COVID-19), and the first known study based on a combination of Technology Acceptance Model (TAM) and Model of Barriers to the Incorporation of Digital Technologies (MBIT). Additionally, the use of an explanatory sequential mixed-methodology design helped

to gain a deeper understanding of what is happening in the process of integrating technology into language teaching and found some unexpected results. This section provides a vision for future related research and suggestions to extend the current research. There are three main areas for future research, which will be discussed in this section.

First and foremost, a logical next step is to replicate this study with a larger and more generalizable ESL instructor sample. The current study is limited because it used a convenience population of 81 ESL instructors in the Bay Area, California. Future research can modify this study by using a larger sample or in different areas with different socioeconomic levels. Moreover, they could use language teachers instead of ESL teachers to replicate this study. Also, they can refine the survey items and interview questions based on the TAM3 and MBIT. Ideally, the future research would have a second coder and reader, which will help them to establish reliability when reporting the qualitative findings.

Secondly, the findings of the current study highlight the important role of ESL students play in integrating technology into language classrooms. As mentioned in the discussion part, few related studies contain a focus on the perspectives of ESL students. But in this study, the ESL students' influence on the whole technology integration process had been mentioned and emphasized many times by the ESL instructors. ESL students differ from other students in that they have a language barrier. This suggests that ESL students play a more important role than expected. If the influence of ESL students is not addressed appropriately, it may hinder the whole process of integrating technology into the language classrooms. Therefore, a focused study on ESL students' perspectives regarding technology integration of the language learning and teaching process would further benefit ESL education academia.

Third, the findings of this study suggest that if a teacher's technical level is high enough, lack of time will no longer be an obstacle in the technology integration process, which suggests that there might be a close relationship between teachers' technical level and time spent in integrating technology into their teaching. Lack of time was identified as the main obstacle for teachers in integrating and using technology into their teaching by many researchers (Helm, 2015; Kumutha and Hamidah, 2014; Al Senaidi, 2009; Albirini, 2006; Cuban, 2001). Lack of time was also identified as a big problem and concern for most ESL instructors in this study. Therefore, even though only one out of seven interviewees clearly stated that because of his high technical level, lack of time was not a problem for him when integrating technology into his language teaching, this did point out a future research direction for educational technology integration. Further research is needed and merited for this area.

Implications for Practice

The researcher began this research with a deep enthusiasm for English language education and great respect for the wisdom of teaching practice. The insights gained from this study are discussed in this section.

Lack of time

One of the most obvious findings of this study is that most ESL instructors are struggling with a shortage of time when integrating technology into their teaching practices. Through in-depth interviews with the ESL instructors, the researcher found that most ESL instructors felt that "there was too much on their plate". Based on a detailed analysis of the research data and a good understanding of ESL education, the researcher hereby makes the following suggestions for higher education institutions to deal with the obstacle of lack of time:

1. Providing more prep time for ESL instructors to integrate technology into their teaching practices;
2. Reduce unnecessary administrative work and meetings for ESL instructors and give priority to their teaching duties;
3. Provide more professional development and help ESL instructors to improve their technical levels.

Tools/Technologies not Working as Expected

Another obstacle revealed by the results of the survey and further confirmed by the interviews is tools/technologies not working as expected. Some ESL instructors shared their experience about how technology failed them at the last minute and some other instructors shared the frustrating consequences of a certain technology tool not working as expected. Based on suggestions from an experienced ESL instructor with a high technical level and a good understanding of ESL instructor participants' bad experiences with technology, the researcher hereby makes the following suggestions for the stakeholders in higher educational institutions and ESL instructors to deal with the obstacle of tools/technologies not working as expected:

1. When integrating technology into teaching, ESL instructors should prepare a backup teaching plan in case sometimes a certain technology fails unexpectedly.
2. Higher educational institutions should explore ways to provide more timely technical support when teachers encounter technical difficulties.

Inadequate Technology Equipment

According to the responses to the survey, most participants stated that inadequate technology equipment could be an obstacle to integrating technology into their language teaching practice. This obstacle was further identified by several ESL instructors in the interviews from different perspectives. Based on ESL instructor participants' shared experiences and researcher's knowledge of the higher education institutions, the researcher hereby makes the following suggestions for the stakeholders in higher educational institutions to deal with the obstacle of inadequate equipment:

1. At most, every four years, higher educational institutions should upgrade their computers and software;
2. Provide a stable Wi-Fi environment on campus;
3. Provide basic technical equipment for both teachers and students.

