INSTRUCTIONAL, SOCIAL, AND INSTITUTIONAL FACTORS AFFECTING TEACHERS' APPLICATION OF TECHNOLOGY IN L2 SECONDARY SPANISH CLASSROOMS

A Dissertation

by

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Abstract

This case study examined second language (L2) instructors' use of technology in high school and junior high Spanish classrooms in the state of Texas. Specifically, this work sought to investigate the kinds of technologies teachers employ in their practice and how they apply them in the classroom, and what personal and institutional factors influence their choices. The study collected data from six L2 Spanish teachers from both a high school and a junior high in the same school district. A qualitative analysis was conducted on the data collected, which included classroom observations, debriefings with participants, and semi-structured interviews. The results revealed that the participating L2 educators' incorporation of technology in the study's classes did not mirror recommended current L2 practices but was more reflective of traditional, output and grammar-based approaches. The data showed that educators' classroom use of technology was influenced by lack of teacher training both in the area of L2 education and technology, poor institutional support, absence of information on institutional and methodological expectations for teachers' practice, issues related to flawed technological devices and wi-fi connections, and the participants' own personal use of and beliefs about technology. Based on the study's findings, this work offers suggestions for the implementation of a training model that could assist institutions with teacher education and provide educators with effective theoretical and practical resources.

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1.1 Study Focus

A prominent addition to the second language (L2) classroom in the 21st century has been the introduction of technology to enhance and facilitate students' learning experience and prepare them for the technology-dominated world of which they are a part (Chun el al., 2016). In the last decade, tablets have begun to replace textbooks, anything can be researched on smartphones, and social media has become commonplace. Technology has completely changed how we live our lives, and, as a natural adjustment to this new way of life, educators have attempted to blend technology into the classroom. It is therefore safe to say that technology is not only expected but has become the norm in today's L2 classrooms (Chun et al., 2016).

A plethora of studies exist that have examined the effectiveness of technology on the development of L2 students' performance and proficiency (Garrett, 2009; Gichon & Hauck, 2011; Kim, 2008; Thoms, 2011; Zhao, 2003). However, fewer studies have focused on L2 instructors' implementation of technology in the language classroom, particularly when it comes to specific types of devices and apps (De la Fuente, 2014; Dogan & Akbarov, 2016; Oberg & Daniels, 2013; Talmo et al., 2013; Van Praag & Sánchez, 2015). In addition, much of the existing literature has not shown the connection between institutional aspects such as the training and support that is provided to instructors and the personal and experiential factors that can influence the way in which L2 instructors use technology.

1.2 Purpose of Study

This case study was conducted to fill gaps in previous research by offering a comprehensive view of L2 teachers' use of different types of technologies in high school and

junior high L2 Spanish classes through the investigation of the specific ways in which instructors implement technology, the beliefs that shape their practice, and the institutional factors that can facilitate or hinder their and their students' experience. Specifically, this work focused on the use of technology made by five high school and one junior high Spanish teachers from a Texas public high school and junior high during a three-month period beginning on October 15, 2017 through December 18, 2017. Based on data collected through a combination of classroom observations and debriefings and semi-structured interviews, this work investigated the kinds of technology that the participants employed in their teaching; the personal, methodological, and institutional reasons that guided their choices and uses of technology; and the extent to which they considered their experiences successful.

2. Literature Review

2.1 Technology in the Second Language Classroom

In the last two decades, numerous technological innovations have substantially changed the field of second language (L2) pedagogy. The use of technology in the L2 classroom has increased dramatically, and it has become an essential part of the L2 curriculum in K-12 programs (Thoms, 2011). For example, since the implementation of the *Bring Your Own Device* (BYOD) initiative in the public education system in 2011, the push for more technology in the L2 classroom has increased (Talmo et al., 2013). Over 90% of American high school students use their smartphones for learning-related information access and communication purposes (Dennen & Hao, 2014). In addition, in 2011, the American Council on the Teaching of Foreign Languages (ACTFL), in collaboration with The Partnership for 21st Century Skills, introduced *Information, Media, and Technology Skills* as part of the skills expected to be developed in the L2 classroom. These include the need to prepare students to access information from the Internet efficiently and effectively, as well as to evaluate and use information accurately and creatively. L2 students are also expected to develop a fundamental understanding of the ethical and legal issues that surround the access and use of online information; to understand how to convey a message through social media; and to learn how individuals interpret messages differently, focusing on the values and points of view that are included in those messages and how the media can influence beliefs and behaviors.

With the advancement of technology and the push by national organizations such as ACTFL to include technology in the L2 curriculum, school boards, districts, and department heads have continued to encourage and even require its use in L2 programs. For example, in a 2011 survey of both public and private schools carried out by Pufahl and Rhodes (2011), it was

shown that a large number of elementary and secondary schools, both in the private and public sectors from all over the United States (i.e., Northeast, South, Southwest, Central, and Pacific Northwest), reported that the use of technology in the L2 classroom had tripled at the elementary level and had more than doubled at the secondary level. Also, the use of computer-assisted instructional materials had increased at both levels of instruction.

As technology has become increasingly popular in L2 curricula, the market has tried to meet the needs of L2 teachers and students. For example, all major foreign language publishers such as Houghton and Mifflin Harcourt, Pearson, McGraw-Hill, and Scholastic include, to some degree, access to online resources and tools and technology-based features like electronic workbooks, e-books with access to media, etc. In addition, professional development workshops for language teachers are constantly offered to encourage educators to implement specific apps and software programs as well as common "non-specific" technology tools, such as photo enhancing sites, and digital platforms for digital publications in their L2 classes (Walhof, 2016). As a result, a large number of L2 teachers are currently using a variety of technologies in the classroom to address all language learning areas. Some of the tools being used in today's classroom to provide a more comprehensive language learning experience are *Rossetta Stone*, *Duolingo*, *Rocket Languages*, *Babbel*, and *Fluenz*. Other Internet accessible sites provide material to support the development of students' grammar knowledge (e.g., Studyspanish.com, Conjugation.org, etc.), and they can be used in the classroom to explain grammar points or for grammar practice. All of these websites offer grammar explanations, printable worksheets, and online practice quizzes and tests that teachers currently use as tools to boost this area of L2 learning (Jager et al., 2014; Van Praag & Sánchez, 2015).

Another recent development, and perhaps the most ubiquitous in recent years, is the presence of mobile technology in the L2 classroom. This type of technology is said to offer benefits such as social interactivity, context sensitivity, connectivity among students, portability, and a sense of individuality or student-centered learning (Luzon & Gonzales, 2006; Van Praag & Sánchez, 2015). Mobile learning tools consist of apps that mostly act as aids for the development of discrete aspects of L2 learning such as vocabulary. For example, apps such as *iKnow!, Quizizz*, *Study Stack*, and *Quizlet* are being implemented in a large number of L2 classrooms around the world (Doerr, 2013; Dreyer, 2014; Steed, 2013). The results of recent studies (e.g., Clark & Luckin, 2013; Dodigovic, 2013; Nikopour & Kazemi, 2014; Redd, 2011) suggest that these apps have instructional benefits, as they seem to offer more authentic materials for L2 vocabulary learning; they motivate students more than traditional paper flashcards; they decrease anxiety; and they promote interest in the subject matter. These trends suggest that technology has indeed become part of the L2 classroom. However, the studies on which this information is based have focused on students. The next section discusses some of the existing studies that have examined the role that L2 instructors play in the implementation of technology.

2.2 L2 Instructors' Application of Technology

Several studies have been carried out to better understand what high school teachers' beliefs and perspectives when implementing technology in their classrooms (e.g., Bebell et al., 2004; Burnett, 1999; Kessler, 2007; Ketsman, 2012; Kim, 2008; Papadima-Sophocleous et al., 2014; Safitry et al., 2015; Zyad, 2016). However, most of these studies have concentrated on subjects other than second/foreign languages, or they have focused mostly on English as a second (ESL) or foreign language (EFL) classes at the university level (e.g., Bebell et al., 2004; Guichon & Hauck, 2011; Kessler, 2007; Kim, 2008; Kitade, 2015; Safitry et al., 2015). The few

studies that have focused on the use of technology in the L2 classroom have shown that both personal and institutional factors can affect teachers' implementation of new technologies and digital tools in their instruction.

For example, in a case study involving the participation of six EFL elementary and high school Turkish teachers, Celik and Aytin (2014) focused on instructors' perceptions concerning their own knowledge, confidence, and competency, and how they affected the way in which technology was implemented in their classrooms. Data for the study were collected through personal interviews. The results showed the participants felt competent about their level of digital literacy and knowledge. However, they did not widely use technology because they felt they lacked resources and access to computers and Internet connections, even though they strongly believed in the need for technology in the L2 classroom. The researchers concluded that the participants' lack of integration of technology in the classroom was based on institutional, rather than personal factors. This study provided us with valuable information regarding high school teachers' use of technology in the classroom; however, it was limited by its small number of participants in a very specific setting, and it was based on interviews as the only means of data collection. Another important flaw was the absence of information about how technology was incorporated into the curriculum.

Other investigators, such as Soussi (2016), have also focused on EFL high school instructors. In Soussi's study, a group of 30 ESL and EFL high school teachers from the capital of Morocco were given a questionnaire with questions with a five-point Likert scale that probed their opinions regarding the importance of technology in the classroom, and to what extent incorporating it to instruction was a straightforward and trouble-free process. In addition, the study focused on the possible methods and strategies that teachers suggested to effectively use

technology in the Moroccan high school EFL classroom. The data gathered were divided into three categories: perceptions, obstacles, and approaches. The results showed that the participating teachers' views of the importance of technology in the classroom were very positive, as they agreed that it resulted in higher degrees of student motivation, interesting materials, and entertainment. However, as in the work by Celik and Aytin (2014), only one third of the teachers claimed they actually used technology in the classroom, mentioning the lack of resources, equipment, training, and available technological services as the main reason for their limited implementation of technology. In addition, in contrast to the study by Celik and Aytin, Soussi found that teachers' confidence was lacking, although they were willing to learn.

Teacher attitudes toward the integration of technology in the L2 classroom were also the focus of Zyad's (2016) study. This investigator attempted to find attitudes of teachers toward technology in the L2 classroom, and if gender or age played a part in these attitudes. Zyad's work was based on EFL teachers who taught at high schools in the province of El-Jadida in Morocco. The study included a total of 56 teachers. Data were collected through a questionnaire and a semi-structured interview with the educators. The study found that the majority of the teachers both male and female had positive attitudes toward technology in the L2 classroom and that there was no relationship between these attitudes and gender. A positive correlation, however, was shown between attitude and age, as the younger teachers were more likely to integrate technology into their L2 teaching. This study provided more data on L2 high school teachers and their attitudes toward technology, and it also helped to fill the gap about possible gender and age differences that may contribute to teachers' specific attitudes.

In another recent study, Izquierdo et al. (2017) examined high school EFL teachers' perceptions of technology and the factors that might influence their use of technology in public

high schools in Mexico. The study took place in 17 Mexican public schools with 28 teachers as participants. Data were collected through a combination of questionnaires, interviews, and classroom observations. The results of this study showed that teachers used multimedia resources such as mobile testing to complement traditional classroom materials, and laptops for instant messaging and networking. However, these resources were only employed to complement students' work at home. This was due to the lack of Internet connection at the schools, which resulted in teachers' limited use of computer technology in the classroom. Another interesting finding was the remarkable divide between the younger and older teachers. This study found that the younger teachers had personal laptops, portable speakers, or tablets in order to use media files in their lessons; however, the older teachers were observed using CD players only. The study concluded that teachers' behavior toward technology in the L2 classroom was mostly negative, "because of the regulations and limited access to the facilities, technical support, time investment, and training" (Izquierdo et al., 2017, p. 41). The overall results of this study coincide with the previously discussed studies in that L2 instructors' negative attitudes toward the use of technology and/or the lack of resources, administrative support, and adequate training can affect the use of technology in high school EFL classes.

Nagel (2019) reported on a more recent study on newer-tech based teaching practices that was based on surveys collected from 33,000 educators around the world, as well as over 400,000 K-12 student parents from over 10,000 schools and 3,300 districts, for a period of four months, from October 2017 to January 2018. The results from this study showed that 78% of the participating teachers were still not comfortable facilitating student collaboration with digital devices, and that the number one factor for not using technology in the classroom was the lack of training and support for the application of new technologies. However, Nagel also pointed out

that many districts were already trying to respond to these challenges by providing the kind of training needed. Nevertheless, the investigator also suggested that lack of time, money, and manpower sometimes hindered the provision of training or it made it very difficult, if not impossible, to achieve. Even though this study provided valuable, up-to-date information on instructors' use of technology, it was not focused specifically on the L2 Spanish classroom.

The articles discussed in this section have added to our knowledge of the factors that might affect the successful incorporation of technology in the L2 classroom. However, several factors were missing. First, the articles presented have only focused on EFL teachers or educators in general. Also, most of the studies discussed did not provide data on high school classrooms in the United States. Since many high school classes in the United States incorporate L2 languages such as Spanish as part of their curricula, it was important to include these languages in this investigation. Another important flaw of the studies presented was that all of them have provided limited information about the role that technology played in the curriculum of the classes studied, and they have relied on limited sources of data. A more comprehensive study is therefore needed.

The present study aims to contribute to the field by focusing on high school L2 Spanish teachers in two Texas schools: a junior high and a high school. The objective of this work was to investigate their use of technology in depth, thus addressing some of the gaps existing in previous work. First, this work provided specific information about the curricular role of technology in the classes studied, focusing on lesson plans, kinds of technology used, and the district and administrative mandates guiding it. In addition, data were collected through a variety of methods, such as classroom observations and debriefings and semi-structured interviews. The study also investigated whether teachers' use of technology in the Spanish high school classroom

reflects recommendations by the American Council on the Teaching of Foreign Languages (ACTFL), the most prominent organization guiding current L2 teaching and learning in the United States. Finally, this work sought to determine the personal factors that guide teachers' use of technology.

To accomplish this task, the researcher made use of Engeström's (1987) Activity Theory. This theoretical framework allowed the researcher to connect differing factors such as teachers, administrators, and training, when analyzing the data collected, and it is presented in the following chapter.

3. Theoretical Framework

3.1 Activity Theory Overview

Activity Theory (AT) was chosen as the theoretical framework guiding this work because its main objective is the study of human behavior in social contexts (Engeström, 1987). That is, the framework allows for the analysis of the factors that influence social activities, focusing not only on the participants, but also on the artifacts that are part of the activity and the contexts in which they take place. Since the goal of this study was to investigate how L2 Spanish instructors use technology in their practice and the institutional and personal factors that affect this use, AT was deemed appropriate to interpret the results of this work.

Engeström's AT (Engeström et al., 1999) is grounded in Vygotsky's (1978) sociocultural theory, which posits the idea that human psychological development is intrinsically connected to the individual's social and cultural contexts, and to the artifacts that are part of their social activity; i.e., Vygotsky emphasized the social nature of cognitive development, and the internalization of language as a result of the child's interactions with others. His framework helped to understand that cognitive processes are not exclusively internal but are socially and culturally dependent.

Engeström (1987) relied on the concepts developed by Vygotsky and also on Leont'ev's (1981) conception of activity[1] to develop a framework that would allow for the analysis of social activity as a collective system that (a) is situated in particular social and geographical contexts; (b) involves the participation (through action) of a group of people who belong to a specific sociocultural group (i.e., a community); (c) has an objective and outcome; and (d) is mediated by artifacts that are used by the participants with the object and result in mind. AT, simply put,

[1] Because of this theoretical background, AT is sometimes called Cultural–Historical Activity Theory (CHAT). However, in this paper, we will refer to the framework simply as AT.

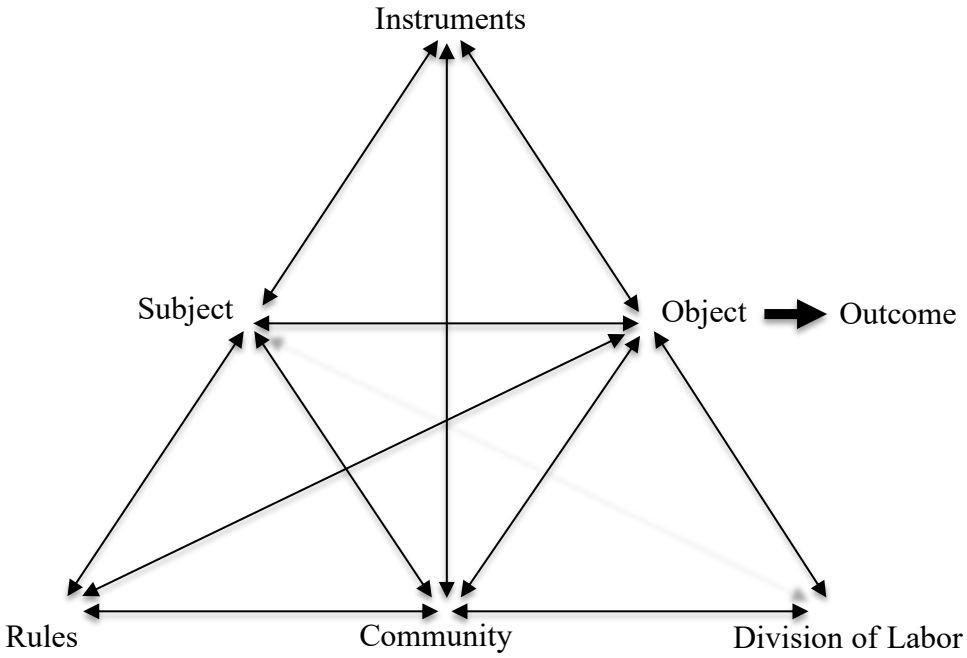
examines who is doing what, why, and how (Hasan & Kazlauskas, 2014). The components of the AT system are as follows:

- the *subject*: the person, or group accomplishing the task;
- the *object*: the desired outcome or goal;
- the *tools*: the artifacts used to accomplish the goal;
- the *rules*: the set of steps and specific actions guiding the ways in which the goal can be accomplished.
- the *division of labor*: the actions for which each participant is responsible (i.e., how tasks are distributed among the members of the group); and
- the *community*: the sociocultural group to which the participants belong and may impact the activity and the outcome**.**

The "core of the activity" is the relationship between the activity and the individual seeking to complete it (Engeström, 1987). This theory also reflects the three-way relationship of mutual mediation among the components, since each element is impacted and affects the relationship with the other elements, and subsequently creates the outcome. These components and the relationship among them are presented in Figure 3.1.

Figure 3.1

Engeström's Activity System.



Note: From *Perspectives on activity theory*, by Y. Engeström, R. Miettnen, and R.-L.Punamäki-Gitai, 1999, p. 259. Copyright 1999 by Cambridge University Press.

Since Engeström (1987, 1999) developed AT, it has been applied in a variety of studies to provide us with an in-depth analysis of the complexities of real-world social activities, such as those found in work-related spaces like hospitals (e.g., Cheung & Vogel, 2012) and educational contexts (e.g., Gedera & Williams, 2015). In order to apply it, researchers first identify the significant activities of the system to be studied along with the subjects, objects, and purposes involved. Second, they define the actions and tools used during the activity, and they explore the dynamics and tensions within and between the identified components (Hasan & Kazlauskas,

2014). For example, when AT is applied with a focus on an educational context, the *subjects* might be the teachers and the *object*, their students and their learning process. The *artifacts* or instruments might be the instructional materials used (e.g., textbooks, lesson plans, etc.). The *rules* could involve the pedagogical steps in the adopted methodology and the institutional and field expectations. In the *community*, one might find the teachers, the students, and the school administrators; and the *division of labor* might make reference to the specific tasks carried out by the subjects.

3.2 Implementation of Activity Theory in This Study

AT is particularly appropriate for the study of educational contexts if one considers that in teaching, what teachers think and do is defined, mediated, and constructed in relation to the context of the activity in which they are immersed. These activities involve the community, the distribution of rules within the community, and the roles and responsibilities of all parties involved in the activity, as well as the artifacts that are employed to achieve a particular object that will result in the desired outcome (Engeström, 1987). AT can allow one to explore these components in depth, and how they influence one another. In the last two decades, AT has been particularly useful for the understanding of the factors that affect the use of technology in education.

3.3 Use of Activity Theory to Investigate L2 Learning Contexts

One of the first studies that applied AT to explore the integration of technology in L2 classes was Zapata (2002). Specifically, the researcher focused on the factors that affected five graduate teaching assistants' (GTAs) use of technology in L2 Spanish classes in a public university in the United States. The incorporation of technology was considered a pedagogical innovation, and the study analyzed the elements in the activity system of which the GTAs were

part, unveiling the factors which resulted in the success or failure of the new instructional components. The application of Engström's (1987, 1999) framework to the data collected through interviews, classroom observations, and debriefings allowed for the analysis of the ways in which the different elements of the system had interacted and the roles they had played in the GTAs' practice. AT, thus, resulted in the discovery that GTAs had implemented technology in the classroom in varying degrees due to a lack of pedagogical unity and training on the part of the institution, unclear division of labor and absence of collaboration, and deficient technology and pedagogical materials. These factors also played a role on the subjects (the GTAs) themselves, as they developed resistance and negative attitudes toward technology-assisted language learning which, in turn, affected the object (their students) and the outcome of the activity (L2 learning).

Blin and Munro (2008) applied AT in a similar way, but in this case, they focused on university instructors in Ireland in order to determine the effects of the adoption of a learning management system (LMS) on their teaching practices. The university analyzed two separate data sets. The first included the type and number of activities and resources in the LMS (in this case Moodle) during two academic years, which consisted of courses taught by 581 teachers in what the institution considered core faculties (i.e., science, business, humanities, social sciences, and computing and engineering). The second data set was a survey administered to the faculty users at the end of each academic year to determine their perceptions of the Moodle platform and to assess their training needs. The survey results were analyzed using Engström's AT.

As in Zapata's (2002) study, the application of AT in the Blin and Munro's (2008) work showed that, even though the LMS was widespread throughout the university and it had been widely adopted, the new activity (its incorporation in the participants' classes) had not resulted in

significant changes in teaching practices. The analysis of the components of this particular system revealed that the resulting outcome was connected to the institution's failure to provide training which, in turn, resulted in instructors' not having enough skills to fulfill the desired task. That is, the LMS was not employed properly by the faculty as a new and transformational teaching tool; but, instead, it was used more as an administrative resource for information and assessment purposes. The findings also showed that more collaborative and reflective activities were needed to produce the desired transformational outcome tied to the incorporation of the LMS in the classroom.