Lack of Necessary Technology Skills

Another obstacle frequently mentioned by the ESL instructors in the interviews is the lack of necessary technology skills. Three ESL instructors shared how a lack of necessary technical skills made them feel inadequate when using technology in the classroom. Based on a deep discussion with the ESL instructors, the researcher hereby makes the following suggestions for higher educational institutions and ESL instructors to deal with the obstacle of lack of necessary technology skills:

1. Higher educational institutions should provide more individualized technical training and personal coaching for teachers with low technical skills.

2. Higher educational institutions should encourage teachers to collaborate more with their colleagues when preparing technology-integrated courses.
3. At the same time, ESL instructors should pinpoint their weaknesses when using technology and keep practicing on it until they feel comfortable.

Generation Gap

According to the responses to the survey, most ESL instructors believe that the generation gap can influence the level of use of technology in language teaching practices. Several ESL instructors also showed their concern about the generation gap in the interviews. Based on the ESL instructor participants' observations and shared experiences, the researcher hereby makes the following recommendations for higher education institutions to deal with the obstacle of the generation gap:

1. Higher educational institutions should provide more individualized technical training and hands-on practice for older ESL instructors.
2. Higher educational institutions should give priority to older teachers in terms of technical training and personal coaching.
3. In addition to training and coaching, more emotional support from both schools and colleagues would also help decrease the influence of the generation gap

Technology Integration and Students' Perspective

One of the most important findings of this study is the discovery of the significant role of ESL students in the technology integration process. Many times, the needs of the ESL students are ignored or not taken into consideration by the schools and institutions. Due to a language barrier and cultural differences, most ESL students need more support and help than

other students. Through in-depth conversations with the ESL instructors and researcher's personal experiences as an international student, here are the suggestions that may help higher education institutions to support ESL students better and make the technology integration process more feasible for ESL instructors:

1. Higher educational institutions should provide necessary technical training for ESL students;
2. Provide technical equipment lending program service for ESL students;
3. Schools and ESL instructors should collect ESL students' feedback on technology use regularly to make sure that no student is left behind.

ESL Instructors' Needs and Expectations

Both survey and interview data show that ESL instructors are full of expectations for educational technology in future ESL classrooms. Based on a good understanding of ESL instructors' needs and expectations through the interviews, and personal experience as an ESL instructor, the researcher hereby makes the following recommendations for the stakeholders of the educational technology companies to support language instructors and ESL students better:

1. Develop more user-friendly technology tools, such as video-editing tools, for educators;
2. Develop more collaborative technology tools, software, and platforms for educators;
3. Gamify language drilling practice for language students;
4. Develop technology tools with simple language and visual support for ESL students.

Self-Reflection

It's hard to believe that I finally finished this huge project during the COVID-19 pandemic period. Throughout this dissertation journey, I have learned way more than I expected.

My original intention was to figure out how to help ESL instructors to use more technology in their language classrooms to support their students learn English easier and better. As an ESL instructor myself, I truly feel the advantages of using technology in supporting my ESL students' collaborative learning and independent learning. Through this research, I gained a deeper and critical understanding of technology use in a second language classroom. Sometimes it's easy to overlook the potential perspectives of key groups such as the students. But their perspectives may play a significant role in the whole process. Before the interviews, I had no idea that ESL students played such a big role in the technology integration process.

Another thing that touched me deeply was the openness and honesty of the ESL instructor participants during the interviews. I was amazed by the rich information provided by interviews and conversations. Also, I was caught by people's different feelings and ideas toward the same issue.

All in all, I gained valuable insights and experiences through this dissertation journey and learned a lot of knowledge that I couldn't learn from a book or coursework. Most importantly, this journey helps me feel the significance and charm of research.

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Appendix A

Informed Consent

Informed Consent Form

Dear ESL instructors:

You are being invited to take part in a research study about English language teaching and technology integration. The study is titled: Perceived Obstacles by ESL Instructors in and Required Support for the Integration of Educational Technology. You are being invited to participate in this research study because you are an ESL instructor teach at a community college in the Bay Area, California.

Participation in this study is totally voluntary. Even if you choose to participate in this study, you can withdraw from it at any time. Please feel free to ask questions if there is anything that you do not understand.

The person doing this study is Xiaotian Zhang, an Ed.D candidate at USF. She is being guided in this research by Professor Mathew Mitchell in the School of Education at USF. The purpose of this research is twofold: one is to identify the obstacles that prevent ESL instructors from integrating educational technology in teaching English and another is to find out how to address and lessen the impacts from the obstacles and what kind(s) of support that can be provided in the language classrooms to better support ESL instructors in the community colleges. By doing this research I hope to generate a proposal with specific strategies to facilitate educational technology to ESL teaching. I also hope to be able to find ways to break down the barriers identified in the study and provide ESL instructors better support in integrating technology into their classrooms.