AT was also used in the Karasavvidis's (2009) investigation of teachers' perspectives on Computer Supported Collaborative Learning (CSCL) in Europe. The participants in this study were 51 elementary school teachers, with an average of 11.2 years of teaching experience. Their comments and concerns regarding the implementation of technology in their educational systems were collected in an in-service blended learning course for a semester, in which a real-life CSCL example was presented to the teachers and then discussed via an online forum. The questions asked to the participants probed their opinions on the conditions under which they would incorporate CSCL. AT was employed to identify teachers' concerns based on their online discussion threads, small group end-of-semester interviews, the researchers' notes on class discussions, and an end-of-year questionnaire. The results of the analysis revealed certain themes that showed contradictions between the main goal—students' learning—and the teachers' agendas. That is, the participating instructors seemed to be more concerned with covering the newly implemented CSCL curriculum than with whether or what the students were actually learning through the curriculum. This contradiction was analyzed using AT, and it was found that the pressure exerted on teachers to cover the curriculum, rather than to focus on students'

learning, had created the opposite of the program's intent, which was for the students to master the curricular contents. In addition, the application of AT unveiled contradictions between the subjects' (the teachers') activity (i.e., applying technology in their practice) and the artifacts (i.e., digital resources). For example, the teachers complained about the time it took to create activities using technology and teaching students how to use them; and, thus, they preferred to resort to typical expository lessons. As in Zapata's (2002) study, through AT analysis, Karasavvidis was able to show that factors related to the rules of the system (e.g., what teachers were expected to accomplish by their institutions), the division of labor (e.g., the fact that instructors were not only expected to teach, but also to create materials), and the materials (e.g., the complexity of digital resources) affected the subjects (the teachers), objects (the students), and outcome (students' learning based on CSCL) of the activity.

Another study using AT to investigate the implementation of instructional technology in the classroom was the work of Feldman and Weiss (2010). This investigation aimed to show that significant change in teaching only comes from instructors' self-realization. The researchers believed that teachers would not change the way they taught unless they recognized the need for change. In order to collect data to support this belief, the investigators focused on 28 teachers from the University of South Florida in the Department of Physical Science who participated in a collaborative action research (CAR) project during the implementation of a new form of instructional technology in their classrooms. The university's main objective was to foster instructors' implementation of visual technology into their classes, resorting to devices to capture images and computer software designed to manipulate them and present them to students. Another goal of this project was for the teachers to conduct action research when implementing the new technology in their classroom, which Feldman and Weiss believed would help assess the

effectiveness of the CAR program to promote self-reflection and, in turn, exert changes to practice in the classroom. Data were collected through participant observations, taped collaborative conversations, analysis of teacher products, and participatory evaluation methods, including narratives from researchers' notebooks, summaries of meetings and collaborative conversations, and anecdotal notes taken by the researchers during informal conversations with the participants. Other documents included agendas for meetings, attendance lists, project surveys, and reports and other learning documents provided to the participants.

The application of AT to the analysis of the data collected from the participants' action research suggested there was little change in the teachers' identity and practice by the end of the first cycle of CAR. The AT analysis revealed that the lack of change was connected to the poor support offered to the teachers by the facilitators. Another important aspect was the absence of specific teacher training on the development and evaluation of their own lessons, and of additional time to fulfill their many roles (e.g., curriculum designers, teachers, and self-evaluators). The analysis that resulted from Engeström's (1987) AT helped identify the aspects that were not working in the achievement of the teachers' effective self-reflection and, in turn, the improvement of their practice. Also, AT allowed the researchers to make changes to the project (e.g., the establishment of action research group meetings and more guidance) to improve both their data collection and teachers' experience.

In a more recent study, Sobri et al. (2019) employed AT to investigate technology in the classroom, examining the lack of success in its implementation in Malaysian public schools. This work focused on two schools: School S, a rural secondary school, and School P, an urban primary school. Five participants were selected from School S and four from School P, including principals, technology coordinators, and teachers. Three in-depth interview sessions were

conducted with each participant. Three different activity systems were applied in order to identify the factors that negatively affected the implementation of technology in the two schools investigated. The first system was connected to the classrooms in which the integrated teaching occurred; the second one, to the departments associated with those classes; and the third one, to the schools per se. Utilizing a qualitative, multiple-case study design, the authors explored the interactions of the three activity systems, and they unveiled several factors that hindered the successful application of technology in the two schools. For example, the functionality of the equipment was a factor, in that faulty equipment or not enough equipment was available to the teachers due to budget constraints. Another element identified through the application of AT was the participants' lack of training, which was caused by their poor attendance to any workshops offered by the schools because of the many responsibilities they had at the school or previous engagements. This finding also pointed to the lack of compliance to adhere to school requirements for technology implementation on the participants' part. Thus, the use of AT in this study revealed the tensions that existed between the teachers and the school stakeholders, and it emphasized the need for both instructors and administrators to work collaboratively in order to achieve a positive outcome, pushing school management to take action.

The studies presented in this chapter suggest that AT is an appropriate framework to analyze activity systems in which teachers are involved. Therefore, it is applied in the current study for the analysis of data collected through interviews, classroom observations, and debriefings. The results determine what and how personal, material, social, and institutional factors might have affected the participating instructors' incorporation of technology in the Spanish L2 junior high and high school classrooms on which this study was based.

4. Methodology

4.1 Section Overview

A case study approach was chosen for this study. This type of research tradition allows a researcher to provide an in-depth, holistic description and analysis of a single, bounded phenomenon situated in a specific real-life context (Merriam, 2009; Plante et al., 2015). Since the purpose of this study was to investigate the personal and institutional factors that affect high school L2 Spanish teachers' use of technology, a case study tradition was deemed appropriate because it would allow the researcher to focus on the real-life context of junior high and high school classes. Also, a case study approach has several strengths, including the possibility for researchers to rely on the use a variety of research methods (Davies, 2011) and to establish rapport with research subjects (Mouton, 2001), both of which can result in the comprehensive examination of instructors' application of technology. Three data sources within this tradition were chosen: semi-structured interviews, classroom observations, and observation debriefings. Data collection took place during the first part of the 2017-2018 academic year. This chapter provides specific information about the research questions that guided the study, as well as the participating instructors; the institutional background of the classes they taught; the data collection process, including instruments and procedures; and the way in which the data were analyzed.

4.2 Research Questions

The purpose of this study was to address the existing gaps in the literature regarding L2 teachers' use of varying types of technologies in high school L2 Spanish classes.[2] This work investigated the specific ways in which instructors implement technology, the beliefs that shape

[2] Herein, "high school" will be used to designate the participating instructors and their classes, including those in the junior high school that was part of this work.

their practice, and the institutional factors that might facilitate or hinder their and their students' experience. This work attempted to answer the following research questions:

- In what ways do junior high and high school Spanish teachers apply technology in the classroom?
- What kinds of technology-based resources do high school teachers resort to?
- What institutional and personal factors influence high school teachers' use of technology in the classroom?
- Does high school teachers' use of technology reflect the mandates of the field of L2 pedagogy as advocated by organizations such as the American Council on the Teaching of Foreign Languages (ACTFL)?

4.3 Participants

In a case-study tradition, Creswell & Plano Clark (2007) emphasized the importance of including a variety of participants (e.g., belonging to differing age groups, genders, and educational backgrounds) in order to achieve a more comprehensive analysis of the perspectives that might have a bearing on the phenomenon that is being studied. Therefore, in this work the researcher recruited participants belonging to different age groups and with different years of experience and educational backgrounds.

The participants in this study were six schoolteachers in charge of L2 Spanish classes ranging from introductory to advanced Spanish, at a high school and a junior high school in the same school district in the state of Texas during the fall semester of the 2017-2018 academic year. The participants' classes met in their respective classrooms every day for a 50-minute time period. Each teacher taught a total of seven classes a day, with the exception of one, who was in charge of a total of five classes a day.

One male and five female instructors participated in the study. Two of the six participants were native to Mexico, and the remaining four were from Texas. The participants represented a variety of ages, ranging from 33 to 61. Some of the teachers had up to 33 years of experience while others had as few as six years. None of the participants reported having any expertise on the use of technology, describing their level of knowledge as beginner or intermediate. Table 4.1 provides a summary of the participants' biographical data.

Table 4.1

Participants' Biographical Data

Participants	#1	#2	#3	#4	#5	#6
Age	43	46	58	53	33	61
Gender	Female	Female	Male	Female	Female	Female
Nationality	American	American	American	Mexican	Mexican	American
Specialization	Spanish History	Business Master's degree Spanish	History Spanish	Spanish History	Master's degree in Spanish	History Spanish French English
Years of Teaching Experience	14	18	31	27	6	33

4.4 Institutional Background

This section provides information about the institutional background of the participating teachers and the classes they taught by describing (a) the schools' administrative organization; (b) the schools' technology policies, (c) the training offered to teachers; and (d) the expectations for the use of technology in the classroom.

The school district in which this study took place serves a population of 8,745 students, with 2,300 of those being at the high school studied, and 800 of them being at the junior high. It is located in Eastern Texas, approximately 90 miles from the Louisiana border. Most of the

students in the district are White (79.4%). Students in the remainder population are Hispanic/Latinx (13.9%), African American (3%), or belong to other ethnic groups (3.7%). The district has one high school and two junior highs. This school district is known for serving students belonging to families with high socio-economic status, and only 23% of students are considered financially disadvantaged. There are 543 teachers in the district, with a total of nine Spanish teachers at the high school and one at the junior high where data for this study were collected.

Spanish teaching in this school district is divided into four levels, and a total of two years of Foreign Language are required for high school graduation, however, this district only offers Spanish. Spanish I is offered in the 8th grade at both junior highs and can count as high school credit. Spanish I, II, III, and IV are taught in the high school. Also, students have the opportunity to take "Spanish for Special Topics" in lieu of Spanish II if they have difficulties passing Spanish I.

Instruction in all Spanish classes in the district, both at the high school and at the junior high, is based on the *Así se dice* (Schmitt, 2018) textbook, which was introduced during the academic semester when this study took place. When data were collected, the textbook was new to all the participating teachers. The head of the Spanish Department at the high school, also a Spanish teacher, is in charge of the development of the curriculum that all Spanish teachers, both at the high school and at the junior high, are required to follow. However, teachers are given some leeway in regard to the methodology they choose to teach the required content and how they organize it. For example, all teachers receive the same vocabulary and grammar sheets per chapter (also called chapter schedules), but some teachers may choose to teach the vocabulary in a different order or in different chapters, or they may choose to offer their quizzes and exams on

different days than those listed on the chapter schedule. The main idea is that all students will work with the same material and will ultimately pass the same final exam. The junior high teachers follow the same curriculum but also have some freedom to adjust quiz and testing dates, as well as their teaching methodology. Each teacher is responsible for providing their own lesson plans, quizzes, and exams, or they can use the materials developed by the department's head for each Spanish level, which instructors can access via "one note" in Office 365 from a district computer at any campus. Although the junior high Spanish teachers receive all of their materials, and curriculum from the high school and the head of the Spanish department, they ultimately answer to the principal of their own school and to their school's rules and regulations. Keeping the curriculum aligned for both the high school and the junior highs is extremely important because students are receiving high school credit for junior high courses.

When it comes to the specific content of their classes, teachers are allowed to include any topics in the *Así se dice* (Schmitt, 2018) textbook, or other cultural issues agreed upon by the Spanish department. Instructors are asked by the administration to be careful when addressing certain cultural issues, such as ethical or religious differences, but for the most part no restrictions are placed on the cultural or linguistic content of Spanish classes. Instead, teachers are asked to use their judgment when selecting themes and guiding classroom discussions taking into account students' age and the district's recommendations both at the high school and the junior high level.

The head of the Spanish department is under the purview of the high school principal, and it is this person who passes down pertinent information regarding the expected use of technology in Spanish classes, any technology changes or maintenance issues, and updates from the district office. The head of the Spanish department then relates the information to the Spanish

teachers both at the high school and the junior high. The district office is fairly "hands off" when it comes to technology and classroom implementation. Nevertheless, all classrooms in the district are expected to have a standard classroom projector, a Smart Board, a document camera, and one to three student desktops or laptops. During the academic year when data for this study were collected the Spanish department at the study's high school had been given a Spanish computer cart that carried 30 laptops for instructors' use in their classes. The junior high was also given a departmental computer cart with 32 computers; however, after the first three months of use, the cart was taken away and redistributed to other campuses. After this incident a Lady Bug[3] and a Smart Board were installed in every classroom at the junior high. Teachers also have regular white boards, so using the Smart Board is expected, but not required. The goal behind this change was to facilitate the use of technology so that teachers could adapt their lessons to incorporate more technology into their classrooms and to allow for more use of technology without the long wait for signing up for computer labs.

In the district where this study took place, technology trainings are offered throughout the school year for all teachers, both at the high school and the junior high. These trainings are very broad and are mostly meant to assist any teacher of any subject with the use of technology. For example, most of the workshops offered focus on the use of a variety of apps and Internet applications, and they review programs to help teachers get information on how they can incorporate technology in the classroom. In the year when the study took place, trainings included workshops on the use of Smart Boards, including their use for PowerPoint presentations and whiteboard activities. Other trainings offered that academic year focused on the following:

[3] A *Lady Bug* is a type of machine that is similar to an overhead projector. It allows teachers to project any picture, writing, image, etc., onto the Smart Board, and to enlarge pictures, zoom in, record, and take photos of whatever is shown.

(a) the incorporation of the flash-card apps *Kahoot, Quizizz*, and *Quizlet* for the teaching of vocabulary; and (b) the application of *Gradebook* and *Eduphoria* for grade management and the recording of discipline or technology maintenance issues in the classroom (e.g., problems with district computers). Information about specific workshops is regularly posted in the district's schools throughout the academic year, and teachers can sign up to participate in them. Instructors are not required to take any of the technology trainings, except for those that teach mandatory tasks, such as recording grades or taking attendance. Beside these two mandatory trainings, each teacher is expected to receive a total of four credits for teacher development throughout the year, and the district offers many technology-based trainings to facilitate the achievement of this requirement. This also applies to junior high teachers.

In order to support instructors' use of technology, each school in the district has a technology assistant who helps resolve simple issues with technology, such as plugs that need to be replaced and computer sound issues, or also reports problems to the district's technology department, since only its personnel has authorization to solve any technology malfunctions (e.g., any equipment problems that might affect the computers, projectors, etc.). In addition, this department can solely (a) upload new programs to classroom computers; (b) install updates and uninstall apps or programs; and (c) block or unblock those sites that contain what is deemed as inappropriate content due to the students' age such as YouTube or travel websites. It is also important to notice that websites ending in .es (i.e., sites originated in Spain) are not allowed by the district, which might pose limitations for Spanish teachers' access to authentic materials. If instructors wish to incorporate content from a banned site in their classes, they may request that it be unblocked. However, the district's technology department can deny the request, or they can

unblock it only in the instructor's desktop. Each campus has its own technology assistants. The high school has two, and the junior high has one.

4.5 Data Collection

The data for this study were collected during the Fall 2017 semester of the 2017-2018 school year. Several sources of qualitative data were collected including two sets of semi-structured interviews with each participant carried out at the beginning (Appendix A) and end of the study (Appendix D), as well as four participant classroom observations (Appendix B) and their corresponding debriefings (Appendix C). Semi-structured interviews were conducted in order to allow for flexibility for the researcher to highlight particular areas of expertise or interest that might arise from participants' answers, and also to give room for certain responses to be questioned in a more in-depth way in order to resolve any doubts or to elicit relevant information, which is recommended in the case-study tradition (Creswell, 2013; Yin, 2009).

The researcher began the data collection process with an initial interview with each participant at the beginning of the Fall 2017 semester. The first round of questions focused on (a) biographical information about each participating teacher, their education, and pedagogical training; (b) their views and use of technology in general; (c) and their beliefs about the use of technology in the high school Spanish classroom (Appendix A). All interviews were conducted in English and were recorded with the *Voice Recorder* app. This app is an easy-to-use recording application that not only records oral interactions, but also transcribes them, which facilitated the researcher's analysis.

The researcher developed a good rapport with the participants, which allowed the interviews to be reduced in social distance, creating a more open and relaxed atmosphere in which they would feel free to share their honest opinions and beliefs about the use of technology

in the classroom, resulting in a more accurate collection of data (Grinstead et al., 2007). The interviews were conducted in the classrooms where the participants taught and at the times chosen by them in order not to disrupt their daily activities. Each interview took approximately 30 minutes to complete.

After the initial interviews, the researcher made appointments with each participant to observe four classes during the semester (a sample observation protocol is presented in Appendix B). These observations were organized as follows: (a) one observation at the beginning of the school year in September, (b) two in the middle of the first semester in October, and (c) one at the end of the semester in November or December. Before each observation, the participants provided the researcher with their lesson plans. The researcher visited the classes on the dates agreed with the participants and recorded field notes focusing on (a) the classroom set-up, (b) the atmosphere in the classroom, (c) the teacher's and students' behavior and patterns of interactions, (d) the material covered, (e) the types of technology used and for what purposes, and (f) any assessment given by the instructor during the class period.

Each observation was followed by short debriefings in which the researcher met with each participant and asked specific questions about what she had observed (a sample observation debriefing is included in Appendix C). The researcher asked questions that pertained to the lesson, for example, the reasons why specific types of technology were used, the frequency with which they were used (beyond what had been observed), the teacher's opinion on the effectiveness of the technology used during the observed lesson, and the teacher's thought process or pedagogical methods when planning and implementing technology. The learners' attitude toward the technology used during the observation was also addressed along with the participants' impressions of how the technology might have aided or hindered

students' learning process. These debriefings offered the participating teachers time to reflect on or further explain their lessons and the purpose behind their use of technology within each particular lesson. The interactions between the researcher and each participant during the debriefings were recorded and later transcribed.

A final interview was conducted after all the observations and debriefings had been completed to conclude the case study (Appendix D). The interview included questions about the participants' observed use of technology, as well as their opinions about the use of technology in the L2 classroom, their planning and implementation process, the implementation of ACTFL's technology standards, and their views on the future of technology as a pedagogical tool.

The differing sources of data presented in previous paragraphs were deemed appropriate to assure the validity and reliability of the case study; i.e., the interviews, observations, and debriefings lent this case study the necessary means to ensure triangulation. Triangulation is the validating of data through the cross verification of the data collected through different means; i.e., using more than one type of instrument to collect data helps widen the scope of possible themes in a study, creating a more comprehensive and deeper understanding of the study from more than one point of view (Hatch, 2002).

Permission to collect the data for the study was granted by Texas A&M University's International Review Board for Research Compliance. The researcher was also granted access to the participants and their classes by the school district and board to which the two schools belonged. Before the start of the data collection process, each participant was given a consent form (Appendix E). Those participants who agreed to be part of the study signed the form.

4.6 Data Analysis

4.6.1 Procedures

Data analysis in a case study involves the coding, sorting, synthesizing, and theorizing of the collected data (Guion, 2002; Miles et al., 2013; Saldaña, 2011). The researcher followed this pattern in her data analysis resorting to *NVivo* (QSR software products, 2012), a qualitative data analysis computer software package that is designed for qualitative research assisting researchers with the coding and analysis processes. The first step of the analysis involved the uploading of all the audio resulting from the interviews and debriefing recordings and the observation field notes into the *NVivo* software program. Also, the researcher organized her data in Google Drive folders, devoting a separate folder to each participant.

The next step of the process involved the generation of codes and the categorization of similar sources of data into different themes. This process also entailed the ranking of themes in terms of the research questions and the theoretical framework on which this work was based (i.e., Activity Theory). In addition, themes were compared with one another and, when appropriate, they were divided into sub-themes. Also, representative quotes and/or observed behavioral patterns were chosen to provide evidence for each theme. A total of five themes emerged from the analysis:

- The participants' personal feelings and beliefs about technology
- The participants' applications of technology in the classroom
- The institutional factors influencing the use of technology
- The types of technology used
- The connection (or lack of) technology and L2 methodology

4.6.2 The Researcher's Position

The researcher is a member of the teaching staff at the same school district in which this study took place, and she has worked alongside the participants for several years. As a Spanish educator with sixteen years of experience, she has in-depth knowledge of L2 pedagogy, and the participants' institutional background, which played an important role in the interpretation of the collected data. For example, the researcher has attended meetings on the Spanish curriculum and its implementation, and she was teaching Spanish I at the junior high school in the same school district during the data collection process. This situation has provided her with an insider's perspective and aided with the interpretation and analysis of her data.

5. Findings I: The Application and Uses of Technology in the Spanish Classroom and Their Relationship with ACTFL Recommendations

5.1 Section Overview

This chapter addresses three of the four research questions posited in this study:

- In what ways do high school teachers apply technology in the classroom?
- What kinds of technology-based resources do high school teachers resort to?
- Does high school teachers' use of technology reflect the mandates of the field of L2 pedagogy as advocated by American Council on the Teaching of Foreign Languages (ACTFL)?

The specific ways in which instructors implemented technology in the L2 Spanish classrooms on which this study focused are described and analyzed in the following sections, as well as the types of technology they incorporated into their teaching and for what purposes. In addition, the connection between these uses and the recommendations by ACTFL for the incorporation of technology in the L2 classrooms are also discussed.

5.2 Technological Tools Used by the Participants in Their Classrooms

The results from the data analysis suggest that all the teachers in this study made use of technology in their classes. Most of the participants stated that they employed the same apps and hardware throughout the semester. However, only some of the participants were actually observed using the apps and equipment they made reference to (a summary of the observed uses is presented in Table 5.1). In the following section, detailed information is introduced about the observed apps. This information is followed by a description of how the apps were used.

Table 5.1

Observed Types of Technology Used in the Study's Classrooms

Technology	Participants					
	#1	#2	#3	#4	#5	#6
Kahoot	X	X			X	X
Quizlet Live	X	X			X	X
Smart Board	X	X	X	X	X	X
Google Docs		X			X	
Microsoft Word	X				X	
Power Point	X	X	X	X	X	X
Prezi					X	
Word Reference		X			X	
Conjuguemos		X			X	
Google Translate				X	X	
Videos		X	X		X	X
Laptops	X	X		X	X	X

5.2.1 Information About the Software and Equipment Used

In recent years, several new apps have emerged and are being incorporated into instructional L2 contexts. Two of the most recent and also the most popular among the participants in the study were *Kahoot* and *Quizlet*. *Kahoot* was launched in 2013 as a game-based response system consisting of a digital platform that can be easily accessible and used with any device that has a web browser and an Internet connection (e.g., computer, mobile phone, tablet).

Kahoot allows instructors to create quizzes to review or to test student knowledge primarily on discrete grammar/vocabulary points and to encourage the class by allowing them to see their progress in the language. This app allows learners to participate simultaneously in any given quiz as instructors can project questions on a screen and students can answer them with their smartphones, tablets, or on a computer (Bicen & Kocaoyum, 2018). The correct answers display immediately on the students' screens after they have entered their response. The game rates students based on correct responses, as well as on the speed at which the answers were submitted.

The second app most participants stated they used in their classrooms was *Quizlet* (quizlet.com), a flashcard app that consists of vocabulary matching activities and a game called *Quizlet Live* meant for the classroom setting. This app was observed by the researcher in four of the six participants' classrooms. *Quizlet* is one of the most widely used flashcard apps and has more than one million registered users and 80 million visitors. In addition, it is a repository for over 30 million user-generated study sets. The app currently offers study sets that are accessible to anyone without the need to register for an account, although users who plan to create their own sets of flashcards must sign up for one. Those who wish to take advantage of extra features such as image uploading, voice recording, and ad-free functioning can upgrade their account by paying a yearly fee.

The game function of *Quizlet Live* was the most popular among the participants. When this app is used, the teacher typically sets up a game and students join by signing in with a game code provided by the instructor. Learners are then randomly put into teams and, working collaboratively, they must find the correct definitions for the vocabulary words in the game. Each word is shown individually, along with four definitions. Yet, while all participants have the same

vocabulary word and four definitions, only one student in the team has the correct answer. Thus, the team must correctly define all the vocabulary words as fast as possible prior to choosing the correct definition. If they accomplish this task and choose the correct answer, they win.

A very popular technology tool among the participants was the Smart Board, and all participants were observed employing it for various purposes. A Smart Board is a large touch-sensitive whiteboard that uses a sensor for detecting user input (e.g., scrolling interaction). A projector displays a computer's video output onto the whiteboard, which acts as a touchscreen. Smart Boards usually have four digital writing tools that use digital ink, replacing the traditional whiteboard markers. The ink works by using an active digitizer that controls the PC input information for writing capabilities such as drawing or handwriting. Studies that have investigated the use of Smart Boards in elementary and high school classes (e.g., Handler, 2011; Min & Siegel, 2011) have shown that, due to their visual complexity, they can help students remain on task and are effective presentational/hands-on learning tools. As an example, they can facilitate the manipulation of geometric shapes in math classes, and they can be used in English courses to present a flipchart book activity. Many interactive games and activities have been created for Smart Boards and they can be found in teacher-friendly websites such as www.teacherspayteachers.com, www.brighthubeducation.com, and www.ismartboard.com. These sites provide ideas on how to develop, incorporate, and/or download instructional resources onto a Smart Board.

Other applications all participants stated they used and were familiar with were *Google Docs* and *Microsoft Word*, even though they were only observed in some of the instructors' classes. *Google Docs* is an application by means of which documents can be created, edited, and stored online. This application allows users to use different types of fonts, tables, images, and

other helpful writing tools; and it is especially useful for users who desire to collaborate on the same document in real-time. All participants can see the changes and work being done by the peers with whom they have shared the document. In addition, users can control who sees and edits their work, and the fact that documents are stored online lessens the risk of information loss. This application is web-based, but it is free to users. *Microsoft Word* is another program that works like *Google Docs*. Its online version, *Office 365,* also allows users to collaborate with others in the same manner as *Google Docs. Office 365* can be accessed using an Internet connection, and the documents are stored on the server until deleted by the user. Both the participants in this study and their students had free access to this tool.

PowerPoint and *Prezi* were other modes of communication the researcher observed some participants using to create student presentations. For example, in the participating classrooms, they were used for presentations that included images, tables, fonts, and other dynamic features such as transitions and pop-up graphics. *PowerPoint* and *Prezi* differ in that the latter involves unique features such as slides which can be rotated and zoomed in, and in which images and words can be moved around back and forth during a presentation. *PowerPoint* can be collaboratively shared through *Office 365* online, as can *Prezi* via its own website. This allows users to digitally store their presentations, and collaborators can make changes to the project as needed.

In addition to these resources, some participants were observed introducing students to other technological tools during their daily work, such as *Word Reference, Google Translate,* and *Conjuguemos.* These three applications are online tools that translate and conjugate verbs in a variety of languages, including Spanish. *Word Reference* is both an online translator and verb conjugator. For example, users may enter sentences and paragraphs to be translated, as well as

type in any verb into the verb conjugator and they will get the verbal paradigm for any tense. *Google Translate* is a similar application, as it also translates sentences and paragraphs; however, it does not have the verb conjugator feature. *Conjuguemos* is a grammar tool that allows students to play games that focus on verb conjugations. This app can be used by a teacher to record students' conjugation scores and progress as they play online. The user must create an account in order to use the "teacher" feature, but students can access *Conjuguemos* without an account and play a selection of the games. The students in the study's classrooms used both classroom laptops and their cellphones to work with all these apps and programs.

Finally, five of the six participants were observed resorting to videos to teach culture. Also, some participants employed videos that included songs to reinforce vocabulary, grammar, and pronunciation. Some of these videos were educational (i.e., created specifically for the Spanish classroom) while others were authentic (e.g., taken from sites such as YouTube).

5.2.2 Applications of Technology

The previous section presented the types of technology-based resources the participants stated they used, and those they were actually observed using in their L2 classrooms. This section describes the ways in which these tools were applied and whether these uses reflected the mandates of the field of L2 pedagogy as advocated by ACTFL. The findings of this study show that most participants used the same technological tools in the classroom and for the same reasons. The participants stated technology was used mostly as a tool that allowed them to (a) reinforce information already covered in class, (b) present information being taught, and (c) establish a cultural bridge to enhance learners' knowledge and view of other countries and cultures. Evidence supporting these uses is presented in the following sections.

5.2.2.1 Technology as a Reinforcement/Review Tool. The findings of this study show that the participants used technology such as *Kahoot* and *Quizlet* as a way to reinforce or review vocabulary and grammar points that had been taught previously in class. This is consistent with the Izquierdo et al. (2017) study in which the researchers reported that one of the leading reasons for technology use in the classrooms investigated was to complement traditional instructional materials and not to explore innovative pedagogical interventions. In the present study, Participant #1 indicated she used *Kahoot* most often in her classroom for review of grammar or vocabulary points. For example, she utilized *Kahoot* games with the students for this purpose in three out of four observations.

Participant #2 also reported the use of *Kahoot* and *Quizlet* in her classroom as a way to help students review the previously taught vocabulary or grammar topics. This teacher, as well as Participant #5, stated that students seemed to enjoy these two apps because they appeared to be engaged with them, which, in the instructor's view, allowed learners to be more successful than with traditional paper-based review methods. These opinions were shared by Participant #6, who felt the use of *Kahoot* for the purpose of reviewing increased students' motivation and test scores. Participant #2 agreed, adding that the immediate feedback provided by *Kahoot* and *Quizlet* helped learners understand their learning process in more depth, as they could see their mistakes and reflect on their linguistic strengths and weaknesses. This type of reflection is essential for metalinguistic awareness, as it can lead to noticing and uptake, which ultimately could result in acquisition (Birch, 2014). However, this can only happen if the reflection is tied to the active use of the language, which was not the case in the study's teacher-centered classes.

Other instructional tools employed for review and reinforcement purposes included *Word*

Reference and *Conjuguemos. Word Reference* was used by Participant #5 to complete a written assignment. The teacher had her students watch a video of a native speaker explaining a recipe, and then the learners were asked to complete a written assignment about what ingredients were used, how the dish was prepared, and what type of food it reminded them of. Students were allowed to use their phones to translate the ingredients they had heard and with which they might have been unfamiliar. This instructor explained that the use of *Word Reference* helped keep the flow of the class going without too many interruptions:

> I use *Word Reference* if they [the students] are doing a reading sequence, just so that the whole class isn't interrupted by them asking me what the word is, so it keeps a quiet atmosphere instead of the kids asking me: "What was that?" or the same questions being asked repeatedly. (Debriefing #2)

Conjuguemos was used to review newly-taught verb tenses. Participant #2 commented that she made use of this tool primarily for practicing verb conjugations and for feedback purposes. In classroom observation #3, this instructor resorted to the app at the end of the class period after teaching a new verb tense. Each student used a classroom laptop to work with *Conjuguemos.* This participant also commented that students had told her they felt the app helped because it forced them to make corrections when they typed in the wrong answer before moving on to the next question, resulting in immediate feedback (Observation #3).

Another tool utilized to reinforce the points taught in class was the Smart Board. All participants used their Smart Boards for several purposes. Participant #2 introduced songs and videos she felt would help her students retain certain previously-taught vocabulary or grammar points. An instance of this use was recorded during Observation #2, in which the classroom Smart Board was employed to project a video of songs from YouTube to review present

progressive verbs. The song had been specifically developed for language learning, and it highlighted the present progressive tense, focusing on the Spanish present participle endings. The Smart Board was also employed with interactive games. In Observation #1, Participant #6 had students play games in groups on the Smart Board, with the main objective of completing grammar activities such as dragging the conjugation endings to the correct verb, etc. (Observation #1). This activity helped learners review and reinforce their knowledge of verb conjugations.

5.2.2.2 Technology as a Presentation Tool. Much of the technology employed by the participants was used to enhance their lesson presentations, as well as their students' work. Both Smart Boards and laptops were used as presentational tools. Min and Siegel (2011) proposed that these two technology tools are used most often because of their ability to enhance student engagement. The participants in this study had a Smart Board in their classrooms and reported using it every day for various reasons. For example, Participant #3 made use of the Smart Board in all the classes that were observed mostly to introduce information to his students through PowerPoint presentations, to explain vocabulary words and grammar points, and to show pictures with cultural references. The participant emphasized the time-saving benefits of this tool:

> I like my Smart Board because I don't have to write something seven times. I can just write it once. It's there. I can make my PowerPoints and then the class can move a lot faster. (Debriefing #1)

Participant #2 also used the Smart Board in all observed classes in similar ways to Participant #3. For instance, she employed it as a whiteboard to teach grammatical points through grammar charts and vocabulary words through pictures. This instructor also

characterized her use of the Smart Board as being guided by its convenient and visual nature, which allowed for the establishment of clear relationships among concepts:

> I like my Smart Board! You can circle the subject, you know, or draw lines and connect the words and show relationships, etc. The neatness factor has clarity. (Debriefing #1)

Participant #4 employed the Smart Board to display pictures of Spanish vocabulary words being taught. For example, in Observation #1, this instructor showed pictures of the target words, and the students were asked to find the correct lexical item to name the image. Learners were then chosen to go to the Smart Board and they were asked to write a sentence using the new vocabulary word.

Participant #5 not only took full advantage of the Smart Board features employed by her colleagues, but also incorporated an extra layer of technology by connecting tablets to the Smart Board. In Observation #1, the instructor and students wrote in tablets, and what they wrote in them was projected onto the Smart Board. This use of technology gave the teacher the freedom to walk around the room and allowed the students full view of the terms and definitions written on the Smart Board. The research by Min & Siegel (2011) on the integration of Smart Board technology and effective teaching showed that students' engagement and interaction with the Smart Board makes tedious tasks more enjoyable. This type of engagement was clear in this classroom observation, as all students seemed to be highly engaged with their tablets and appeared to enjoy using them, even while completing a discrete point grammar activity. Participant #5 offered these reasons to explain her use of both the Smart Board and tablets:

> It [the use of tablets] gets the whole class involved. If I see that I only have a small group participating, that'll be a time when I plug in the tablets, to make sure that I check for

> understanding from everybody. It just gets the whole class involved, and by doing it on the board, it helps them correct their work immediately. (Debriefing #1)

Some participants in this study also resorted to laptops in their classrooms to facilitate the presentation of their students' work when they were assigned projects and asked to create an electronic presentation. Examples of these tasks were observed in several classroom observations (Participant #1, Observation #2; Participant #2, Observation #3; Participant #4, Observation #2; Participant #5, Observation #3; Participant #6, Observation #4). The activities observed included, for instance, the development of a family tree (Participant #1), for which students employed school laptops to design and create the tree in a word document format in *Microsoft Word*. Also, the students in Participant #4's class used laptops to develop a travel abroad project, creating PowerPoint presentations that included information on their destination, itinerary, and items they would need for their trip. Students also created projects in *Prezi.* The rest of the participating instructors, with the exception of Participant #3, also reported these types of uses in their classrooms, though they were not observed by the researcher.

5.2.2.3 Technology for the Introduction of the Target Culture. The data in this study suggest that all of the participants felt that technology was an effective way to give their students a more realistic and visual view of the target cultures and peoples. For example, Participant #4 stated that she felt that one of the best uses of technology was letting learners "enter a new other world," allowing them to see other cultures and experience them without ever leaving the classroom (Observation #3, Debriefing #3). Participant #3 seemed to agree with this statement, since he believed that "especially with culture, you need videos in order to transport them [learners] and give them that feeling of being there and experiencing the culture" (Observation #3, Debriefing #3). Participant #5 also noted that the use of technology could help bridge

cultures and language by providing students with authentic language and materials, which can be facilitated by the incorporation of authentic resources to instruction:

> Technology can basically help [students] deal with more realia, you know, authentic sources. I use *BBC Mundo* for current literature or current events. They can see the "real" applications of what we're learning, and see language in context. (Debriefing #3).

The materialization of these views in the participants' practice was observed in the use of videos and pictures, shown on their Smart Boards, to engage their students with different aspects of the target cultures. For example, the researcher observed the participants using YouTube or educational videos, images, and soap operas to present cultural lessons, complementing the information presented with visual ensembles aimed at providing the students with more engaging ways of connecting with cultural content. For instance, in Observation #2, Participant #3 employed an informational video taken from a children's show in Latin America when teaching students about the Nazca Lines in Peru.

Participants #4 and #5 also attempted to employ technology to add cultural connections in their classes. For example, in classroom Observation #3, Participant #4 showed learners a clip from a Spanish soap opera. The students watched the scene, and the teacher asked questions about what they had understood and what differences they had detected between the target culture and their own. Then the students wrote dialogues for restaurant scenes similar to the one seen in the video. In classroom Observation #3, Participant #5 presented a lesson on recipes that included an activity with a video. The students were first given a written recipe of a Spanish dish, and they were asked to read it quietly to themselves. They were then told to underline any words they did not understand and to make any notes on the verbs they knew. After learners had had time to read over and take down notes, the teacher showed a video of a well-known Spanish

chef explaining the recipe in Spanish and then making the dish. The students watched the video and added notes on their written recipe. Upon conclusion of the video, the instructor asked the learners questions related to the vocabulary words they had doubts about, focusing on how much understanding had been gained after having seen or heard the words in context. This activity was followed by a discussion on similar American dishes in which the teacher pointed out differences and similarities in ingredients, cooking styles, etc.

5.3 Congruency Between Observed Applications of Technology and ACTFL's Recommendations

ACTFL states that the incorporation of technology into the L2 instruction should offer students opportunities to further their active use of the target language and as a result, contribute to the development of their L2 performance and/or proficiency. In addition, technology should be linked to instruction in the three modes of communication outlined in ACTFL's *Communication* standards. The standards and modes are defined in the following terms:

- Communication: [Learners] communicate effectively in order to function in a variety of situations and for multiple purposes.
- Interpersonal Communication: Learners interact and negotiate meaning in spoken, signed, or written conversations to share information, reactions, feelings, and opinions.
- Interpretive Communication: Learners understand, interpret, and analyze what is heard, read, or viewed on a variety of topics.
- Presentational Communication: Learners present information, concepts, and ideas to inform, explain, persuade, and narrate on a variety of topics using appropriate media and adapting to various audiences of listeners, readers, or viewers. (https://www.actfl.org/publications/all/world-rediness-standards-learning-languages**)**

In accordance with these instructional mandates, technology should be incorporated into the L2 classroom with the objective of exposing learners to authentic multimodal materials produced by members of the target culture(s) and to provide them with opportunities to actively use the target language. These overall objectives for technology use in the L2 classroom are delineated in ACTFL's position statement, presented as follows:

> The use of technology is not a goal in and of itself; rather technology is one tool that supports language learners as they use the target language in culturally appropriate ways to accomplish authentic tasks. Further, all language learning opportunities whether facilitated through technology or in a classroom setting, should be standards-based, instructor-designed, learner-centered, and aimed at developing proficiency in the target language through interactive, meaningful, and cognitively engaging learning experiences.

> ACTFL acknowledges a role for national standards and facilitated by language educators. The development of technology is best driven by the needs of the language learner, supporting the kinds of interactions our students need to become college, career, life, and world-ready. (https://www.actfl.org/news/position-statements/statement-the-role-technology-language-learning)

This statement suggests that, for ACTFL, technology should facilitate learners' active use of the target language for communication in and outside the classroom. When considering the uses of technology observed in the classes taught by the participants in this study, it is clear that there exists a discrepancy between the field's expectations (as reflected in ACTFL's position statement) and the traditional applications recorded in the study's classes. None of the activities developed by the participants around technology seem to require students to use the target language to accomplish authentic tasks (i.e., uses of the language that "mirror the tasks and challenges encountered by individuals in the real world" [Adair-Hauck et al., 2013, p. 25]). Rather, most of the reported and observed applications appeared to have involved students in the completion of activities focused on discrete-point exercises (i.e., decontextualized, non-communicative tasks). This suggests that most technology use was oriented to students' limited L2 application to complete grammar-based activities or to review and learn isolated vocabulary words. For example, the participants used *Quizlet* and *Kahoot* to focus learners' attention on isolated vocabulary words, and they employed *Conjuguemos* and *Word Reference* to help students find the lexical items needed to complete a written grammar-based assignment. This use of apps is not congruent with ACTFL's recommendations on the application of technology in the L2 classroom.

The same can be said about the use of the Smart Board. The participants employed it to present their lessons, graphics, and sometimes authentic videos; however, with the exception of Participant #6, none of the tasks developed for the Smart Board seemed to allow students to initiate learning, resulting in teacher-centered classrooms with very few opportunities for active use of the target language. Also absent from the participants' classes was online interaction with native speakers of Spanish. The researcher did not observe the participants using any type of technology that would have allowed students to interact via video, audio, or text in real-time with other speakers of the target language. This is one area that could be very helpful for the development of students' L2 performance, and also for motivation, as learners would meet and chat with peers from other Spanish-speaking countries/communities. Another limitation observed was in the use of cultural videos. Only Participants #3 and #5 employed two authentic videos to introduce aspects of the target culture. However, the tasks developed for the discussion of the videos does not entail learners' active language use.

Despite the participants' goal to have students perform presentational tasks using technology, the students did not complete any assignments collaboratively. For example, some of the tools available to the participants (e.g., *Edmodo*, *Canva,* or *Google Docs*) could have allowed educators to offer opportunities for their students to use the target language with peers and to share the results of their work with parents or other members of the community. Nevertheless, none of the instructors in this study appeared to have chosen to take advantage of these online tools, nor did they mention having the knowledge to work with this type of technology. One observation of this weakness was noticeable in an activity that Participant #4 assigned to her students. The instructor asked students to develop PowerPoint presentations on their own to be shared with the rest of the class, but no peer feedback or interaction was part of the task. This is

one area where technology could be very helpful in engaging students and teachers in the use of the target language; however, it was not utilized.

Another problem with the participants' use of technology was their inability to monitor students' independent use of technology. Even though the students in the participating classes worked at their own pace to access online content and utilize computer adaptive programs, as recommended by ACTFL's technology statement, unfortunately all programs used, other than *Quizlet*, did not allow instructors to monitor and/or assess technology use on learners' part.

Overall, the results of the study show that technology in the participants' classes can be characterized as more of a traditional tool akin to the blackboard or paper handouts, than as a resource for innovation and active L2 use, as mandated by ACTFL. As such, the apps, software, and hardware incorporated into the instructors' practice did not bring innovation to their classrooms, and continued to perpetuate a teacher-centered, structural (i.e., grammar-based, not communicative) approach to L2 teaching. This conclusion was not only drawn from the researcher's observations, but from comments and statements made by the participants. Participant #1 reiterated that her goal for using technology was to bring variety to students' use of "fill-in-the-blank" worksheets, and grammar drills:

> I've noticed this year…they have trouble putting words into a sentence. Sometimes some of our Kahoots are finding that word or that verb to fit into the sentence. I just think that I tried to give them as much of a variety of learning things. Some kids like the worksheets, some kids would rather see it visually so it's just kind of like… it adds, to the variety. (Debriefing #1)

Participant #5 also added that conjugation exercises are a big part of the technology used in her classroom. She continued by stating that when she wants to practice specific conjugations, she allows learners to use Quizlet as a review tool:

> We do, for… short conjugations, like: "I went" or "he sings" and they'll [students] be able to do it there as well. Anything that's really short. If you start going into sentences… some of the kids are so much slower that you don't get a good rhythm to what you're doing. (Debriefing #1)

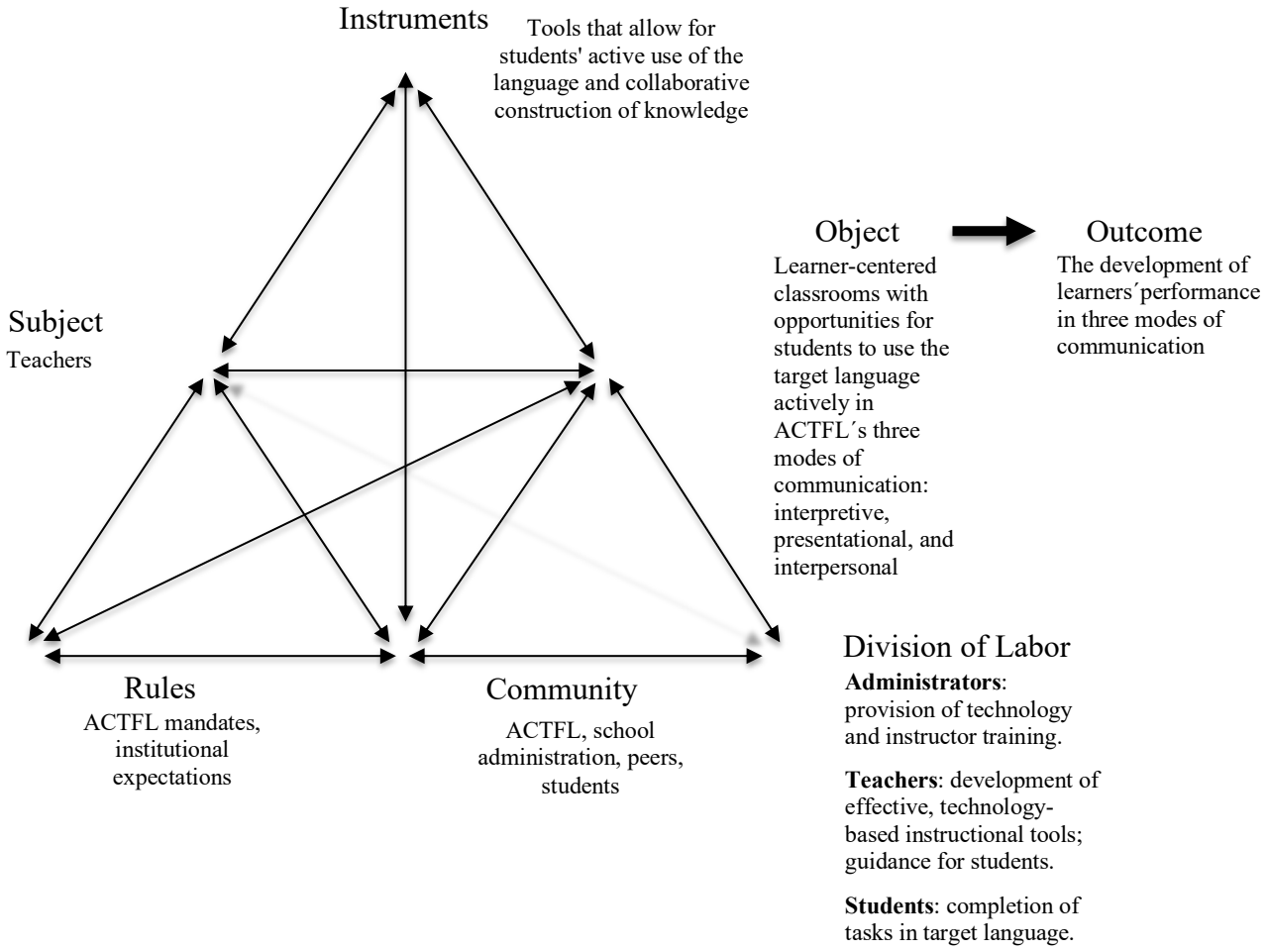
As a result of these practices, learners in the study's classes did not have the opportunity to work with technology as a means to facilitate collaboration and L2 use with other learners or Spanish-speakers outside the classroom, nor were they able to resort to digital tools to create multimodal products that would have showcased not only their new knowledge, but also could have allowed for the expression of aspects of their identity in the L2. Instead, in the study's classes, technology served as a means to emphasize the role of the instructors, since, in every use, they were either its initiators (e.g., leading students with app games or video songs) or overseers (e.g., giving students limited roles in the use of technology and closely monitoring their work).