Your name will not be on the interviews, so your answers will be anonymous. You will be asked if you would like to give a pseudonym for your interviews so that your real name is not ever connected with them; if you do not wish to choose a pseudonym, one will be selected for you in order to make sure that the interviews and social gatherings are confidential. This informed consent document, with your name on it, will be stored in Xiaotian Zhang's personal computer, and no one but Xiaotian Zhang will have access to this. The informed consent documents will be destroyed by deleting them three years after the results of the study are published.

The information you give will be entered into an electronic database and analyzed. In this process, your information will be combined with information from other people taking part in the study. When I write up the results of this study to share it in my study, you will not be identified in these written materials. You are encouraged to ask questions now, and at any time during the study. You can reach me, Xiaotian (Kate) Zhang, at 415-231-8073 or via xzhang109@usfca.edu.

I have read and I believe I understand this Informed Consent document. I believe I understand the purpose of the research project and what I will be asked to do. I have been given the opportunity to ask questions and they have been answered satisfactorily. I understand that I may stop my participation in this research study at any time and that I can refuse to answer any question(s) that I would like. I understand that my name will not appear on the interviews; meetings; and that I will not be identified in reports on this research. I have received a signed copy of this Informed Consent document for my personal reference. I hereby give my informed and free consent to be a participant in this study.

Signatures:

Xiaotian Zhang

_____

Consent Signature of Participant Date

_____ _____

Appendix B

"Potential Obstacles in Integrating Technology into Language Teaching"

Online Survey

Potential Obstacles in Integrating Technology into Language Teaching

Introduction Dear ESL Instructors,

You are being invited to take part in a research study about English language teaching and technology integration. The study is titled: Perceived Obstacles and Required Support by ESL Instructors in the Integration of Educational Technology. Thank you so much for your participation!

The person doing this study is Xiaotian Zhang, a doctorate candidate at the University of San Francisco (USF). She is being guided in this research by Professor Mathew Mitchell in the School of Education at USF. The purpose of this research is twofold: one is to identify the obstacles that prevent ESL instructors from integrating educational technologies in language teaching and another is to find out how to address and lessen the impacts from the obstacles and what kind(s) of support that can be provided to better support ESL instructors. By doing this research, I hope to generate a proposal with specific strategies to facilitate educational technology to ESL teaching. I also hope to be able to find ways to break down the barriers identified in the study and provide ESL instructors better support in integrating technology into their classrooms

The information you give will be analyzed anonymously. When I write up the results of this study, you will not be identified in these written materials. The participation of this study is totally voluntary. Even if you choose to participate in this study, you can withdraw from it at any time. You are encouraged to ask questions now, and at any time during the study. You can reach me, Xiaotian (Kate) Zhang, at 415-231-8073 or via xzhang109@usfca.edu anytime.

Your implied consent to participate in this survey is recognized by your completion of this survey. Thank you again for your kind participation :)

Q1 Please enter the College name that you are working at:

_____

Q2 Please select your gender

- ○ Male
- ○ Female
- ○ Non-binary/third gender
- ○ Prefer not to say

Q3 Approximately how long have you been teaching?

- ○ a. 1-3 years
- ○ b. 4-5 years
- ○ c. 6-10 years
- ○ d. More than 10 years

Q4 How would you rate your overall educational technology skills?

- ○ a. Basic
- ○ b. Intermediate
- ○ c. Advanced

Q5 Please indicate the extent to which you agree or disagree with the following statements about educational technology integration in language teaching and learning:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
5.1 Educational technology would improve my ability to teach	○	○	○	○	○
5.2 Most educational technologies are reliable	○	○	○	○	○
5.3 Educational technology integration would improve the quality of language teaching	○	○	○	○	○
5.4 More technology will be used in future ESL classrooms	○	○	○	○	○

Q6 To what extent do you agree that educational technology could work for the following statements? (Job Relevance - PU)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
6.1 Class preparation	○	○	○	○	○
6.2 Providing instructions, reminders, and feedback	○	○	○	○	○
6.3 Facilitating student activities	○	○	○	○	○
6.4 Monitoring students' progress	○	○	○	○	○
6.5 Assessment	○	○	○	○	○

Q7 To what extent do you agree that classroom technology could improve the following areas? (PU - output quality)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Students' engagement	○	○	○	○	○
Learning motivation	○	○	○	○	○
Classroom interaction	○	○	○	○	○
Meaningful learning	○	○	○	○	○
Collaborative learning	○	○	○	○	○