5.4 Discussion

If Engeström's (1987) AT were applied to illustrate how ACTFL's mandates for the application of technology in L2 classes would have to be implemented in the study's classrooms in order to achieve the overall outcome of developing learners' performance/proficiency in the three modes of communication, the participants' activity system would have the structure presented in Figure 5.1.

Figure 5.1

Representation of Teachers' Activity System if ACTFL's Mandates were Followed



If ACTFL's mandates were followed, the desired outcome for the participants' use of technology in their classrooms would be the development of students' performance in the three modes of communication (i.e., interpretive, interpersonal, and presentational). The achievement of this outcome would entail instructors' use of tools (i.e., software and hardware) that would facilitate the creation of technology-based tasks that result in a learner-centered classroom in which students would be able to use the target language actively for interpretive, interpersonal, and presentational communication. Additionally, this type of instruction would rely on the use of authentic materials that provide real-life examples of language used in everyday situations.

Another important instructional factor that would need to be part of teachers' practice would be the application of resources that would be tied to learners' life, world, and interests.

However, the data presented in this chapter suggest that ACTFL's mandates did not materialize in the participants' classes since most of their applications of technology reflected a teacher-centered, non-communicative "one-size-fits-all" model. Even though the instructors sometimes seemed to have planned to apply technology along the same lines recommended by ACTFL, the tasks that incorporated technology in this study were, for the most part, detached from authentic uses of the language, did not promote learners' active use of the language for interpretive, interpersonal, and presentational communication, and only provided a decontextualized picture of the target cultures. Furthermore, most tools were employed to practice discrete skills through activities led and created by the teachers.

One of the principal factors behind the instructors' failure to follow ACTFL's guidelines for technology use in the L2 classroom appeared to have been their lack of knowledge regarding its mandates. When questioned about ACTFL, only Participant #5 reported having heard about this organization and its role and contributions to L2 learning (e.g., the communication guidelines). However, she was not able to articulate its role in L2 teaching, what benefits it offered, and what kind of language instruction it promoted. This suggests that the participants in the study were not aware of the latest methodological innovations in the field, nor did they have any knowledge of its expectations with regard to the role that technology needs to play in the L2 classroom to contribute to students' active use of the target language, and in turn, to the development of their performance/proficiency.

The results of this study also reflect findings in the existing literature. For example, Wang and Reeves (2003) undertook a review of several works that concentrated on the question of why

teachers needed to use technology in their classroom, and they discovered that they reported similar results as the present work. For instance, among the books reviewed, Cuban's (2009) work (*Oversold and Underused*) stated that teachers who used computers regularly in the classroom employed them in ways that reinforced traditional pedagogical practices rather than learner-centered approaches and maintained an overreliance on traditional teaching pedagogies. Kim (2008) reported similar results in her study on ESL/EFL teachers who used technology as a tool for reinforcing grammar and vocabulary, focusing on practice-and-drill activities. Also, in retention (Debriefing #2).

Participant #5 used the most technology in the classroom, and out of all the participants, she was the most familiar with ACTFL. Also, she described her classroom as eclectic, with a mixture of communicative and cooperative learning strategies. However, at the same time, she emphasized the importance of repetition during grammar drills and vocabulary activities (Debriefing #2), which clearly evinces inherent contradictions in her views. In addition, her use of student tablets for decontextualized conjugation exercises suggests that, in spite of having characterized her methodology as "communicative," it was not. In fact, the only oral practice that was observed was when the teacher had students share information regarding the recipes they had found and translated in class using their iPhones. Moreover, she described technology as "a great tool for reinforcement," additionally stating that "nothing [beat] the good old fashion [ed] way" of L2 instruction which, based on her observed practice, could be interpreted as being a traditional teacher-centered approach (Final Interview).

The only teaching methods training that Participant #6 had received was as part of her school in-service sessions, or workshops she had attended outside the district as professional development hours. Even though this participant used a wide variety of technological

applications, and implemented collaboration among her students, her practice was still closely aligned with a grammar focus and teacher-centered L2 instruction. For example, the participant stated that she used technology "in order to open up more communication," but only one of the observed technology applications allowed for communication (Initial Interview). That is, she used grammar matching games and vocabulary asteroid games with the Smart Board, but only one game required students to communicate with each other in order to ask and answer the scripted questions that she had pre-written and posted on this tool, which leads to lexical chaining but not real communication. These are the types of activities believed by Participant #6 to be "communicative," which reflects a clear instance of the lack of knowledge of crucial concepts that Glisan (2012) made reference to in her analysis of the factors that affect the successful incorporation of ACTFL's standards in L2 classes. That is, Glisan believes that incorrect or absent conceptualizations are reflected in L2 teachers' practice and can, as a result, affect the development of their students' performance/proficiency in the target language. This appears to have been the case with the participants in this study.

These results suggest that the participants' lack of L2 methodological training and knowledge (of which technology use was part) was one of the factors that affected the incorporation of technology in the classroom. Similar findings have been reported in the literature. For example, Zapata (2002) found that one of the main reasons why most of the graduate assistants in her study had failed to successfully incorporate technology in their L2 Spanish university classes was also their lack of pedagogical knowledge. In this investigator's work, the only successful implementation of technology had been observed in a class in which the instructor had taken a course on Computer-Assisted Language Learning. This implies that having the opportunity to take a course that highlights innovative applications of technology and

prepares instructors to incorporate it in their classrooms could be of great benefit to L2 teachers. Unfortunately, the participants in the present study did not appear to have had such a chance.

Zyad's (2016) study also pointed to the lack of pedagogical training as the root of the problem for the lack of technology use in his participants' classrooms. His study took place in Morocco where several schools were seeking to integrate Information Communications Technology (ICT) into secondary education classes in the El-Jadida province. He concentrated on exploring the barriers that discourage EFL teachers from utilizing ICT for pedagogical purposes. A total of 56 teachers from secondary schools participated in the study. His results showed that the instructors in his work were not aware of how to implement technology in the classrooms because they had continually been pushed to a teacher-centered, non-collaborative, curriculum-driven mentality precisely because they lacked a methodology background. Based on his findings, Zyad stated that a balance between technology and pedagogy knowledge within the classroom is an important requirement for effective teaching. Kramsch et al. (2000) also suggest that, sometimes, even when teachers possess some training, they are simply unaware of the connection between computers and language teaching in a pedagogical sense, and this hinders their desire to use technology because they do not see the benefits or understand how it can be used as outlined by the profession, as in for example, ACTFL's mandates.

These two issues were also raised by Thoms (2011) in his study of 154 graduate student instructors, who were either current students or graduates from an L2 M.A. or Ph.D. program from 12 American universities. This work revealed that, in spite of having had a variety of technology-based experiences and training, the participants primarily still relied on mostly traditional applications in the courses they were teaching. These findings beg the question of why this could have been happening. Was it because the methodology training received was not

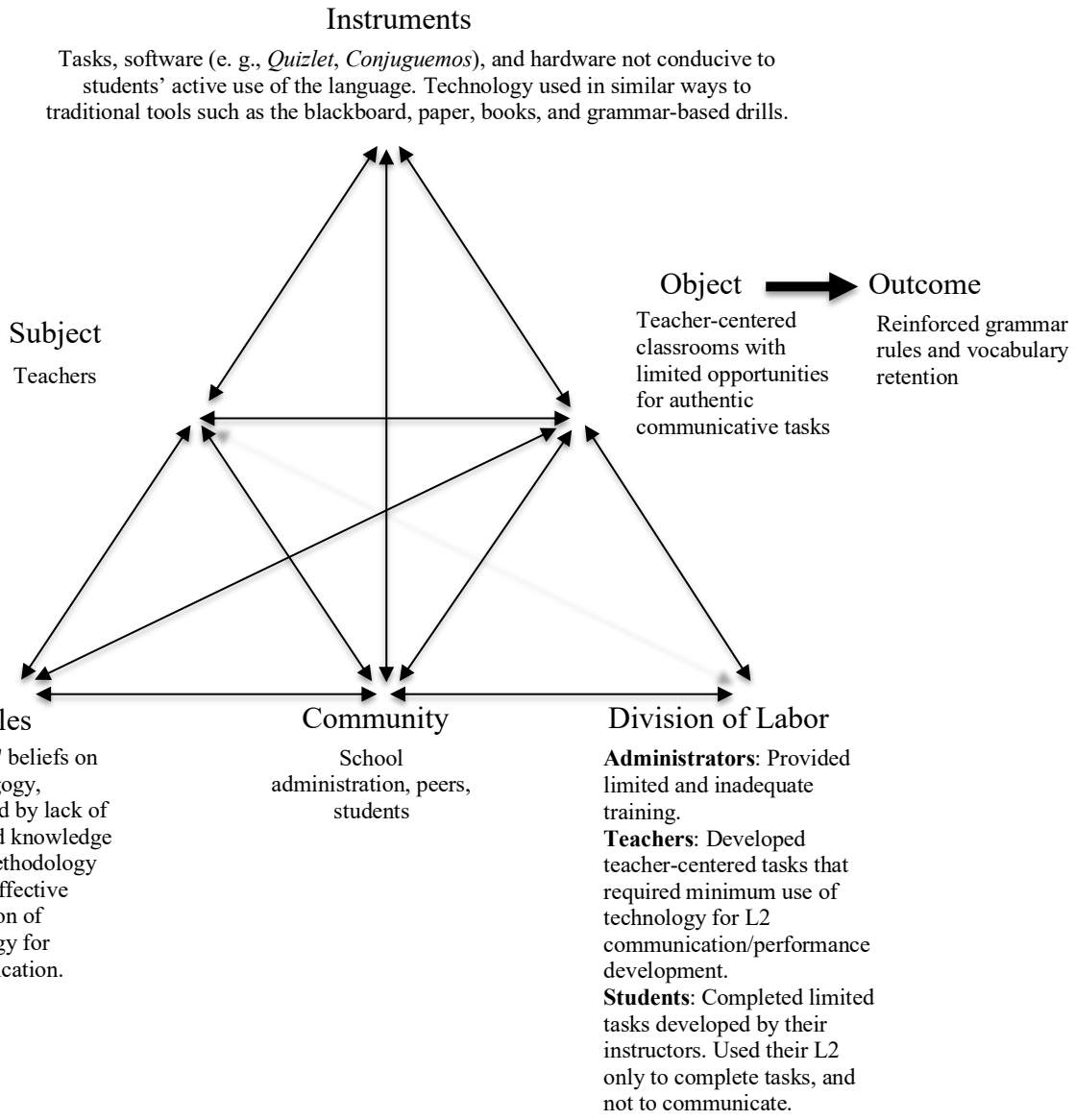
up-to-date or was it because teachers, as Kramsch et al. (2000) suggested, could not make connections between theory and practice? Thoms points out that other factors at play could be connected to the type of curriculum that instructors need to adhere to and continues to be produced by large textbook companies. Another important factor could perhaps be the influence of fellow mentor teachers who were trained in traditional methods, or even the participants' own student experiences, which were also cited as important in both Kim's (2008) and Zapata's (2002) studies.[4] In any case, both the data in the present study and in previous work appear to confirm the existence of an undeniable link between pedagogical knowledge and the successful use of technology for instructional purposes.

The results of this study show that the Activity System representation in Figure 5.1 is inappropriate to reflect instructors' activity in this study. First of all, there is a clear contradiction between the subjects and the community since teachers do not appear to be part of ACTFL. The same can be said about the rules, as it is apparent that the instructors in this study do not follow ACTFL's mandates. Other links that are broken in their system are those among the subjects, the instruments used, the object of the system (i.e., the students), and the outcome. Additionally, the division of labor does not accurately reflect what teachers and students do in the study's classrooms. Based on the results of this work, the representation of the participants' system warrants revisions, which are presented in Figure 5.2.

[4] These factors will be discussed in depth in Chapter 6.

Figure 5.2

Activity System Representation Based on Data Analysis



5.5 Section Summary

The participants' application of technology as a tool in the classrooms rendered the activity system based on ACTFL's mandates inappropriate to reflect their practice. When coding the observation data, the idea of using technology to reinforce and retain previously taught

vocabulary and grammar points was a prominent aspect of the participating instructors' technology application. The analysis of the debriefing and interview data revealed that the participants were unable to provide sound methodological reasons for incorporating technology into their lessons on several occasions. Moreover, some had no rhyme or reason for their use of technology other than to "break up" the class period (Participant #5, Debriefing #3) and "fill time" (Participant #3, Initial Interview). The data thus suggest that one of the main factors for this disconnect between the application of technology and teachers' pedagogical reasons for its use was a lack of knowledge and training. Although the teachers used some technology tools to aid in instruction, they felt ill-prepared and uncertain about their effectiveness. Indeed, all participants but one mentioned the need for training or stated they felt that they had insufficient training and lacked knowledge about ways to incorporate technological tools and online resources into their practice.

The participants' reliance on traditional methodologies appeared to have been the result of their lack of pedagogical knowledge and training, particularly in the area of L2 and technology-based instruction, which resulted in very teacher-centered classrooms that led to little collaboration among students and limited use of the target language for communication. Despite the important role that pedagogical training and knowledge seemed to have played in the participants' practice, other factors of a personal and institutional nature also seemed to have exercised some influence on the observed pedagogical interventions. These will be discussed in Chapter Six.

6. Findings II: Institutional Factors Affecting the Use of Technology in L2 Spanish Classrooms

6.1 Introduction

This chapter addresses the final research question: What institutional and personal factors influence teachers' use of technology in the classroom? The first part of the chapter focuses on the institutional expectations in the schools where the study took place, the training and resources offered to the participating instructors, and how they influenced their use of technology. The second section describes the participants' personal use of technology and the attitudes they had toward technology and how both of them were reflected in their practice.

6.2 Institutional Factors

The school district where the study took place did not provide the instructors with specific mandates concerning the use of technology in the classroom in writing; however, some technologies were required by the district, and this was communicated verbally in each school. The school board and the Technology Department in the district determined the specific software to be used for official e-mail communication and student attendance, and these were mandatory for all teachers. Each school administration was also allowed to set the rules and expectations for the incorporation of technology, as well as to provide the instructors with the resources deemed appropriate. For example, the high school in this study replaced all whiteboards with Smart Boards.

The institutional expectations and rules for the use of technology were made known to the participants in the study during the professional development orientation held at the beginning of the school year. This two-week training included four hours of technology-related sessions. Teachers met in a computer lab and learned how to use *Gradebook* and *Office 365.*

Gradebook is an online program used to record students' grades, attendance, and behavioral Kim's study, there were no online discussions or interactions between student peers, and collaborative learning was not observed. Like the instructors in the present study, the teachers in Kim's work also had a preference toward teacher-centered practices. The same result was reported by Karasavvidis (2009) in his study of instructors' use of technology in Crete, where the participants' practice was curriculum driven, and they felt they could not trust their students to create the learning environment needed to acquire the required information.

The inability of the participants in the present study to use technology in more innovative, learner-centered ways could also have been related to their lack of L2 methodology knowledge. Even though all the participants appeared to have taken some kind of methods class in college, and a few courses on technology training, the information they provided in the interviews suggests that their training would either have been very traditional (having taken place years before), not specifically related to L2 Spanish teaching, or too short. For example, Participant #1 had received her Bachelor's degree in Spanish, but methodology classes had not been part of her program. She later had completed a Texas Emergency Certification program to obtain her teaching certificate, but she said that there had been only one course on methodology for the Spanish L2 classroom, and it was "not at all applicable" to today's classroom (Initial Interview). The disconnect between this teacher's educational background and the field's mandates was clearly evinced when she characterized her L2 practice as having "a focus on vocabulary and grammar."

Participant #3 shared the same type of educational background, and he was the most resistant to technology. Even though he had received some training in pedagogy in his college education, he believed it was not consistent with the new approaches that are being incorporated

in the L2 classroom today. For example, he reminisced about the language labs and the Audiolingual method that were very popular during his time, and this preference appeared to be reflected in his pedagogical style, which can be described as grammar-focused and characterized by the use of decontextualized pictures to teach vocabulary, a common technique in Audiolingualism. Also, his characterization of this use of pictures as "communicative" suggests that he did not have the knowledge of how this term is currently defined by the field.

Both Participants #2 and #5 had a degree in Spanish, and they both mentioned having some methods training in their university classes. However, they stated that most of the knowledge they had at the time of the study had been acquired through a variety of short professional development sessions they had attended recently (Participant #2, Initial Interview; Participant #5, Initial Interview). Perhaps this was the reason why both participants offered more communicative, innovative instructional environments to their students than the rest of the teachers in the study. For example, even though the focus of Participant #2's class was still mostly grammar, she tried to incorporate more communicative tasks such as skits, oral dialogues, and activities that fostered student collaboration. Nevertheless, her classes were still very teacher-centered, and she confessed to using technology mainly for grammar and vocabulary

concerns and to contact parents. As a part of the training, the participants logged into *Gradebook* and followed the workshop administrator's prompts to learn what buttons to click and what boxes to fill. The teachers were required to use this program in their classrooms on a daily basis.

The other technology trainings provided during the orientation focused on the use of Smart Boards and *Office 365. Office 365* is a digital Microsoft platform used in the district for official e-mail communication, and it also allows instructors to use tools such as Word and

PowerPoint to create and share documents online with other members of their school/district. This training was similar to the previous session: Participants were asked to follow directions to log into their account and then completed simple tasks such as sending an e-mail and setting up automated signatures for their e-mail system. Students were also provided with access to *Office 365* in order to use their school e-mail account and to create documents and presentations. Teachers were expected to be able to walk the students through the steps needed to use *Office 365* and related programs.

During the professional development orientation, the participants were made aware of the school's expectations for the use of technology and that it would be a focus of the official classroom observations that would be conducted by the principal or assistants. Participants were debriefed during the professional development orientation on what to expect during the Teacher Classroom Observations conducted by the administrators, and the department heads were required to provide information to teachers on how and what would be assessed during the observations. New instructors are observed every year for the first three years at the school and, after that, every three years. The academic departments' heads gave each teacher a set of categories and criteria that would be used to assess their work. Technology was one of the categories; however, the type of technology to be used and how it should be used were not specified. It was simply stated that teachers needed to "make use of technology." In order to be considered "outstanding" or "exemplary" in an observation, a teacher would need to score 9-10 points in every category. This made the participants feel further pressure to include technology in order to score high in their observations.

When directly asked by the researcher in the initial interviews conducted in this study, all but one of the participants stated they felt the administration was supportive of technology in the

classroom. However, the data collected through the classroom observations, interviews, and debriefings do not appear to support this claim. The data show the participants did not have a clear idea of the school's expectations for their use of technology in the classroom. For example, Participants #3 and #6 stated specifically that the district was "pushing" technology, but when asked what those expectations were, they could not give a clear answer. Participant #3 described the use of apps such as *Kahoot* and *Quizlet* in these terms: "Maybe I'm supposed to be using them, I don't know" (Final Interview). Participant #6 also stated that the administration had asked teachers to use technology, but how or for what purpose had not been specified. She described this situation as "technology for technology's sake" (Initial Interview).

When referring to the institutional training and support they received, the participants mentioned feeling inadequately trained due to the short amount of time allotted to the use of technology during the professional development orientation. For example, during the initial interview, Participant #4 stated she felt the school was supportive of technology; however, she believed she needed more hands-on training. She felt anxious about her use of the Smart Board because the only training she had received had been about 45 minutes during the professional development orientation (Initial Interview). Participant #1 expressed the same opinion when speaking about the Smart Board. Although she and her colleagues had been trained on how to use its features, due to the short nature of the orientation, she still did not know how to use this tool. She referred to a trainer during the Smart Board session in these terms, "I tried to watch her to see what she was doing but she was too fast, so I was like, 'Ok no'" (Initial Interview).

The researcher also observed the participants lacked knowledge about the technology they were using. For example, Participant #4 had trouble using the Smart Board during Observation #2, and asked a student to help her with a simple task. During other observations,

the researcher noticed the application of the Smart Board was limited to uses similar to those expected in a classroom with a whiteboard (e.g., for the projection of PowerPoint presentations and videos or for writing text). These uses did not take advantage of the more interactive and innovative capabilities offered by this tool (e.g., touch-screen games; movable figures, shapes, and objects; the highlighting of features; etc.). Participant #3 used the Smart Board only as a projector for his daily PowerPoint lessons. When asked if he incorporated any of the features used by other teachers, such as the "drag-and-drop" function or touch-screen games, he simply replied, "It would take more than 30 minutes to teach me how to do that," which made reference to the short amount of training time he had received during the orientation (Debriefing #2). This participant also stated he did not create *Kahoot* games or *Quizlet* activities for his students because he did not know how to do so. Instead, he allowed the students or asked other teachers to create them for him (Debriefing #3).

Another common theme on institutional expectations that emerged from the researcher's interactions with the participants was technology support. The Technology Department for the district was in charge of providing the teachers and schools with computers, laptops, computer labs, and the computer carts used by certain departments. This division was also in charge of downloading any software programs needed or requested by the staff or administration. When there were problems with any of the computers provided, the department's staff would first try to remotely fix them and, if possible, would then travel to the sites to look at the computers and repair them. This department also was in charge of finding Internet servers and to offer the best wi-fi connections available.

Several of the participants made comments about this department, referring mostly to its lack of support when they had problems with technology. One common complaint made by

Participants #1, #2, and #5 was that when requests were made to the Technology Department for, example, the installation of software, they would receive no response, or they would require several additional requests. Participant #1 stated:

> If something breaks down we have tech-support and that takes forever. It could be the simplest thing, but no one can come and help you because I've got to turn in the order form five times. They want us to use technology, but they don't come and fix the issues we have, or they come way after the fact and you've already moved on from the project. It makes you not want to deal with the hassle. (Initial Interview)

Also, the participants described their devices as being refurbished and faulty, which caused glitches during the software uploading process and their classroom use. Some of the issues that were mentioned included (a) their inability to log into computers, (b) the computers showing a blank screen or not charging, and (c) error codes appearing on the computer screens (Participant #1, Debriefing #3; Participant #2, Observation #1; Participant #5, Observation #2).

In addition to problems with hardware, the participants mentioned difficulties with software. Participant #5 expressed her frustration with the Technology Department's lack of cooperation for the downloading of new software. She explained that, on several occasions, she and her colleagues had requested that certain software be downloaded, but after multiple requests, several months had passed and they had seen no results. Both Participants #2 and #5 complained that the department would block certain websites and IP addresses, and this limited their opportunities to work with authentic materials. Participant #3 stated that any website with the ".es" ending (i.e., originated in Spain) was categorically blocked, which resulted in a limited amount of online resources from which to pull for classroom activities. When the participant

requested, on several occasions, that the sites be opened, the response was always negative. However, no explanation for this refusal was provided.

In addition to these reported difficulties, the most common complaint from the participants was the faulty wi-fi connections. All six participants made comments regarding the lack of reliable wi-fi access in their classrooms, and they all believed this contributed to their and their students' negative experiences with technology. For example, some students would log into a *Kahoot* game only to be kicked out in the middle of it. Then these students would sit idly while the rest of the class participated. This problem was also observed by the researcher during the classroom observations. It was especially concerning in the case of Participant #6, in whose class there was absolutely no cellular signal for phones and the wi-fi connection would come and go. During Observation #2, the students attempted to play a *Quizlet* game, but it became impossible because of the lack of connectivity; thus, the participant resorted to another activity with the whiteboard and markers. Participant #1 also made reference to the same problem in her class stating, "When I get here on my phone and try to link onto the wi-fi I can't get on. It's horrible" (Initial Interview).

The data show the participants did not feel equipped to use certain technology devices, programs, or apps, nor did they use them to their full potential. Not only was there a clear lack of training, but, as shown in Chapter 5 also a lack of knowledge about what technology should look like in a language classroom. Without up-to-date methodology knowledge, or specific training on the use of technology for the teaching of L2 Spanish, it seems that the participants were simply adding technology to their classes to comply with their institution's mandate. The instructors' lack of direction when using technology in the classroom contributed to the loss of opportunities to maximize their students' active use of the target language and performance development

through new innovative apps and programs. The data suggest that the lack of both pedagogical and technological training, together with deficient hardware and limited digital resources, hindered the participants' application of technology as expected in the L2 field.

6.3 Personal Factors

The participants' personal experiences with and opinions of technology were reflected in the way in which some of the instructors made use of technology. For example, they affected what technology was used and how it was applied. The data suggest that two personal factors influenced technology application in the classroom: (a) the participants' personal knowledge and use of technology, and (b) their opinions and beliefs about technology and its effects on L2 instruction. However, in some cases no direct correlation was found between these two factors.

In their personal lives, all participants used several types of technology and equipment, such as desktop computers, laptops, cell phones, tablets, and several apps, as well as participated in a variety of social media networks in their personal lives. However, some participants used more technology than others. A summary of these uses is presented in Table 6.1.

Table 6.1

Participants' Personal Use of Technology

Technology	Participants					
	#1 Aged 43	#2 Aged 46	#3 Aged 58	#4 Aged 53	#5 Aged 33	#6 Aged 61
Apps (e.g., *Pinterest, Duolingo, Words with Friends)*	X	X			X	X
Cellphone	X	X	X	X	X	X
Desktop computer	X	X	X	X	X	X
Tablets	X	X			X	
Laptop computers	X	X	X	X	X	X
Social media (e.g., *Instagram, Facebook*)	X			X	X	X

The data suggest that age may have played a role in both the frequency and the ways in which the participants used technology. As in Kim's (2008) study, the younger instructors in this work appeared to be ones who employed devices and apps the most. As shown in Table 6.1, the youngest instructors, Participants #1 and #5, made the most use of technology in their personal lives. Both participants reported using cell phones, laptops, and desktops daily for personal tasks such as e-mail and participation in social media (e.g., *Facebook* and *Instagram*). They also used *Words with Friends,* an online app similar to Scrabble, and *Pinterest*, a web platform and application designed to discover information digitally mainly through images. Both participants

stated feeling comfortable around technology and having some familiarity with most of the technology used by their students.

Participants #3 and #4 were approximately 10-15 years older than Participants #1, #2, and #5, and the data show that they appeared to employ less technology in their personal lives than their younger peers, especially in the case of Instructor #3. Participant #6 seems to have been an exception, since she was the oldest, but her use of technology was more ample than that of her older peers (e.g., besides using a variety of devices, she also mentioned using specific apps such as *Pinterest*, and participated in social media). Both Participants #4 and #6 had *Facebook* accounts; nevertheless, they indicated they used them in a very limited manner. For example, Participant #4 said her main reason for being on *Facebook* was to keep in touch with her daughter who was in college, and Participant #6 said her main objective was to be in contact with friends. Both instructors stated they rarely posted anything themselves and checked *Facebook* only "about once a week" (Participant #6, Final Interview).

Participant #3 was among the oldest, and he used the least amount of technology in his personal life. Even though he made use of laptops, desktops, and cell phones, he seemed to have strong opinions against social media: "I don't do any social media whatsoever. I'm still glad that I don't. I'm not out there with fingerprints on the Internet like a lot of people are" (Initial Interview). He was also unfamiliar with many of the newer apps and online games his students used: "I have no clue what that [*Skype*] is. I don't know how to use it at home and I don't know how to use it here" (Observation #3). These findings are similar to those reported by Kessler (2007), which suggests that, in this study, the participants' age and use of technology were also linked. That is, those who were younger appeared to make wider use of technology than the participants who were 15-20 years older.

Based on results from previous studies (e.g., Celik & Aytin, 2014; Kessler, 2007; O'Dwyer et al., 2005), it was expected that the participants who favored technology in their personal lives would also do so in the classroom. However, this was not always the case in this work. For example, there seemed to be some correlation between Participant #5's personal and classroom use, as she incorporated technology the most often and in the most varied ways. She employed the Smart Board in all the classroom observations, and in Observation #2, her students used the Smart Board tablets synced with the Smart Board. She also resorted to laptop computers and the students' cell phones to work with several programs such as *Word Reference* and *Conjuguemos* (Observations #2 and #4). This instructor's behavior when using technology suggests she was comfortable with it, and this might have been related to her personal preferences and use.

Participant #1 also stated she used the same technology devices, social media, and similar apps for personal use as Participant #5. However, she did not employ much technology in her classroom. For example, this instructor was observed using the Smart Board only for *Kahoot, Quizlet Live, Microsoft Word,* and *PowerPoint,* but no other uses of technology were registered during the observations or mentioned in the interviews or debriefings. When questioned about the lack of technology use, especially with the Smart Board, the participant responded that technology had become too much of a "hassle" (Debriefing #4). As a matter of fact, this participant did not even use the Smart Board as a white board; instead, she wrote with a marker on the regular whiteboard located at the back of her classroom (Observation #3). Also, on two different occasions Participant #1 made reference to her classroom's poor technology equipment and the lack of good Internet connections, which could have been the reason why she had become

frustrated when using school technology and had decided to stop incorporating it in her practice (Debriefing #3, Final Interview).

Participants #2, #4, and #6's personal use of technology fell somewhere in the middle; but interestingly, their application of technology in the classroom varied substantially. For example, Participant #2 was observed using the most technology and the widest variety of digital resources in this group which concurs with the use of technology in her personal life. Her students used both laptop and desktop computers for classroom projects, and they also worked with applications such as *Word Reference.* In addition, this instructor made use of the Smart Board daily using drag-and-drop activities with her students, displaying pictures and videos, and reviewing grammar lessons.

Participant #4 appeared to use similar amounts of technology in her personal life as Participant #2; however, she used the least amount in the classroom in this group. For instance, she used the Smart Board only during two of the four observations, and on one of the occasions she needed help from a student for turning the input to the correct setting. She also used laptops during a project and had students use their cell phones to access *Google Translate* during an activity. On average, Participant #4 used technology in only about seven of the 47 class periods. This could have been related to the fact that she did not consider herself very technologically "savvy" (Initial Interview), and she expressed her frustration when trying to learn new technologies (Final Interview).

Participant #6 employed more technology in the classroom than Participant #4, even though their personal use was similar. For example, this instructor used the Smart Board for drag-and-drop activities, as well as for displaying pictures and vocabulary words, and she also employed laptops and cell phones for online games such as *Kahoot* and *Quizlet Live*

(Observations #1 and #4). This participant also mentioned that she had built her own computer and was knowledgeable regarding more complex areas of technology, such as how computers are constructed and how they run. The difference in levels of knowledge and familiarity with technology may have caused Participant #6 to include more technology in her classroom than Participant #4, who seemed to shy away from learning about and employing new technologies.

Participant #3 reported the least personal use of technology, and this seemed to have translated to his practice. During the first of the four classroom observations, he only resorted to technology to expose his students to PowerPoint presentations and, in Observation #2, to show a video. His average use of technology was only 10 minutes. This participant admitted he was very cautious about the use of technology, and he felt the traditional methods of teaching language were more effective (Debriefing #4).

These findings suggest both institutional factors and the participants' personal use of technology may have affected the way in which they incorporated it in their practice. The next section explores the participants' beliefs and attitudes toward technology to investigate whether they also played a role in their classroom use.

6.4 Participants' Opinions and Beliefs about Technology and Its Effects on L2 Instruction

The data show that the participants' positive and negative attitudes toward technology may have played a role in the type of tools they used in their classroom and the frequency with which they incorporated them into their practice.

6.4.1 Positive Beliefs and Opinions Toward Technology

Most participants defined technology as a "tool" to reinforce vocabulary learning and to review grammar points. These data are consistent with previous research, such as Celik and Aytin's (2014) study in which it was reported that the participating EFL teachers felt using

technology helped improve students' long-term retention of concepts. For example, Participant #1 characterized technology as a "good tool for reviewing vocabulary" (Initial Interview), while Participants #5 and #6 described it as an effective tool for retention. This belief became apparent in these participants' preference for apps whose main objective was vocabulary and grammar review, such as *Quizlet Live* and *Kahoot.*

Participants #2, #4, and #6 described technology as an effective tool when teaching culture because it can help students visualize places and cultures, which was reflected in their practice. For example, in Observation #3, Participant #2 used a video to help students visualize a cultural component connected to the topic of the lesson. The participant said, "It gives them the feeling of what it's like. A picture in [a] language [class] is worth a million words. They need to see to understand sometimes and to make… connections" (Debriefing #3). Participant #4 shared this opinion when she stated that technology could help "enhance students' knowledge of the culture and language [and] it can help transport them into another world" (Debriefing #3). Participant #6 also agreed with this view, saying that technology can bring the "culture to life" (Final Interview) and "[can] create windows to other cultures" by allowing students to have a closer view of products and people from the target cultures (Debriefing #2). As a result of these beliefs, the three participants incorporated technology when the focus of their lessons was culture: Participant #2 incorporated a cultural video in Observation #3, and Participants #4 and #6 used still images from the target culture in Observations #1 and #2.

Participants #2 and #5 also described technology as an organizational resource because they felt that tools such as the Smart Board helped with classroom management and organization. For example, Participant #2 believed that the Smart Board writing tools allowed her students to better read her handwriting and to keep the board neat (Debriefing #1). She also

stated that she enjoyed being able to save a piece of information after writing it down once, and then pulling it up later instead of having to rewrite it. Participant #5 had similar views of the Smart Board:

> I love having everything already on the Smart Board presentation by chapter. So if I'm going to use a Word document, it's already in the Smart notes. If I'm going to use an Excel document, it's already in my Smart notes, so I open one program the entire day. I love having it on there. I can go backwards and forward and see something from last week if they want to see it again. That's my main thing as far as organizational. (Final Interview)

She added that using the classroom tablets to complement the Smart Board allowed her to walk around and keep an eye on what the students were writing, while continuing to interact remotely with the Smart Board (Initial Interview). The participants' positive attitudes toward the organizational tools offered by technology seemed to have encouraged them to use them frequently for that specific purpose in their classrooms, as it was noted in their classroom observations.

6.4.2 Negative Beliefs and Opinions Toward Technology

Several of the participants expressed negative opinions toward technology and its use in the L2 classroom based on the fact that they felt that technology caused their students to become very distracted. A similar result was reported by Kim (2008). In that study, instructors characterized technology as a hindrance to instruction because of the distractions it brought to their students' work. Similar opinions were expressed in this work. For example, Participant #6 made several comments about the difficulty in keeping students on task when using technology: "I can lose them [when I use technology]. They can become distracted or unfocused with what

they are supposed to be doing because they have so many other stimuli screaming at them from their cellphones" (Debriefing #1). This belief may have been the reason why this participant used a limited amount of technology each day, which seemed to have been corroborated in Observation #3. This instructor asked her students to use their phones to play *Kahoot*; however, after noticing several of them were on social media, she proceeded to have students get out their dry erase boards and do the exercises using these tools instead of their phone.

This concern was also shared by Participants #2 and #3, who felt the distraction extended to their students' attention span and had long-term effects on their cognitive processes. Participant #2 stated that technology affected learners' ability to retain information, as can be seen in this quote:

> Kids don't retain information anymore. They have a hard time remembering. And it's even the advanced kids. I've been teaching for a long time now, and it seems to be getting worse, and I wonder if it's not a result of technology. We don't have to remember anything anymore, our phones or our tablets do it for us. (Debriefing #4)

Participant #3 agreed, as he felt technology was "taking away kids' ability to imagine" and think for themselves. He also characterized students as being overstimulated, making it hard to "keep them entertained" (Final Interview).

The belief that technology could negatively impact students appeared to have limited its use in the participants' classroom. For example, Participant #3 used the least amount of technology among the participants, as in all of the classes observed he only resorted to the Smart Board, using PowerPoint presentations and still images to teach his lessons, which resulted in a teacher-centered pattern of instruction. The participant admitted to rarely allowing his students to access or use their cell phones, or participate in any independent technology-based activity. Even

though Participant #2 had also expressed negative opinions toward the incorporation of technology in the classroom in the Initial Interview, as well as the Final Interview, unlike Participant #3, she relied on songs to help her students remember grammar points, and she used laptops to review vocabulary and grammar on *Word Reference.*

Other beliefs about technology were connected to the participants' views of L2 methodology. Participants #3, #4, and #5 believed that traditional methods worked better than the new approaches in which technology played an important role, and this could be seen in their practice. These types of attitudes were also reported in Kessler's (2007) and Zyad's (2016) work where the researchers stated that their participants had certain prejudices against technology because they believed there was no substitute for traditional methods of L2 teaching. For example, Participant #3 commented, "Nothing can replace good old fashion [ed] teaching using props and waking up the senses" (Debriefing #3). Participant #5 made a similar claim stating, "There's nothing that beats the old-school way of doing it [teaching language]" (Initial Interview). These beliefs seemed to have translated to their practice in the way in which they included or failed to include technology. For example, Participant #5's classes were teacher-centered, and technology was just a replacement of traditional tools such as a blackboard, and it was used in the same way. Also, her students worked with the app *Word Reference* to translate words from Spanish to English in the same way they would have employed a paper dictionary. These applications of technology suggest that it had become a tool for the materialization of the grammar-translation method in which the teacher is considered the center of the classroom, and memorization and grammar practice is key (Brown, 2014a), which does not correspond to the current L2 field's expectations as outlined in ACTFL's technology statement.

The same type of beliefs and practices were observed in Participant #4's opinions and classes. In the debriefing for Observation #3, she stated that technology could be helpful, but in no way could it replace the outcomes of traditional teaching. These opinions were offered when she was asked to comment on her use of technology in the observed class, where she had asked her students to use their phones to do translations for an entire class period using *Google Translate.* The objective of the activity had been to show learners the inaccuracies of technology-based translations to emphasize the point that digital tools are not the "end all, know all" to language, and therefore, they should "be used with caution." The participant told her students that sometimes, "learning language like we always have instead of being dependent on a cellphone is still the best way" (Observation #3). This instructor also believed that newer teachers relied too much on technology instead of on traditional methods; thus, they were not able to be as creative and effective stating that "teachers… should be able to use the book and create without technology. To think outside the box, and not focus on technology" (Initial Interview). This was a view that she voiced throughout her participation in the study.

The final attitude that emerged from the participants' views on technology has also been reported in several similar studies (Kessler & Hubbard, 2017; Kim, 2008; Thoms, 2011; Zapata, 2002; Zyad, 2016) that have shown that instructors use less technology when they have had problems with faulty equipment and/or they have experienced weak wi-fi connections. As in previous work, the participants in this study believed technology could hinder, rather than help, language teaching based on their negative experiences with unreliable technological devices or connections. For example, both Participants #1 and #6 stated they would use more technology if it simply would work properly and expressed their frustrations with the lack of connectivity in their classrooms, which translated to their practice. Participant #3 called his Smart Board his

"stupid board" after having many problems with the wi-fi connection and system. Participant #4 expressed her frustration during an observation when she attempted to pull up something on a student laptop for a project: "I wish this stupid Internet would connect! Nothing ever goes right with technology. You always need a backup plan" (Observation #3). These negative experiences seemed to have resulted in these participants' lack of desire to use technology as often as possible, as required by their school administration, because they feared problems would arise and they would have planned a lesson and would be unable to execute it, therefore losing the time and effort they had put into it. Participant #4 summarized these feelings when she stated, "You might as well just do it without the computer if you have to plan a backup plan for every lesson" (Observation #3).

The findings presented in the previous sections suggest that both institutional and personal factors appeared to have combined to influence the way in which the participants made use of technology in their classrooms. In the next section, both the interaction of these factors and how it affected the L2 learning process in the observed classes are analyzed.

6.5 Discussion

6.5.1 Institutional Factors

Few studies have examined how school and district level characteristics influence the use of technology in teachers' classrooms. One of the existing works, O'Dwyer et al. (2005), has shown that the relationship between schools/districts and teachers is significantly more impactful and problematic in the case of technology use and implementation than with matters such as teacher/peer relationships or teacher/student relationships. O'Dwyer and colleagues investigated how 1,490 elementary teachers used technology as a learning tool in elementary schools, focusing also on the role that 96 principals and district leaders played in this use. Through

teacher surveys from 120 districts and interviews with district and school leaders, including technology support specialists and library/media personnel, the researchers studied the extent to which expectations of technology use were communicated by the administration to the participating teachers, as well as the amount of professional development on technology inclusion that instructors received. Also, the investigators explored the availability of technology devices in the schools, as well as the policies and restrictions placed on technology use by students. The results of the study showed there had been a lack of communication between the administration and the teachers regarding the types of technology and the amount of technology use required, which had resulted in instructors' finding the use of technology awkward, challenging, and without merit.

The results of the present work seem to reflect some of the issues uncovered by O'Dwyer and colleagues (2005). The data suggest the administration failed to explicitly and clearly communicate the expected use of technology to the participants, as well as the instructional outcomes they were expected to achieve when using technology in their classrooms. This lack of guidance, combined with poor training and the participants' lack of pedagogical knowledge, resulted in a controlled, teacher-centered use of computer technology, which did not reflect the L2 field's expectations nor did it result in the development of students' performance in the interpretive, interpersonal, or presentational modes of communication.

Additionally, both the lack of communication and training appeared to have given rise to feelings of frustration and anger among the participants. For example, Participant #6 stated that although the administration did not explicitly communicate the need for technology in the classroom, it was worth 20% of a teacher's evaluation conducted by the administrator, which she deemed unfair (Final Interview). Participant #1 also stated that the administrators would briefly

mention the use of technology during teacher work days at the beginning of each school year, but they would fail to communicate what kinds of technology and how instructors were expected to incorporate it in their classrooms:

> They are always taking off points on your evaluation if you don't include technology, or what they deem an appropriate amount of technology, but really, who knows? We are in the dark every year. What should I use, for how long? Am I doing the right thing? It's a guessing game. (Debriefing #4)

Participant #2 also commented on the fact that the lack of communication between the teachers and the administration about technology had created a lingering animosity regarding teachers' evaluations. She explained that some instructors had received negative evaluations based on the fact that they had not used enough technology, or the technology that the administrators had desired when they had been observed. This participant believed this was unfair since, when teachers had previously asked about technology in connection with their evaluation, the administration's response had simply been "just make sure you include technology," and no further instructions had been provided. This lack of communication and clarity continued to create more tension as the semester went on and was not resolved. Thus, the participants felt that they had received little to no guidance on the issue and were then punished if they did not "guess" correctly. This contributed to their feelings of frustration about using technology in the classroom which, in turn, might have exacerbated their already-held negative beliefs and might have resulted in the deficient and/or teacher-centered applications observed in this study.

The same can be said about the lack of technical support provided by the administration. As in previous studies (e.g., Alenezi, 2017; Hannes et al., 2013; Tondeur et al., 2017; Zapata,

2002), the participants' use of technology in this study also appeared to have been hindered by the only adequate devices with which they had been provided, which often failed, and by the lack of strong wireless connectivity. In addition, the instructors in this study had to deal with a lack of student accessible computers and slow or sometimes inexistent response from the district's IT Department. For example, the participants consistently mentioned the need for more laptop computers and iPads for use in their classroom. Also, after having asked for equipment for a number of years, the administration had given the Spanish department a laptop cart containing 30 laptops only to later pass it on to another department, to the detriment of the language classes. This move was clearly a source of further frustration among the participants, as expressed by Participant #6:

> We had a department laptop cart, but the district took that cart away, so now I'm back to sharing with our other departments. So that limits us, it was pretty much available to us, and now it's gone. (Debriefing #3)

Participant #2 voiced similar feelings of frustration: "I just don't know how they expect us to use technology when either we don't have the equipment, or we don't have the upkeep" (Final Interview). These issues seemed to have added to the already existing frictions between the administration and the participating teachers, and they seemed to have also played an important role in the instructors' willingness to incorporate technology to their practice.

The issues reported by the participants in this study have also been addressed in previous work on technology in L2 classes. For example, studies such as Hew and Brush (2007), Inan and Lowther (2010), and Zapata (2002) have pointed to the lack of technological equipment, software, or programs as major factors influencing the incorporation of technology to L2

practice. What is surprising, however, is that some of these studies took place more than or almost two decades ago, and the same problems reported seem to persist.

Another important aspect of the incorporation of technology in the participants' classes also reported in previous work (e.g., O'Dwyer et al., 2005; Zapata, 2002) was a shortage of equipment upkeep and repair by the administrative and district offices. This situation was described by Participant #1, who said: "With the laptops we still have to put in an order for them to come and fix them, and that will take forever. It's annoying." (Participant #1, Initial Interview) Participant #5 agreed by stating that many of the laptops in the carts the Spanish teachers had received were refurbished and were constantly in need of repair.

During Participant #6's Observation #3, the researcher witnessed this type of problem. The participant had planned an activity using the Smart Board that would require that students drag the correct conjugation to the end of each written verb. However, after the first two attempts to complete the planned activity, the board stopped working and the participant had to spend the next 30 minutes of class attempting to fix the problem. After class was over, the researcher asked the participant about the experience, and she characterized it as follows:

> So a lot of the things… a lot of my plans I had to do two lessons in order to cover it, because I wanted to do Smart Board activities because they [the administrators] were so "you got to do technology, you don't have enough technology!" Well if you'd give me something that would work! Where I didn't have to constantly turn in tickets that they would send back to me saying: "we need this info…" Then, I mean, I do love using it, and the kids like it. I wanted to use technology because I had already had them use their white boards, so that's why I kept trying to fix the board. (Debriefing #4)

This incident highlights the participants' frustration with technology, which was compounded by a process to fix issues that involved filling out various online forms, waiting for approval of the requests made, and once that happened, for the technology department to come out and repair the equipment. Participant #4 described an experience that reflected these complications when she made reference to a request she had filed before the end of the school year and that the district's technology department had failed to respond to, which had resulted in her having the same problems she had reported at the beginning of the following academic year. This type of frustration clearly helps explain the participants' hesitancy to use technology in their classrooms.