Q8 To what extent do you agree or disagree with the following statements about educational technology integration in language teaching and learning: (PEU - Computer Anxiety and Computer Self-Efficacy & Objective Usability)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
8.1 I easily get nervous when facing various educational technologies	○	○	○	○	○
8.2 I don't think I have the technology skills to support students in class	○	○	○	○	○
8.3 I feel confident in my ability to access the available technology when I need it	○	○	○	○	○
8.4 I feel confident and comfortable to integrate educational technologies into my teaching	○	○	○	○	○
8.5 I have a good variety of ideas for integrating educational technology into my instruction and teaching	○	○	○	○	○
8.6 More time needed to prepare technology-integrated classes	○	○	○	○	○

Q9 To what extent do you agree or disagree with the following statements about educational technology integration in language teaching and learning: (PEU -perceived enjoyment & computer playfulness)

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
9.1 I believe that the integration of educational technology would make the teaching process more enjoyable	○	○	○	○	○
9.2 I believe that the integration of educational technology would make teaching more fun	○	○	○	○	○
9.3 I enjoy applying various technologies into my teaching	○	○	○	○	○

Q10 Have you ever experienced any of the following obstacles while integrating classroom technology into teaching? (please select all that apply)

- ☐ a. Lack of necessary technology skills
- ☐ b. Lack of time
- ☐ c. Inadequate technology equipment
- ☐ d. Students get distracted
- ☐ e. Does not fit my teaching objectives and philosophy
- ☐ f. Budget or policy issues
- ☐ g. Feeling inadequate
- ☐ h. Tools / Technology not working as expected
- ☐ i. Insufficient training
- ☐ j. Have not experienced any obstacles
- ☐ k. Other (please specify)

_____

Q11 Please indicate the level of agreement for the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
01. The implementation of technology has been achieved thanks to the effective leadership of those responsible for its incorporation	○	○	○	○	○
02. The institution supports those teachers who promote the use of technology	○	○	○	○	○
03. The use of educational technology would be greater if it were not for the amount of work assigned to teachers	○	○	○	○	○
04. Teachers have a follow-up or evaluation by the institution on the use of technology in their teaching tasks	○	○	○	○	○
05. The institution gives quality infrastructures for the use of educational technology	○	○	○	○	○
06. For the incorporation of technology, there is a strategic planning that sets the guidelines for its use	○	○	○	○	○
07. The technology training that has been proposed was adequate	○	○	○	○	○

to the needs of the teachers					
08. The technology training that has been at the right times	○	○	○	○	○
09. Teachers are motivated with the use of technology	○	○	○	○	○
10. Teachers who prefer not to use technology are based on strong research or arguments	○	○	○	○	○
11. The generation gap influences the level of use of technology	○	○	○	○	○
12. Sufficient training has been received on the use of technology	○	○	○	○	○
13. Teachers receive incentives for using technology	○	○	○	○	○
14. Teachers have enough time to incorporate new technologies into their practice periodically	○	○	○	○	○
15. Sufficient infrastructure is available for the use of technology	○	○	○	○	○
16. The constant evolution of technology resources prevents you from being up to date on their use	○	○	○	○	○

17. The pedagogical conceptions of teachers are in favor of the use of technology	○	○	○	○	○
18. Teachers know how to integrate technology in the methodological design of their classes	○	○	○	○	○

Q12 This question is designed to identify what your technology needs are and how to support ESL instructors better, please indicate to what extent that you agree or disagree with the following statements:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
12.1 I need more time to integrate technology into my curriculum and teaching	○	○	○	○	○
12.2 I need more training to use educational technology	○	○	○	○	○
12.3 More support from the administration	○	○	○	○	○
12.4 I want more access to technology tools to integrate in my teaching and classroom instruction	○	○	○	○	○
12.5 I want more options for professional development in the areas of educational technology	○	○	○	○	○
12.6 I want more ideas about how to integrate technology into my teaching	○	○	○	○	○
12.7 I want more opportunities to collaborate with colleagues on how to use educational technology	○	○	○	○	○

Appendix C

Interview Questions

Interview Questions

1. What's your general attitude towards the incorporation of technology into English teaching and learning? Why?
2. What do you think are the most common barriers or resistances in the integration of technology in your teaching? Why? How would you explain it?
3. Could you share a good experience of using technology in your ESL classroom? Why was it good for you?
4. Could you share a bad experience of using technology in your ESL classroom? Why was it bad for you?
5. Do you have colleagues resistant to the use of technology? What reasons do they usually give? How would you explain it?
6. Based on the questionnaire results, the top 3 most common barriers are **lack of time**, **tools/technology not working as expected**, and **inadequate technology equipment**. Do you feel like you can relate to your situation and your institution? Why?
7. What are your technology needs in the context of your language teaching? Are you getting the support you expect? Or need?
8. What kind of technology do you think best facilitates your teaching?