The participants' negative feelings about faulty equipment and the district's lack of response were further complicated by the lack of well-functioning Internet connections, with slow to no signal, and login issues on school computers. These problems added to the instructors' existing reluctance for technology use, and are reflected in Participant #1's views:

> Our connections are horrible. So you have your students try and sign in [to Kahoot], and half of them can't, and the others complain about having to use their data, and what's the point? By the time I'm done trying to log everyone on I've wasted half of the class (Debriefing #1). I think the administrators should know that we don't have great wi-fi, so how can they expect us to push it? They don't want us to use paper, and they want us to push wi-fi, and Office 365, when half the time you can't get on Office 365 [or] they [students] don't know their log in, and then you waste so much time. (Initial Interview)

Participant #6 described similar experiences and feelings:

> All we've had is trouble with our Internet connections. I'm very worried about it. I don't get e-mails. I get them when I'm walking out to the car. Even our Internet service out

> here is glitchy. I'll take roll and then I'll come back and it's not done. I can make phone calls from the parking lot out there. You would think in this day and age we would figure out something that would work. (Initial Interview)

Similar instructor frustrations have been reported by Alenezi (2017). The participants of that study were 8 K-12 teachers of similar subjects who reported using a moderate amount of technology in the classroom. For example, one of Alenezi's participants expressed her frustration with a Smart Board because it did not function properly. Other malfunctions reported included, like the present study, faulty laptops and online connections. Problems with connectivity were also a factor found by Li and her colleagues (Li et al., 2015), who reported lack of connectivity as one of the main sources of frustration among their participants, who were six student teachers from mid-western universities. The findings suggested that the teachers' use of technology was closely linked with the fact that they could not adequately use technological devices or the software they had planned to employ because of faulty wi-fi connections.

Another important factor linked to the administration that might have influenced the participants' view and use of technology was the fact that certain sites were blocked, specifically those originating in Spain and others connected to the textbook that had been adopted. These restrictions limited the participating instructors' access to authentic materials and/or the availability of additional instructional resources. Participant #5 described her frustration with this issue:

> Case in point, you know when we adopted the textbook, and I sent in the request to have them open up one of the publishers' website so we could use it, I heard no response. I mean completely ignored the entire request. So they [students] ended up having to do that

> part at home, and not have the support [that they could have received in class]. (Final Interview)

Participant #2 felt let down by the district's policy for the restriction of certain websites:

> There have been some other things that I have been disappointed with from the district and technology such as they've blocked a lot of websites that would be helpful for foreign language. It's extremely difficult to include technology if every Spain website is blocked. I mean, why? It makes no sense. (Debriefing #3)

Participant #1 also mentioned the inconsistency between the district's technology department's constant push for technology in the classroom and the lack of available websites because of censorship by the district:

> I have a lot of trouble sometimes trying to use authentic materials because everything is blocked! It's very frustrating. And it's simple stuff, like newspaper articles, or educational videos, and anything "es" from Spain. It's crazy. That's not helpful. (Participant #1, Final Interview)

These technology-related setbacks in direct connection to the administration might have led the participants not to rely on technology in their practice, and they might have added to the resentment already felt due to what they perceived as lack of appropriate training and clear information about expected technology use.

6.5.2 Personal Factors

The data in this study suggest that the participants' personal use of and beliefs on technology played a part in the incorporation of technology to their practice, albeit a smaller one, when compared to both their knowledge of L2 methodology and institutional factors. For example, the findings show that if instructors rarely used technology in their personal lives, this

seemed to transfer to their classrooms. Also, instructors who reported being more familiar and confident with technology appeared to have been more open to its use for instructional purposes. This is known as self-efficacy, and it has been shown to play a role in teachers' classroom use of technology (Alenezi, 2017; Brown, 2014b; Gilakjani, 2013).

For example, Brown (2014b) examined 20 elementary teachers' attitude and confidence when integrating technology in the classroom to determine how personal knowledge, confidence, and training affected it. The results showed that the participants' personal use of technology and confidence were the most important factors when considering the degree to which they applied it for educational purposes. In his review of existing studies, Gilakjani (2013) also highlighted the influence of teachers' self-efficacy on technology use in the classroom. In a more recent study, Alenezi (2017) focused on the obstacles that K-12 teachers encountered while integrating technology into the classroom, and he identified their level of comfort with technology as a major one. That is, the participants' lack of self-efficacy appeared to have hindered the integration of technology in their classrooms.

Another factor that seemed to have influenced the participants' use of technology in this study was age, which has also been reported in previous works. For example, based on the results of a survey completed by 2,462 Advanced Placement and National Writing Project teachers in middle and high schools, Purcell et al. (2013) stated that teachers aged 35 and younger appeared to have been more knowledgeable about technology than those over 55, and they also tended to use more participative and collaborative web-based technology tools (e.g., online blogs and discussions) than their older colleagues. These findings mirror those reported by Alenezi (2017), who found that younger instructors (between 23-30 years of age) were more knowledgeable regarding technology and used it more in their classroom than those over 40.

The results of this study also show that the participants' particular views on the ways in which technology could contribute to students' learning appeared to have influenced the kinds of apps and resources chosen. For example, most of the instructors in this work believed that technology could help with students' vocabulary retention and grammar skills and with the organization and management of learners' activities and classroom work, and these opinions were reflected in the limited, discrete-point teacher-centered tools they chose to incorporate to their practice.

Similar findings have been reported in previous work. For example, Miranda and Russell (2011) surveyed 1040 district-level personnel, including superintendents, directors of technology, principals, and teachers from 21 Massachusetts' school districts in order to discover the factors that affected instructional technology in elementary classrooms. The results showed that one of strongest predictors of teachers' technology classroom use were their beliefs about its instructional benefits. For instance, the participants saw technology as an effective tool for the teaching of vocabulary and grammar, and this was precisely how it was applied in their classroom, in ways similar to the instructors in this study. In her examination of teachers' attitudes toward technology integration in the classroom, Zyad (2016) also found that one of the main uses of technology by her participants was as a tool to access information and reinforce lexical and grammar knowledge. As the participants in this study, Zyad's instructors resorted to vocabulary- and grammar-centered apps, online games, and word translation programs (e.g. *Google Translate* and *Word Reference*) because they were aligned with their view that technology was a tool to aid with vocabulary and grammar learning.

The results of this study also show that, even though several participants felt that technology could be beneficial for L2 instruction, they also viewed it negatively because they

felt it could distract students and hinder their learning process. Previous studies have reported similar findings. For example, Van Praag and Sánchez (2015) focused on the use of cellular devices for classroom activities in three American and Canadian language classrooms using video-recorded classroom observations, interviews, and debriefings. The researchers reported that their participants believed mobile devices could be a distraction instead of a link to the outside world of language, which negatively influenced their adoption of technology in the classroom. In a similar work, Celik and Aytin (2014) also made reference to teachers' characterization of technology as a distracting tool as one of the factors limiting its classroom use.

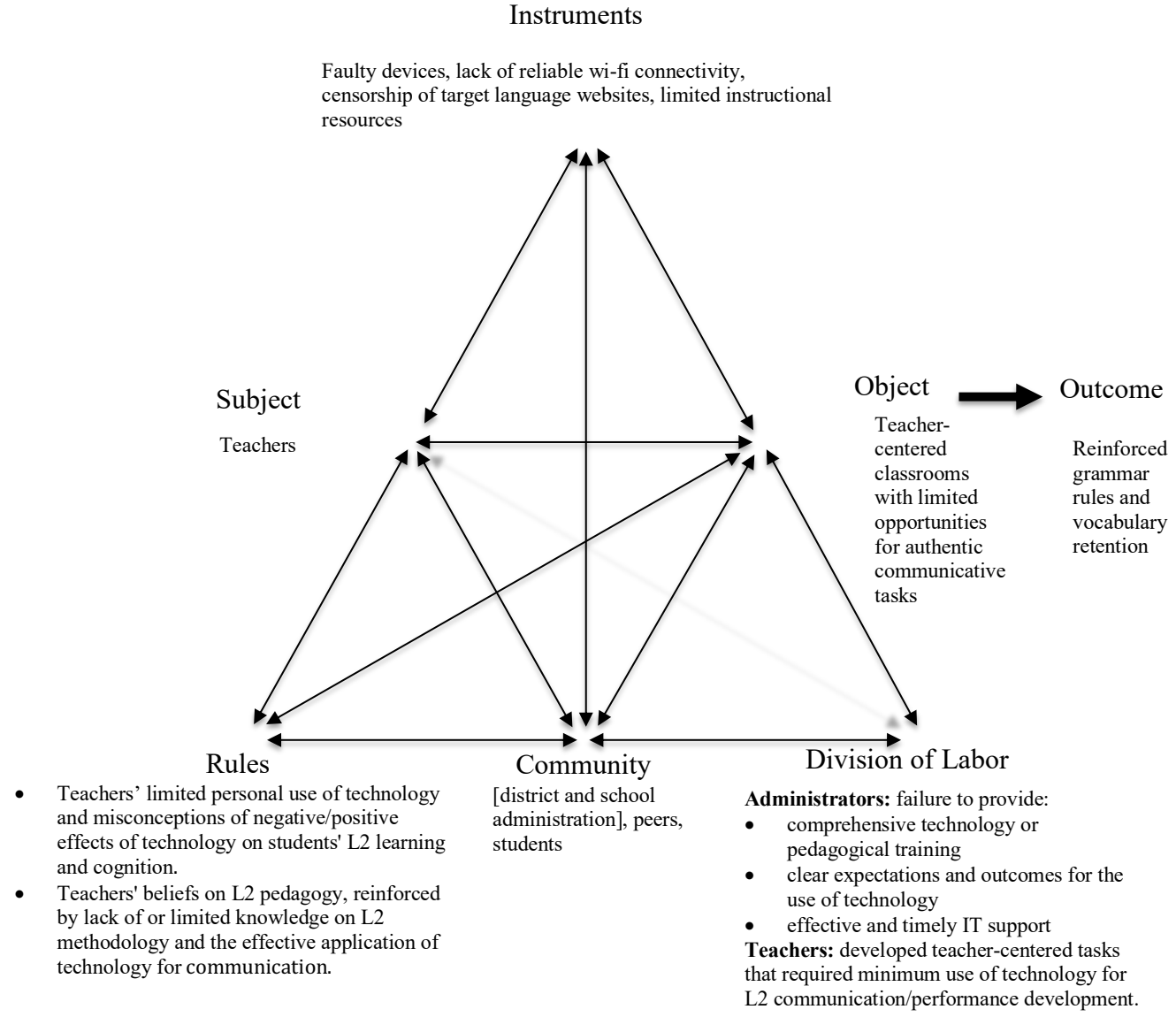
Another important factor that could have affected the participants' adoption of technology in the classes on which this study focused could be related to their beliefs about language learning. The data in this work suggest that most participants felt that traditional L2 methods were more effective in language teaching than more innovative methodologies. And this was clearly reflected in the types of technology to which they resorted, which allowed them to enact their traditional methods: teacher-centered tasks with a focus on the decontextualized learning of vocabulary and grammatical features. Similar results have been reported in previous studies. For example, after examining the pedagogical practices and technology use of 1,882 teachers from 51 schools in Singapore, Jacobson and his colleagues (2010) pointed out that the participants' traditional beliefs on L2 learning had resulted in teacher-centered approaches, centered around discrete-point vocabulary and grammar exercises, with little or no use of technology. Kim's (2008) work also showed that the EFL teachers' application of technology in her study was connected to their traditional pedagogical beliefs on language learning, which resulted in uses mainly for practice-and-drill purposes, as was the case in the present work.

6.6 Conclusion

The data presented in this chapter suggest that institutional and personal factors played a role in the participants' incorporation of technology in their classes and they resulted in an activity system (shown in Fig. 6.1) different from the one that could have resulted if ACTFL's recommendations had been followed, and the participating teachers' knowledge and beliefs, instructional instruments, and division of labor had been more attuned with the role of technology expected in the field.

Figure 6.1

Representation of the Institutional and Personal Factors in the Participating Teachers' Activity System



The findings show that there was lack of support from the school and district administration, which resulted in a marginal contribution in the participants' community of practice and its division of labor. That is, the district's and participating schools' lack of comprehensive teacher

training and poor communication of clear expectations and expected outcomes for technology use exerted an important influence on the participant's incorporation of technology in their practice: the administration did not fulfill their expected role. The same can be said about the instruments with which the administration provided the instructors. The faulty devices, the absence of reliable connectivity, the censorship of websites from the target cultures, and the lack of IT support negatively affected the participants' use of technology and, indirectly, could have reinforced their lack of self-efficacy with respect to technology, their outdated knowledge of methodology, and/or any negative views they could have held on technology-supported instruction.

The resulting activity system clearly points to the need for action. In the next chapter, a series of recommendations address the institutional, educational, and personal shortcomings discussed in this and the previous chapter.

7. Recommendations for the Implementation of Technology to Integrate ACTFL's Mandates in L2 Secondary School Classes

7.1 Introduction

The findings from the current study reveal weaknesses in the way in which technology was implemented in the participating L2 junior high and high school classrooms. Specifically, the results suggest that the field's mandates (as represented by ACTFL) were not followed by the participants due to both institutional and personal factors. The main institutional factors involved the lack of comprehensive pedagogical and technology training, as well as the absence of adequate equipment, effective Internet connections, and access to websites originating in the target cultures. The personal factors pointed to instructors' lack of pedagogical knowledge, including the most up-to-date L2 methodologies (of which ACTFL's technology mandates were part) and the role that technology can play in facilitating students' active use of the target language and performance development in ACTFL's three modes of communication (i.e., interpretive, interpersonal, and presentational). This chapter is divided into two sections: (1) the researcher's recommendation in response to the findings presented in this study, and (2) the researcher's recommendations regarding the further implementation and exploration of technology in the L2 Spanish classroom in view of the Corona Virus (COVID) pandemic and its aftermath.

The first section addresses the researchers' recommendations for addressing the weaknesses found in this study by offering suggestions for institutional teacher education and training, in addition to infrastructure changes. This section continues to summarize the findings of the study in connection to the field's expectations for technology use in junior high and high school L2 classes. The next part of the first section introduces a collaborative model that might

be implemented to address the weaknesses identified in this work. The last part of the first section provides specific recommendations for the implementation of the proposed model. The second section addresses recommendations by the researcher to address the needs found in this study in lieu of the COVID-19 pandemic based on current research and data.

7.2 Factors that Affected the Incorporation of Technology in the Study's Classes

As it is clearly shown in both ACTFL's technology-recommendations statement and its 21st Century Skills Map (ACTFL & P21, 2011) technology has become an essential component of L2 instruction. Since the beginning of the 21st century, there are myriad of articles that have investigated different aspects of the use of various technology-based tools for L2 teaching and learning (for comprehensive reviews, see Chun et al., 2016; Kessler, 2018). These have revealed ways in which technology can result in L2 development and active use. However, as the results of this study show, the integration of technology in L2 classes as promoted by current L2 pedagogy seems to still be plagued with problematic aspects at the institutional and instructional levels. The findings in this work and other previous studies (e.g., Ertmer, 2017; Francom, 2020; Gil-Flores et al., 2017; Kessler & Hubbard, 2017; Li et al., 2019; Mueller et al., 2008, Petko et al., 2018; Rosch & Anthony, 2012) suggest that even though teachers may be familiar with technology in a general sense and institutions may push for its use, there are still many issues that need to be addressed before we accomplish L2 instruction as envisioned by the field.

In this study, several factors were found to affect the use of technology in the Spanish classroom. The first were institutional factors such as the provision of administrative and technical support, the absence of adequate equipment and online connectivity, and the censorship of authentic digital materials. The second factor was teachers' lack of L2 methodology and technology training and limited knowledge of ACTFL's guidelines for technology use. Another

important factor that appears to have had some influence on the participants' incorporation of technology in their classes were their own negative views and attitudes toward technology and their traditional beliefs on L2 learning. The combination of these factors seems to have resulted in limited, non-communicative uses of technology-based tools, which hindered students' active use of the target language and, in turn, their L2 development in the interpretive, interpersonal, and presentational modes of communication.

These findings point toward the need for a model of professional development and infrastructure improvement that will not only addresses training weaknesses and equipment problems but will also involve all key players actively—teachers, administrators, and the district's technical support team. The next section introduces a model that could address the weaknesses revealed in this study.

7.3 Teachers as Trainers Model

After considering all the data presented and utilizing her 15 years of experience in the classroom, the researcher proposes the use of the *Teachers as Trainers* model as a possible answer to the technology-related shortcomings described in this study. This method, as described by Cooley (2001), is a site-based, staff development program that consists of teacher empowerment, accountability, responsibility, and ongoing support. This model consists of four phases: *Needs Assessment*, *Core Team Selection and Planning*, *Delivery of Training*, and *Personnel and Program Evaluation*. Each phase is described in the following four sections.

7.3.1 Needs Assessment

The first phase of the proposed model is *Needs Assessment*. This phase requires the party interested in implementing the model (e.g., teachers, administrators, or other institutional staff members) to seek to uncover and understand what a program's shortcomings or weaknesses

might be. In order to do so, the main goal of this phase should be the gathering of data to determine what is missing or deficient so that a training plan can be developed to accomplish desirable outcomes and objectives (i.e., those set or proposed by an institution, department, and/or group of teachers) (Garst & McCawley, 2015). The process begins with the development of guided questions or the establishment of areas of focus to identify the specific needs that the training should address. The results of this study identified the following needs with regards to the participants' knowledge of current L2 research-guided practices (e.g., such as those promoted by ACTFL) and the use of technology: (1) a lack of methodology and technology training; (2) a lack of technology equipment, as well as inadequate equipment and poor Internet connections; and (3) the teachers' general negative attitudes toward the use of technology in the L2 classroom because of personal views, past experiences, and lack of training.

The first need demonstrated in the study was a lack of teacher training in the areas of L2 methodology and technology. The individual participants were found to have had very limited pedagogical training with only two of the participants having attended L2 methodology classes, and only one having more than one methodology class in their formal education. The amount of L2 training while in service was also limited. The participants received only one session of professional development per year at their current institution, and it was rarely methodological in nature. The results suggest this situation kept the participants trapped in an antiquated traditional method of L2 teaching that was characterized more as a teacher-centered curriculum than an education environment and curriculum conducive to active L2 use and, in turn, performance development. Additionally, the materials and pedagogical moves employed by the teachers did not follow ACTFL's guidelines or standards for the use of technology. This combination of factors resulted in a choice of technology-based tools primarily used for vocabulary retention and

grammatical exercises. The same holds true for the participants' training on the application of technology in the L2 classroom. Only one participant of all teachers involved in the study stated that they had received technological training specifically to teach L2 Spanish. As for being adequately trained in the technology available in their classrooms, only three of the six participants stated they felt adequately trained.

The training model the researcher is recommending would allow the teachers in the study and her colleagues to receive the identified training in two main ways. The first step would require the institution to provide financial support for two or three instructors (or more, depending on personnel size) to receive professional training (e.g., attending the workshops and summer institutes offered by ACTFL), and then train their peers. To achieve this goal, the second step would require the facilitation (both logistically and financially [e.g., in the form of incentives for both trainees and trainers [e.g., stipends plus fewer responsibilities while holding these positions]). The sharing of knowledge among peers could result in a cooperative learning model which could provide both the methodological and technological training identified as lacking. In addition, this type of peer-based model could strengthen bonds among the faculty community, and the institutional investment would signal the administration's commitment towards professional development and their recognition, both financially and professionally, of instructors' contributions to the work place. This model could also result in a more unified curriculum by implementing the same practices and methodological approaches across grade and class levels.

The second institutional area found to be of concern was the lack of adequate equipment, limited access to needed websites, and poor Internet connections. These difficulties made the use of technology less readily available for the participants and could have predisposed them

negatively towards its incorporation in their practice. For example, even when participants felt ready to implement the use of technology, there was a shortage of laptops for students, or the laptops were defective. In addition, the Internet connections were intermittent at best, and many of the websites the instructors desired to use were blocked by the district's IT department. This combination of factors appeared to have discouraged the participants from using technology frequently. The *Teachers as Trainers* model recommended here seeks to remedy some of these difficulties by choosing a designated teacher to act as an advocate/liaison between the three entities involved: the Spanish teachers, the administration, and the technology department. This member of the team of trainers would present the technology and budget needs to the administration and technology department so that a more collaborative, equitable, and efficient approach to technology use in the classroom could be achieved.

The third factor that the study revealed was the participants' negative views and perceptions of technology and its use in the classroom. The instructors related negative experiences in their practice due to faulty connections and a lack of equipment and/or refurbished, malfunctioning devices. These experiences affected their perceptions of the use of technology in the classroom, causing teachers to feel that its application was too time consuming and/or rarely worked properly. The lack of training also discourages the participants from adopting technology in their classes on a continuous basis. The instructors voiced their lack of knowledge and discomfort when using the many available technologies as another important reason they were not included in classroom activities. The *Teachers as Trainers* model could offer a more appealing view of technology to the teachers, as it would allow for peer mentoring and could result in a collaborative teacher environment that would not isolate teachers in the classroom as they implement new practices and technology-centered activities. Instead, the

active sharing of knowledge among peers would promote a healthy, collaborative learning experience, which, besides training, could also incorporate supportive peer observations and discussions on a consistent basis.

7.3.2 Core Team Structure and Responsibilities

The second phase of the *Teachers as Trainers* model involves the democratic and equitable selection of the team of teachers to carry out the training and advocacy needed. The first step would involve the establishment of the *Core Team*, a group consisting of representatives from the school administration and IT personnel, and the head(s) of the Spanish department. This team would be in charge of setting up the goals and outcomes to be achieved instructionally and in terms of training, including the development of the application that teachers would need to fill out and submit to become Teacher Trainers or Advocates/Technology Liaisons. The Core Team would invite all the teachers within the Spanish department at both the junior high and high school on which this work focused to apply for these positions. The instructors chosen to be Teacher Trainers would receive the off-site training (described in the previous section), and then train their colleagues on site, which would be achieved through hands-on workshops before and during the school year. Additionally, the trainers would provide classroom support and monitor implementation after training. The advocate and technology liaison would have the responsibility to represent the instructors in their communications with the school administration and district. For example, this person would be entrusted with aspects related to the monitoring of equipment maintenance and repair and the purchase/acquisition of functional devices and instructional resources more congruent with technology used for L2 active communication. The Core Team responsibilities are summarized in table 7.1.

Table 7.1

Core Team Structure and Responsibilities

Structure	Responsibilities
Representatives from the administration and IT personnel and head(s) of department	• Create goals for the L2 Spanish program based on evidence-based practices and ACTFL's standards and recommendations • Establish parameters and rules for the implementation of the Teachers as Trainers model (e.g., responsibilities, assessment, etc.) • Choose workshops/training courses (e.g., ACTFL) and procure funding • Create the description for teachers' application for positions of Teacher Trainer and Advocate/Technology Liaison • Monitor the applications received; interview and choose candidates • Provide the chosen trainers with financial and logistical support to complete trainings • Organize workshops once Teacher Trainers have received training • Provide support to trainers / advocate • Organize and carry out program and training assessment

7.3.3 Delivery of Teacher Training

Once they have received their training, the Teacher Trainers, together with the members of the Core Team, will organize and establish what the trainings will look like and how they will be delivered. Based on the results of this study, the researcher recommends that the Teacher Trainers attend and then deliver ACTFL workshops that provide first a foundation on essential evidence-based pedagogy and incorporate guidelines for the development of tasks that promote students' L2 active use and the development of their L2 performance in the three modes of

communication (i.e., interpretive, presentational, and interpersonal). For example, one of the workshops could be the one that focused on core (or high-leverage) practices, defined by Ball and Forzani (2009, p. 504) as "tasks and activities that are essential for… teachers to understand, take responsibility for, and be prepared to carry out in order to enact their core instructional responsibilities." In L2 learning, Glisan and Donato (2016, 2021) have identified the following 10 high-leverage practices, which they consider essential to provide L2 learners with a successful (in terms of L2 use and development) and meaningful classroom experience:

1. Facilitating target language comprehensibility;
2. Building a classroom discourse community by engaging learners in oral classroom communication and designing and conducting oral interpersonal pair and group tasks;
3. Guiding learning learners to interpret and discuss authentic texts;
4. Focusing on form in a dialogic context through PACE;
5. Focusing on cultural products, practices, and perspectives in a dialogic context;
6. Providing oral corrective feedback to improve learner performance;
7. Establishing a meaningful and purposeful context for language instruction;
8. Planning for instruction using an iterative process of backward design;
9. Engaging learners in purposeful written communication; and
10. Developing contextualized performance assessments.

ACTFL offers online, short training courses on these practices, and attendants receive a certificate once they have completed them. After undergoing the core practices training, Teacher Trainers could divide up the practices throughout the academic year, offering workshops on the most essential ones (e.g., practices 1 through 4) before the beginning of class, and on the other six throughout the school year.

In the area of technology, it is suggested that instructors participate in the workshop *Smart Board Applications for the Spanish Classroom*. Although trainings in the use of Smart Board applications have been previously offered, none has specifically targeted the L2 classroom. The Administrator and Technology Advocate/Liaison would recruit an instructor from the technology department of the district who will train one of the Teacher Trainers in the use of the Smart Board. This technology staff member should be knowledgeable in the use of the Smart Board applications. Instruction in this particular area would be especially valuable for these reasons: (1) All teachers have a Smart Board in their classrooms; (2) the Smart Board applications program has hundreds of interactive L2-ready tools and activities that are easily accessible to the teachers; (3) Smart Boards have already been purchased and the applications programs are included, therefore no additional expenditures would be necessary; and 4) the training would be given by a fellow colleague inside the district, so no extra costs would be incurred for this training. Because Smart Board applications contain many possible activities and adaptations for the L2 classroom, the Teacher Trainer, who has previously received training from a staff member of technology, would be asked to choose three of the applications that could be applied in the L2 classroom immediately, and would facilitate the incorporation of ACTFL's core practices and the attainment of the instructional goals established by the Core Team.

The advantages of the combination of the technology and methodology trainings are twofold. Not only does this approach address those needs presented in this study, allowing the participants to further their knowledge of methodology, but it also gives the participants the opportunity to implement that knowledge using technology, online programs, and apps. Additionally, although the L2 methodology trainings involve the attendance of workshops outside the school system, the use of the institutions' own teachers and technology trainers to

train the rest of the faculty will keep costs to a minimum while employing the trainers´ strengths and addressing weaknesses within the school system.

The training offered by the Teacher Trainers will be complemented by methodological and technical follow-up support for the participating teachers. During the school year it is essential that the Teacher Trainers continue to communicate regularly with the colleagues they have trained as these instructors attempt to incorporate the new concepts learned into their practice. This will involve frequent communication between Teacher Trainers and their peer teachers and classroom observations at least twice during the school year to monitor implementation, provide feedback, and make suggestions regarding the need for further training. For example, a teacher might choose to contact the Teacher Trainers to request assistance either in implementing a core practice or using technological devices or applications. When this happens, the Teacher Trainer will schedule a time to aid the teacher either through video chat or in person. This ongoing support and communication will help teachers feel successful and motivated to continue incorporating core practices to their teaching and actively using technology. Having trainers available to receive questions and offer follow-up support might strengthen the teachers' knowledge of methodology and technology and give them the confidence they need to try out new things and use innovated technologies.

A further opportunity for Teacher Trainers to support their peers will come at the end of a semester of implementation. All trainers and teachers will be asked to reconvene to collaboratively address any issues encountered in the classroom with the new methodology and/or technology. Recommendations and suggestions will also be given to the group that will aid all members to work together and support each other while learning how to adopt new practices and use new tools.

7.3.5 Follow-up Retraining Sessions

Teachers who respond to the Teacher Trainers with an interest in being retrained or refreshed in the technology or methodology presented in the teacher trainings will have the opportunity to be retrained one-on-one by the Teacher Trainer that initially presented the training. The teachers who feel they require more one-on-one training regarding a specific methodology or technology application will arrange a time to be retrained by the Teacher Trainer who conducted the original training. This training can be scheduled by the parties involved at their discretion. If there is more than one teacher who requests retraining, the Teacher Trainer can attempt to retrain both teachers at the same time or program a one-on-one session with each teacher.

This retraining can be conducted in a similar fashion as the first teacher training, or the Teacher Trainer may opt to present the material using a different approach to aid the teachers in applying differentiation in their classroom instruction depending on proficiency levels, while also allowing the teachers to immediately implement the methodology or technology during the training. In this manner the teachers can "play" with the technology and ask questions as they use said it and discuss and create ways to implement the core practices in effective ways for the Spanish classroom.

The Teacher Trainers could also offer to schedule a class period of the school day in the peer teacher's classroom to observe the teacher as they implement the technology or methodology previously taught by the Teacher Trainer. This alternative method of retraining would give the Teacher Trainer the opportunity to observe their fellow teacher as they implement the methodology or technology and help troubleshoot problems on the spot as they arise. The trainer would also make notes and observations about the application or use of the technology or

methodology in question that can then be discussed and re-evaluated with the teacher. These observations will be complementary to those that are planned as part of the follow-up phase of the training process.

Providing the teachers with follow-up support and the opportunity to be trained one-on-one will give the them more confidence to implement the trainings in a way that they feel will be effective. As it is often challenging to add new and unfamiliar technologies and methodologies into the classroom, teachers may feel anxious, frustrated, and even intimidated when attempting to incorporate them into their practice. Retraining provides the teachers with practical feedback and support that can make the difference between simply attending another training where they hear instruction but where implementation does not occur, or alternately, internalizing the ideas and products they have learned about and applying them in productive ways in the classroom. Of course, in order for this component of the training to succeed, it is imperative that the institution compensate the Teacher Trainer's effort, either financially and/or with reduced teaching responsibilities.

7.3.6 Recognition and Celebration of Staff

The next component of the Teachers as Trainers model is the recognition of those participating in the workshops for their efforts to improve their teaching skills. Teachers need to feel appreciated and connected to their peers and their organization in order to be open to new methodologies and innovation (Hersey et al., 1988). Therefore, it is recommended that the teachers be celebrated and recognized to motivate them and give them a sense of being important members of the institution. Recognition might involve anything from selecting a "Teacher of the Month" to displaying certificates of accomplishment or highlighting a teacher and her accomplishments in the halls or via social media. The recognition chosen to be implemented

could be a very specialized and individualized action or something generic. For example, the Teacher Trainers could recommend a teacher each semester who is effectively using technology or implementing the trainings into the classroom and give special recognition from the staff and the administration through a "Premier Praise Page" created on the school website. A short paragraph would be written and placed on this page describing who the teacher is and the outstanding work they are doing in the classroom and for the students. The teachers could also create a "Star Teacher of the Month" award to be given specifically within the Spanish Department. This award could also be chosen by the Spanish teachers of the department for a teacher who demonstrates a continuous effort to grow professionally and implement new technologies into the classroom. The "Star Teacher" could be celebrated with a visual announcement outside their door, in the classroom, or even as a shirt pin. They could also be given a gift card as an expression of admiration and recognition by their fellow Spanish teachers.

7.3.7 Personnel and Program Evaluations

The final stage of the implementation of the Teachers as Trainers program entails its assessment and that of the participating personnel based on the criteria and rubrics developed by the Core Team. This goal is meant to create accountability and a shared sense of responsibility among all parties involved in this method application process. Additionally, the planned assessment should be designed to ensure the attainment of goals and outcomes not only for teacher training, but also for the development of L2 students' performance. The implementation of this phase will involve the team of core members, as well as the Teacher Trainers, and Technology Advocate/Liaison Team member. Without assessment, it would be difficult to ascertain whether the training has been effective (Thompson & Cooley, 1986). The researcher recommends that the members of the Core Team document the benchmarks met by both the

trainers and teachers and collect evidence throughout all the phases of the program (e.g., observation reports, surveys on trainers, interviews with participating teachers, etc.). This evidence would then be reviewed at the end of the school year to determine which aspects might not have functioned as expected, and to propose changes and new outcomes. In this manner, the program would continue to evolve and adapt to the needs of the department and its staff.

7.4 Recommendations for Technology Needs Post Pandemic

In March of 2020, as part of the consequences of the COVID-19 pandemic lockdown, institutions worldwide closed their doors, which resulted in a shift to a fully remote learning environment for students and teachers. Although most public schools in the US have returned to the classroom in person, researchers (e.g., Almaiah et al., 2020; Bailey & Lee, 2020; Ghazali, 2020; König et al., 2020) have already investigated the consequences and outcomes of this event and have posited the need to make adjustments for what this defining time in history will mean for the education system. The following sections will address the areas of weakness found in this study with further recommendations as they pertain to the current post-pandemic L2 Spanish classroom.

7.4.1 Need #1: Lack of Methodological and Technology Training

One major issue the existing literature (e.g., Bailey & Lee, 2020; Kaspar, 2020, König et al., 2020) on the state of education during the current COVID-19 pandemic has unveiled is the lack of technological training exhibited by teachers worldwide, and its resulting hindering effects. For example, König et al.'s (2020) work focused on Germany and France, and showed that instructors who had competence in the use of technology-based tools fared much better with the pandemic' online teaching challenges than colleagues who had not received training or had been exposed to some training in their formal education, but had not delved into the topics

presented in depth. These data were consistent with Bailey and Lee's (2020) study in South Korea. This work uncovered differences between technology-experienced teachers who had conducted online teaching in the past and inexperienced online teachers during the 2020 COVID shift to online learning. The investigators found that technology-experienced teachers were more adaptable to the challenges presented by online forums (e.g., in terms of creating topics and responding discussion threads), student assessment, and overall communication with the students in their classes.

Hanna et al. (2020) conducted a study that specifically looked at L2 teachers and their attitudes toward computer-assisted language learning (CALL) during the COVID-19 pandemic in the United States. This study's findings mirrored the results reported by Bailey and Lee (2020) and König et al. (2020), as they pointed to the participating teachers' limited knowledge of CALL and the vast discrepancy between training and actual online teaching. These three studies emphasized the central role that technology training plays in today's education, but they also stressed the need for training to be in-depth and hands-on. That is, it is not enough to convey information: Teachers need to *do* to learn.

The data in these recent works are also consistent with the findings in the present study, as they emphasize the weakness existing in the way institutions prepare teachers to incorporate technology into their practice teacher technology training systems. Based on the reported results and what the pandemic has taught us about online education, the researcher offers two recommendations for the Teacher as Trainers model. The first one would be to add online material developers' roles to the program. These instructors would have the responsibility to adapt and organize all pedagogical content for online instruction, which will bring uniformity to the curriculum and also facilitate teachers' work. The second recommendation would be to add

more specific online curriculum-related teacher trainings. These trainings would focus not only on the use of technology, but also on methodology. That is, the trainings would include guidelines for the development of tasks that would allow for active L2 use in online environments, as well as for formative and summative assessment that reflects ACTFL's performance standards and recommendations.

7.5.2 Need #2: Equipment Needs

Educational research on teaching practices during the pandemic also unveiled problems with the technology itself (devices, wi-fi connections, platforms, etc.) that influenced student learning worldwide. For example, Almaiah et al. (2020) found that one of the factors that negatively influenced student learning in Jordanian university was the lack of equipment, Internet connectivity, and poor network infrastructure. The difficulties reported by these investigators were already present in the current study, and they exacerbated during the shift to online learning. The shift from in-person classes to online teaching exposed several deficiencies in the school district's technology department. First, there were not enough devices to service all the students. The school district was some 500 laptops short of providing students with a means for online learning at the high school level alone. Second, there was also a growing awareness of the lack of online programming and access to websites that hindered teachers' ability to create and post online materials for their students. Last, the lack of adequate Internet connection in the junior high and the high school was very evident as the teachers attempted to upload videos, documents, and computer programs to the school computers and onto *Google Classroom* while on campus.

During the 2020-2021 school year, the researcher was required to teach in-person, as well as online. This challenge further highlighted the deficiency in technology equipment and

connectivity and created an even larger gap in the facilitation of L2 learning. The requirement to teach language virtually, as well as in the classroom, has given new urgency to the need for better technology equipment. It has also pushed the school district to upgrade Internet connections and find alternative avenues to boost the wi-fi signals within the schools.

Ying et al. (2021) also conducted a literature review regarding the challenges of English Language Learners (ELL) during the COVID-19 pandemic. This work highlighted the crucial role played by e-learning applications in continuing education, especially those that facilitate virtual meetings, such as *Microsoft Teams*, *Zoom*, and *Skype*. During the pandemic, the researcher was asked by the administration to use several of these video conferencing platforms. However, difficulties arose when the computers/laptops provided by the schools did not have the current software downloaded for many of the applications, or the requirements needed for these applications were not feasible for the laptop provided due the age of the device.

The researcher recommends that these issues, along with those addressed in the needs analysis, be considered a priority simply because the use of technology for online L2 Spanish classroom becomes impossible if the equipment and connections are not available for use or if they malfunction constantly. The technology liaison would be responsible for creating a brief online survey or questionnaire for all the L2 Spanish teachers that would help pinpoint the difficulties and areas of concern experienced during the shift to online teaching. After these data are collected and analyzed, the needs could be prioritized and presented to the administration and the technology department in the hope to find a solution that benefits all parties.

7.5. Conclusion

This chapter presented recommendations for the implementation and application of the Teachers as Trainers model in order to address and aid in the deficiencies found in this study within the institution, the faculty, and the technologies used. The researcher defined the Teachers as Trainers model, outlining the steps and procedures required to implement the program starting with a needs assessment and ending with an assessment of the program implemented by the model. The program could result in a more collaborative work space because it would rely on teams that would partner members of the district and administration with the faculty. The researcher believes that by involving the school's faculty, administration and IT members, the department and district would not only save financially, but would also provide their own teachers with the opportunity to take leadership and ownership of their own learning and professional development. The researcher also believes that peer trainings can enhance communication and support within the Spanish department in each of the participating schools as well promote healthy relationships with the administration and IT members in the district.

Courses were suggested by the researcher for the Teacher Trainers, based on the nature of both the methodological and technological needs found in this study. These trainings would be held throughout the year, with the exception of a *Smart Board* training to be conducted before the school year begins. The researcher's recommendations would address both the methodological and technological teacher weaknesses. Additionally, the model recommended incorporates a form of recognition and compensation for the Teacher Trainers, IT liaison, and the faculty as a whole for their participation and hard work. It is the researchers' belief that this could promote extrinsic motivation and encourage the teachers to step up and learn new technology applications and develop their skills further as well as help their fellow teachers.

The chapter closed the chapter discussing some of the challenges that arose during the COVID-19 pandemic. Based on the results of recent studies on the shift from in-person schooling to on-line instruction brought about by the COVID-19 pandemic, as well as her own personal experiences, the researcher revisited and expanded her teacher training recommendations. It is her hope that the suggestions offered will provide both administrators and instructors with ideas and guidelines to develop and enact more congruent, evidence-based L2 curricula and practices that will not only be applicable to face-to-face instruction, but also to online teaching and assessment.

8. Conclusions

8.1 Section Overview

This section summarizes the previous chapters focusing on the data that were gathered and analyzed, in relation to the research questions posited in this study. The section then discusses the importance of the study and its relevance for today's L2 instruction as it pertains to the use of technology in L2 Spanish classrooms. The researcher also addresses some limitations and areas for future research that this study has prompted as well as new challenges addressing the educational system and L2 learning as a result of the COVID pandemic.

8.2 Summary of Results

The rise of technology in our world has prompted school districts to invest millions of dollars in technology (Ficklen & Muscara, 2001). However, although the use of technology has been encouraged in the Spanish L2 classroom, in this study, the participants' pedagogical applications of technology were found to be very inadequate in terms of current L2 evidence-based practices. The use of technology in this work's classrooms pointed to three main problems with the activity system of which the instructors were part: The lack of L2 methodology and technology training/knowledge, faulty devices and connections, and negative personal experiences and attitudes.

The results of the data analysis showed that the participants employed technology in three main ways: (a) to review/learn new vocabulary or grammatical points in decontextualized, discrete-point tasks; (b) to present information to students; and (c) to introduce or enhance culture lessons. The findings revealed that ACTFL's technology mandates were not adhered to, as technology became a tool for teacher-centered practices instead of L2 active use. These results also pointed out that the participants were unaware of ACTFL's technology guidelines. The

interviews, classroom observations, and debriefings revealed the lack of knowledge the instructors had not only in terms of L2 teaching and learning, but also technology, which clearly emphasized the crucial need for training.

Teachers' use of technology (or lack of) in the classroom was also connected to institutional factors, such as faulty, old, or limited equipment and Internet connectivity. Other problems with the institution included poor administration and technology department support, problems with hardware and software, and a lack of technology training. Additionally, personal factors appeared to have played a role in the instructors' classroom use of technology. These factors included the amount of technology the participants used in their personal lives, and their own positive or negative beliefs about technology. The findings showed that many of the participants used a very limited amount of technology in their personal lives due to their age, or their negative beliefs towards it, which, in some cases, led to a lack of confidence in pedagogical uses of technology. The findings also linked the participants' rejection of technology to traditional views of L2 learning as well as past negative experiences due to a lack of methodological training, and institutional and/or technological support.

To remedy the reported technology-related shortcomings, the researcher introduced the *Teachers as Trainers* model. She provided a blueprint for the establishment of a program that would incorporate a needs assessment and would rely on the collaboration of the administration and faculty to facilitate, organize, and deliver teacher training workshops and provide on-going methodological and technological support. The model recommended by the researcher would also recognize the participants, compensating them for their work and celebrating their efforts. The final recommendations posited considered the new needs brought about by the COVID-19

pandemic, which not only exacerbated the already existing flaws in methodology and technology, but also unveiled new challenges for both teachers and students.

8.3 Implications of This Study

This case study sought to examine the use and application of technology in the Spanish L2 classroom from the perspectives of six high-school teachers. This work's findings confirmed some of the results previously reported. For example, previous studies have shown that teachers' integration of technology into their practices varies depending upon several factors such as personal beliefs (e.g., Bebell, et al., 2004; Burnett, 1999; Kessler, 2007; Ketsman, 2012; Kim, 2008; Papadima-Sophocleous et al., 2014; Safitry et al., 2015; Zyad, 2016); teacher training and methodology/technological knowledge (e.g., Kim, 2008; Thoms, 2011); and available, reliable technology devices and connections (e.g., Celik & Aytin, 2014; Izquierdo et al., 2017; Zapata, 2002). This study contributed to the existing literature investigating areas that had not been studies before, such as technologies for use in Spanish L2 high school classrooms, the pedagogical reasons they are used, and adherence to ACTFL's technology guidelines and recommended evidence-based practices.

The researcher uncovered the ways in which the participating teachers employed technology in L2 Spanish classes and the reasons why they did so by triangulating three types of data: semi-structured interviews, classroom observations, and debriefings, and by applying the Engeström's (1987) Activity Systems Theory to identify how different institutional and personal factors interacted and resulted in the teacher-centered, decontextualized L2 instruction that characterized technology use in the study's classes. Using this unique approach, the study was able to trace the factors that can affect the use of technology in L2 classes. The findings resulting from the data analysis of her data and the construction of the teachers' activity system allowed

the researcher to recommend a program to address methodological and technology needs. It is her hope that both the data and program will aid the institutions of focus, as well as others, to offer L2 instructors the support they need to embrace and incorporate technology as recommended and expected in current L2 teaching and learning.

8.4 Study Limitations and Suggestions for Future Research

8.4.1. Limitations of the study

Even though this case study provided a deeper understanding of the technologies being used in high school classes and the factors that might hinder/limit instructors' employment of technology for the enactment of evidence-based, current L2 practices, this work had limitations. For example, the investigation was based on a limited number of participants and focused on two specific schools in Texas. This implies that the results might not apply to other educational setting both in this country and abroad. Additionally, the data collection was completed before the COVID-19 pandemic, and, therefore, the researcher was not able to explore any changes that might have taken place in the instructors' use of technology and/or attitudes towards technology as a result of the pandemic.

The researcher's position as a staff member of the same district could also be considered by some. The researcher did everything possible to maintain a non-bias outlook and interpretation to the study and she stuck to the outcome of the data and data analysis to prevent any potential bias, however, human error is always a possibility.

8.4.2. Suggestions for further research

This study focused on the implementation of technology in the L2 Spanish classroom as it relates to what types of technology are employed and how they are incorporated into teachers' practice. The researcher suggests that future research should extend to other important aspects of

instructors' practices such as the development of lesson plans and instructional interventions, focusing on the processes that lead teachers to choose certain technologies over others and the role that their students' needs might (or might not) play in their decisions. For example, for these types of studies, think-aloud protocols (Leow & Morgan-Short, 2004; Yoshida, 2008) could be used while the teachers are planning their technology-based lessons and/or pedagogical interventions.

Future work should also seek to include research with virtual L2 teachers. With the continued uncertainty that our world and education now face, the sudden need for virtual learning and teachers who can provide this type of teaching and facilitate this style of learning is becoming more essential for public and private institutions (Barr et al., 2020; Burgess & Sievertsen, 2020). More current studies (e.g., Moser et al., 2021; Petrie, 2020; Pokhrel & Chetri, 2021) found that the rapid move in the Spring of 2020 from in-person teaching to online instruction highlighted certain areas of weakness within the educational system. Of concern was the lack of teacher technology knowledge regarding their curriculum as well as a lack of understanding in the implementation of certain common technology applications and uses for classroom teaching and assessment. More work in this area is evidently needed, particularly in connection with teacher cognition and its relationship with the enactment of pedagogical moves. The differences and similarities between on-site and virtual L2 teachers in terms of existing methodological knowledge and the planning and enactment of technology-supported instruction may bring a new wave of research to the current L2 field (Brady 2021; Liguori & Winkler, 2020).

Additionally, future studies could investigate the implementation of the *Teachers as Trainers* training model proposed by the researcher in this study. The study would involve the

examination of the program from the planning phase to the training phase and all the way through to its assessment. Sources of data could include semi-structured interviews; think-aloud protocols; observations and debriefing; student surveys; and the analysis of artifacts such as meeting notes, lesson plans, and learners' work. This type of study would provide the L2 teaching field with data on the effectiveness of the proposed model, which could benefit institutions in other educational settings.

References

American Council on the Teaching of Foreign Languages & Partnership for the 21st Century (2011). *21st century skills map*. Partnership for 21st Century Skills. https://www.actfl.org/sites/default/files/resources/21st%20Century%20Skills%20Map-World%20Languages.pdf

Adair-Hauck, B., Gilsan, E. W., & Troyan, F. J. (2013). *Implementing integrated performance assessment.* American Council on the Teaching of Foreign Languages. https://eric.ed.gov/?id=ED585795

Alenezi, A. (2017). Obstacles for teachers to integrate technology with instruction. *Education and Information Technologies*, *22*, 1797–1816. https://link.springer.com/article/10.1007/s10639-016-9518-5

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and Information Technologies*, *25*, 5261–5280. https://link.springer.com/article/10.1007/s10639-020-10219-y

Azorín, C. (2020). Beyond COVID-19 supernova. Is another education coming? *Journal of Professional Capital and Community*, *5*(3/4), 381–390. https://doi.org/10.1108/JPCC-05-2020-0019

Bailey, D. R., & Lee, A. R. (2020). Learning from experience in the midst of covid-19: Benefits, challenges, and strategies in online teaching. *Computer-Assisted Language Learning Electronic Journal*, *21*(2), 176–196. http://callej.org/journal/21-2/Bailey-Lee2020.pdf

Ball, D. L., & Forzani, F. M. (2009). The work of teaching and the challenge for teacher education. *Journal of Teacher Education, 60*(5), 497–511. https://journals.sagepub.com/doi/10.1177/0022487109348479

Barr, M., Nabir, S. W., & Somerville, D. (2020). Online delivery of intensive software engineering education during the COVID-19 pandemic. In M. Daun, E. Hochmüller, S. Krusche, B. Brügge, & B. Tenbergen (Eds.), *2020 IEEE 32nd Conference on Software Engineering Education and Training (CSEE&T)* (pp. 1–6). IEEE. https://doi.org/10.1109/CSEET49119.2020.9206196

Bebell, D., Russell, M., & O'Dwyer, L. (2004). Measuring teachers' technology uses: Why multiple-measures are more revealing. *Journal of Research on Technology in Education*, *37*(1), 45–63. https://doi.org/10.1080/15391523.2004.10782425

Bicen, H., & Kocakoyun, S. (2018). Perceptions of students for gamification approach: Kahoot as a case study. *International Journal of Emerging Technologies in Learning*, *13*(2), 72–93. https://doi.org/10.3991/ijet.v13i02.7467

Birch, B. M. (2014). *English grammar pedagogy: A global perspective*. Routledge. https://doi.org/10.4324/9780203838747

Blin, F., & Munro, M. (2008). Why hasn't technology disrupted academics' teaching practices? Understanding resistance to change through the lens of activity theory. *Computers & Education, 50*(2), 475–490. https://doi.org/10.1016/j.compedu.2007.09.017

Brady, J. (2021). Transformative pedagogy for Spanish and Portuguese in 2021 (and in the years to come). *Hispania*, *104*(1), 1–2. https://doi.org/10.1353/hpn.2021.0000

Brown, H. (2014). Teachers' attitudes and confidence in technology integration (Publication No. 893). *Theses, Dissertations and Capstones*. https://mds.marshall.edu/cgi/viewcontent.cgi?article=1898&context=etd

Brown, H. D. (2014). *Principles of language learning and teaching* (6th ed.). Pearson Education.

Burgess, S., & Sievertsen, H. H. (2020). Schools, skills, and learning: The impact of COVID-19 on education. *VoxEu.org*, *1*(2). https://voxeu.org/article/impact-covid-19-education

Burnett, J. (1999). Classroom-management-classroom survival: One teacher's story of constructing practice in a computer-equipped foreign language classroom. *Foreign Language Annals, 32(3),* 279–294. https://doi.org/10.1111/j.1944-9720.1999.tb01341.x

Celik, S., & Aytin, K. (2014). Teachers' views on digital educational tools in English language learning: Benefits and challenges in the Turkish context. *The Electronic Journal for English as a Second Language, 18(2).* https://files.eric.ed.gov/fulltext/EJ1045127.pdf

Cheung, R., & Vogel, D. (2012). Activity theory as a design framework for collaborative learning using Google applications technology. In D. K. W. Chiu, M. Wang, E. Popescu, Q. Li, & R. Lau (Eds.), *New Horizons in Web Based Learning. ICWL 2012. Lecture Notes in Computer Science*, 7697. Springer. https://doi.org/10.1007/978-3-662-43454-3_15

Chun, D., Kern, R., & Smith, B. (2016). Technology in language use, language teaching, and language learning. *Supplement: Celebrating 100 Years of the The Modern Language Journal, 100*(S1)*,* 64–80. https://doi.org/10.1111/modl.12302

Clark, W., & Luckin, R. (2013). *iPads in the classroom. What the Research Says.* https://digitalteachingandlearning.files.wordpress.com/2013/03/ipads-in-the-classroom-report-lkl.pdf

Cooley, V. E. (2001). Implementing technology using the teachers as trainers staff development model. *Journal of Technology and Teacher Education*, *9*(2), 269–284. https://www.learntechlib.org/primary/p/8432/

Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Sage.

Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches* (3rd ed.). Sage. http://www.ceil-conicet.gov.ar/wp-content/uploads/2018/04/CRESWELLQualitative-Inquary-and-Research-Design-Creswell.pdf

Cuban, L. (2009). *Oversold and underused: Computers in the classroom*. Harvard University Press.

Davies, M. (2011). *Study skills for international postgraduate students*. Palgrave MacMillan.

De la Fuente, M. (2014). Learners' attention to input during focus on form listening tasks: The role of mobile technology in the second language classroom. *Computer Assisted Language Learning, 27*(3), 261–276. https://doi.org/10.1080/09588221.2012.733710

Dennen, V., & Hao, S. (2014). Intentionally mobile pedagogy: The M-COPE framework for mobile learning in higher education. *Technology, Pedagogy and Education, 23*(3), 397–419. https://doi.org/10.1080/1475939X.2014.943278

Dodigovic, M. (2013). Vocabulary learning with electronic flashcards: Teacher design vs. student design. *Voices in Asia Journal, 1*(1), 15–33. https://www.researchgate.net/profile/Marina-Dodigovic/publication/260175727_Vocabulary_Learning_with_Electronic_Flashcards_T

eacher_Design_vs_Student_Design/links/0deec52fe2e6209c9a000000/Vocabulary-Learning-with-Electronic-Flashcards-Teacher-Design-vs-Stu

Doerr, J. (2013). Smart phones for smart kids. *Wall Street Journal, 11,* 217–218. https://www.wsj.com/articles/john-doerr-smart-phones-for-smart-kids-1408664277

Dogan, A., & Akbarov, A. (2016). Teachers' attitudes toward the usage of mobile devices in EFL classrooms. *European Journal of Educational Research, 5*(1)*,* 11–17. https://doi.org/10.12973/eu-jer.5.1.11

Dreyer, J. (2014). The effect of computer-based self-access learning on weekly vocabulary test scores. *Studies in Self-Access Learning Journal, 5(3),* 217–234. https://sisaljournal.org/archives/sep14/dreyer/

Engeström, Y. (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Cambridge University Press.

Engeström, Y. (1999). Activity theory and individual and social transformation. In Y. Engestrõm, R. Miettinen, & R.-L. Punamäki-Gitai (Eds.), *Perspectives on activity theory: Learning in doing: Social, cognitive, and computational perspectives* (pp. 19–38). Cambridge University Press.

Ertmer, P. (2017). Baby steps: Scaffolding teachers' uses of innovative learning pedagogies. *Society for Information Technology & Teacher Education International Conference* (pp. 1-10). Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/177829/

Ficklen, E., & Muscara, C. (2001). Harnessing technology in the classroom. *American Educator*, *25*(3), 22–29. https://www.aft.org/periodical/american-educator/fall-2001/harnessing-technology-classroom

Francom, G. M. (2020). Barriers to technology integration: A time-series survey study. *Journal of Research on Technology in Education*, *52*(1), 1–16. https://doi.org/10.1080/15391523.2019.1679055

Garrett, N. (2009). Computer-assisted language learning trends and issues revisited: Integrating innovation. *The Modern Language Journal, 23*(s1)*,* 719–740. https://doi.org/10.1111/j.1540-4781.2009.00969.x

Garst, B. A., & McCawley, P. F. (2015). Solving problems, ensuring relevance, and facilitating change: The evolution of needs assessment within Cooperative Extension. *Journal of Human Sciences and Extension*, *3*(2). https://www.jhseonline.com/article/view/684

Gedera, D. S., & Williams, P. J. (2015). *Activity theory in education: Research and practice*. Springer. http://dx.doi.org/10.1007/978-94-6300-387-2

Gil-Flores, J., Rodríguez-Santero, J., & Torres-Gordillo, J.-J. (2017). Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure. *Computers in Human Behavior*, *68*, 441–449. https://doi.org/10.1016/j.chb.2016.1t1.057

Gilakjani, A. P. (2013). Factors contributing to teacher's use of computer technology in the classroom. *Universal Journal of Educational Research*, *1*(3), 262–267. https://doi.org/10.13189/ujer.2013.010317

Glisan, E. W. (2012). National standards: Research into practice. *Language Teaching, 45*(4), 515–526. https://doi.org/10.1017/S0261444812000249

Glisan, E. W., & Donato, R. (2016). *Enacting the work of language instruction: High-leverage teaching practices* (Vol. 1). American Council on the Teaching of Foreign Languages.

Glisan, E. W., & Donato, R. (2021). *Enacting the work of language instruction: High-leverage teaching practices* (Vol. 2). American Council on the Teaching of Foreign Languages.

Grinstead, J., De la Mora, J., Pratt, A., & Flores, B. (2007). Verbal tense and agreement in child Spanish-speakers with specific language impairment. *WECOL, 2007,* 56–67. https://www.csufresno.edu/artshum/linguistics/documents/WECOL%202007%20VOLUME%2018.pdf#page=60

Guichon, N., & Hauck, M. (2011). Editorial: Teacher education research in CALL and CMC: More in demand than ever. *ReCALL, 23*(3), 187–199. https://doi.org/10.1017/S0958344011000139

Guion, L. A. (2002). *Triangulation: Establishing the validity of qualitative studies*. University of Florida Extension: Institute of Food and Agricultural Sciences, Gainsville. https://doi.org/10.32473/edis-fy394-2002

Handler, M. (2011). An evaluation of the effectiveness of smart board technology by evaluating the students' ability of completing their work with focus on students with disabilities (Publication No. 374) [Doctoral dissertation, Rowan University]. *Theses and Dissertations*. https://rdw.rowan.edu/etd/374

Hanna, L., Barr, D., Hou, H., & McGill, S. (2020). *An investigation of modern foreign language (MFL) teachers and their cognitions of computer assisted language learning (CALL) amid the COVID-19 health pandemic.* arXiv:2010.13901v1

Hannes, K., Booth, A., Harris, J., & Noyes, J. (2013). Celebrating methodological challenges and changes: Reflecting on the emergence and importance of the role of qualitative evidence in Cochrane reviews. *Systematic Reviews, 2*(84). https://doi.org/10.1186/2046-4053-2-84

Hasan, H., & Kazlauskas, A. (2014). Activity Theory: Who is doing what, why and how. In H. Hasan (Ed.), *Being practical with theory: A window into business research* (pp. 9–14). THEORI Research Group, Wollongong University. http://eurekaconnection.files.wordpress.com/2014/02/p-09-14-activity-theory-theori-ebook-2014.pdf

Hatch, J. A. (2002). *Doing qualitative research in education settings*. State University of New York Press.

Hersey, P., Blanchard, K. H., & Johnson, D. E. (1988). *Management of organizational behavior* (5th ed.). 169–201. Prentice Hall.

Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 teaching and learning: Current knowledge gaps and recommendations for future research. *Educational Technology Research and Development*, *55*, 223–252. https://doi.org/10.1007/s11423-006-9022-5

Inan, F. A., & Lowther, D. L. (2010). Factors affecting technology integration in K-12 classrooms: A path model. *Educational Technology Research and Development, 58*, 137–154. https://doi.org/10.1007/s11423-009-9132-y

Izquierdo, J., de-la-Cruz-Villegas, V., Aquino-Zúñiga, S., Sandoval-Caraveo, M., & García-Martínez, V. (2017). La enseñanza de lenguas extranjeras y el empleo de las TIC en las escuelas secundarias públicas. *Comunicar*, *50*, 33–41. https://doi.org/10.3916/C50-2017-03

Jager, S., Bradley, L., Meima, E. J., & Thouësny, S. (Eds.). (2014, December). *CALL design: Principles and practice-proceedings of the 2014 EUROCALL Conference.* Research-publishing.net. https://doi.org/10.14705/rpnet.2014.9781908416209

Jacobson, M. J., So, H. J., Teo, T., Lee, J., Pathak, S., Lossman, H. (2010). Epistemology and learning: Impact on pedagogical practices and technology use in Singapore schools. *Computers and Education*, *55*(4), 1694–1706. https://doi.org/10.1016/j.compedu.2010.07.014

Kaspar, K. (2020). Motivations for social distancing and app use as complementary measures to combat the COVID-19 pandemic: Quantitative survey study. *Journal of Medical Internet Research*, *22*(8), e21613. https://doi.ogr/ 10.2196/21613

Karasavvidis, I. (2009). Activity Theory as a theoretical framework for the study of blended learning: A case study. *Proceedings of the 6th International Conference on Networked Learning* (pp. 195–202). http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.570.8318&rep=rep1&type=pdf

Kessler, G. (2007). Formal and informal CALL preparation and teacher attitude toward technology. *Computer Assisted Language Learning, 20*(2), 173–188. https://doi.org/10.1080/09588220701331394

Kessler, G. (2018). Technology and the future of language teaching. *Foreign Language Annals*, *51*(1), 205–218. https://doi.org/10.1111/flan.12318 d

Kessler, G., & Hubbard, P. (2017). Language teacher education and technology. In C. A. Chapelle & S. Sauro (Eds.), *The handbook of technology and second language teaching and learning* (pp. 278–292). Wiley. https://doi.org/10.1002/9781118914069.ch19

Ketsman, O. (2012). *Technology-enhanced multimedia instruction in foreign language classrooms: A mixed methods study.* [Unpublished doctoral dissertation]. University of Nebraska-Lincoln.

Kim, H. K. (2008). Beyond motivation: ESL/EFL teachers' perceptions of the role of computers. *CALICO Journal, 25*(2), 241–259. http://www.jstor.org/stable/calicojournal.25.2.241

Kitade, K. (2015). Second language teacher development through CALL practice: The emergence of teachers' agency. *Calico Journal, 32(3),* 396–425. https://www.jstor.org/stable/calicojournal.32.3.396

König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: Teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education*, *43*(4), 608–622. https://doi.org/10.1080/02619768.2020.1809650

Kramsch, C., A'Ness, F., & Lam, W. S. E. (2000). Authenticity and authorship in the computer-mediated acquisition of L2 literacy. *Language Learning and Technology*, *4*(2), 72–95. http://dx.doi.org/10125/25101

Leont'ev, A. A. (1981). *Psychology and the language learning process*. Pergamon.

Leow, R. P., Morgan-Short, K. (2004). To think aloud or not to think aloud: The issue of reactivity in SLA research methodology. Studies in Second Language Acquisition, *26*(1), 35-57. https://doi.org/10.1017/S0272263104026129

Li, L., Worch, E., Zhou, Y., & Aguiton, R. (2015). How and why digital generation teachers use technology in the classroom: An explanatory sequential mixed methods study. *International Journal for the Scholarship of Teaching and Learning*, *9*(2). https://doi.org/10.20429/ijsotl.2015.090209

Li, Y., Garza, V., Keicher, A., & Popov, V. (2019). Predicting high school teacher use of technology: Pedagogical beliefs, technological beliefs and attitudes, and teacher training.

Technology, Knowledge and Learning, *24*, 501–518. https://doi.org/10.1007/s10758-018-9355-2

Liguori, E., & Winkler, C. (2020). From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. *Entrepreneurship Education and Pedagogy*, *3*(4), 346–351. https://doi.org/10.1177/2515127420916738

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.

Miles, M. B., Huberman, M., & Saldaña, J. (2013*). Qualitative data analysis*: *A methods sourcebook* (3rd ed.). Sage.

Min, K., & Siegel, C. (2011). Integration of SMART board technology and effective teaching. *Imanager's Journal on School Educational Technology, 7*(1), 38–47. https://digitalcommons.fairfield.edu/education-facultypubs/54

Miranda, H., & Russell, M. (2011). Understanding factors associated with teacher-directed student use of technology in elementary classrooms: A structural equation modeling approach. *British Journal of Educational Technology*, *43*(4), 652–666. https://doi.org/10.1111/j.1467-8535.2011.01228.x

Moser, K. M., Wei, T., & Brenner, D. (2021). Remote teaching during COVID-19: Implications from a national survey of language educators. *System*, *97*, 102431. https://doi.org/10.1016/j.system.2020.102431

Mouton, J. (2001). *How to succeed in your Master's and Doctoral Studies: A South African guide and resource book*. Van Schaick Publishers.

Mueller, J., Wood, E., Willoughby, T., Ross, C., & Specht, J. (2008). Identifying discriminating variables between teachers who fully integrate computers and teachers with limited

integration. *Computers & Education*, *51*(4), 1523–1537. https://doi.org/10.1016/j.compedu.2008.02.003

Nagel, D. (2019, May 8). How teachers use technology in the classroom. *THE Journal.* https://thejournal.com/articles/2019/05/08/how-teachers-use-technology-in-the-classroom.aspx

Nikopour, J., & Kazemi, A. (2014). Vocabulary learning through digitized and non-digitized flashcards delivery. *Procedia: Social and Behavioral Sciences, 98,* 1366–1373. https://doi.org/10.1016/j.sbspro.2014.03.554

O'Dwyer, L. M., Russell, M., & Bebell, D. (2005). Identifying teacher, school, and district characteristics associated with middle and high school teachers' use of technology: A multilevel perspective. *Journal of Educational Computing Research*, *33*(4), 369–393. https://doi.org/10.2190/4BVW-5NDJ-L2G3-EAND

Oberg, A., & Daniels, P. (2013). Analysis of the effect a student-centered mobile learning instructional method has on language acquisition. *Computer Assisted Language Learning, 26*(2), 177–196. https://doi.org/10.1080/09588221.2011.649484

Papadima-Sophocleous, S., Giannikas, C., & Kakoulli-Constantinou, E. (2014). ICT in EFL: The global effect of new technologies in the language classroom. In S. Jagar, L. Bradley, E. J. Meima, & S. Thouesny (Eds.), *CALL Design: Principles and practice, Proceedings of the 2014 EUROCALL Conference* (pp. 296–300). Research-publishing.net.

Petko, D., Prasse, D., & Cantieni, A. (2018). The interplay of school readiness and teacher readiness for educational technology integration: A structural equation model. *Computers in the Schools*, *35*(1), 1–18. https://doi.org/10.1080/07380569.2018.1428007

Petrie, C. (2020). Current opportunities and challenges on COVID-19 in education. *Spotlight: Quality education for all during COVID-19 crisis*, 14–15. Hundred Research Report #011. https://cdn.hundred.org/uploads/report/file/15/hundred_spotlight_covid-19_digital.pdf

Plante, E., Patterson, D., Gómez, R., Almryde, K. R., White, M. G., & Asbjørnsen, A. E. (2015). The nature of the language input affects brain activation during learning from a natural language. *Journal of Neurolinguistics*, *36*, 17–34. https://doi.org/10.1016/j.jneuroling.2015.04.005

Pokhrel, S., & Chhetri, R. (2021). A literature review on impact of COVID-19 pandemic on teaching and learning. *Higher Education for the Future*, *8*(1), 133–141. https://doi.org/10.1177/2347631120983481

Pufahl, I., & Rhodes, N. (2011). Foreign language instruction in U.S. schools: Results of a national survey of elementary and secondary schools. *Foreign Language Annals, 44*(2), 258–288. https://doi.org/10.1111/j.1944-9720.2011.01130.x

Purcell, K., Heaps, A., Buchanan, J., & Friedrich, L. (2013). *How teachers are using technology at home and in their classrooms*. Pew Research Center's Internet and American Life Project. https://www.pewresearch.org/internet/wp-content/uploads/sites/9/media/Files/Reports/2013/PIP_TeachersandTechnologywithmethodology_PDF.pdf

Redd, J. (2011). *Supporting vocabulary growth of high school students: An analysis of the potential of a mobile learning device and gaming app* [Unpublished doctoral dissertation]. Iowa State University. https://dr.lib.iastate.edu/handle/20.500.12876/26280

Rosch, D. M., & Anthony, M. D. (2012). Leadership pedagogy: Putting theory to practice. *New Directions for Student Services, 2012*(140), 37–51. https://doi.org/10.1002/ss.20030

Safitry, T., Mantoro, T., Ayu, M., Mayumi, I., Dewanti, R., & Azmeela, S. (2015). Teachers' perspectives and practices in applying technology to enhance learning in the classroom. *International Journal of Emerging Technologies in Learning (iJET), 10*(3), 10–14. https://dx.doi.org/10.3991/ijet.v10i3.4356

Saldaña, J. (2011). *Fundamentals of qualitative research.* Oxford University Press.

Schmitt, C. (2018). *Así se dice*. McGraw Hill/Glencoe.

Sobri, K. M., Hanum, F., Zulnaidi, H., Ahmad, A. R., & Alfitri (2019). A comparative study of school environment for students' skills development in Malaysia and Indonesia. *Kasetsart Journal of Social Sciences*, *40*(1), 149–154. https://so04.tci-thaijo.org/index.php/kjss/article/view/239829

Soussi, K. (2016). An exploration of teachers' and learners' perceptions and use of ICT in EFL classrooms: The case of Moroccan high schools. *Arab World English Journal (AWE) Special Issue on CALL, 3.* http://dx.doi.org/10.2139/ssrn.2822967

Steed, A. (2013). Technology in the classroom. *Teaching Business & Economics,17*(3), 7–9. https://ebea.org.uk/wp-content/uploads/2017/05/V17-N3-Autumn-2013.pdf

Talmo, T., Einum, E., & Støckert, R. (2013). Bring your own device to language class - Applying handheld devices in classroom learning. In S. Jagar, L. Bradley, E. J. Meima, & S. Thouesny (Eds.), *CALL design: Principles and practice, proceedings of the 2014 EUROCALL Conference, Groningen, The Netherlands* (pp. 352–357). Research-Publishing.net. https://doi.org/10.14705/rpnet.2014.000244

Thompson, J. C., & Cooley, V. E. (1986). A national study of outstanding staff development programs. *Educational Horizons*, *64*(2), 94–98. https://www.jstor.org/stable/42925882

Thoms, J. (2011). Investigating foreign language graduate student instructors' perceptions and use of technology in the classroom. In H. Allen & H. Maxim (Eds.), *AAUSC issues in language program direction 2011: Educating the future foreign language professoriate for the 21st century* (pp. 192–211). Heinle. https://scholarspace.manoa.hawaii.edu/bitstream/10125/69703/2011_10.pdf

Tondeur, J., Van Braak, J., Ertmer, P. A., & Ottenbreit-Leftwich, A. (2017). Understanding the relationship between teachers' pedagogical beliefs and technology use in education: A systematic review of qualitative evidence. *Educational Technology Research and Development*, *65*, 555–575. https://doi.org/10.1007/s11423-016-9481-2

Van Praag, B., & Santiago Sánchez, H. (2015). Mobile technology in second language classrooms: Insights into its uses, pedagogical implications and teach beliefs. *ReCALL*, *27*(3), 288–303. https://doi.org/10.1017/S0958344015000075

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Harvard University Press.

Walhof, L. (2016). *Using apps, mobile technology and other effective technology tools to enhance student learning in your world language classroom.* Bureau of Education & Research.

Wang, F., & Reeves, T. C. (2003). Why do teachers need to use technology in their classrooms? Issues, problems, and solutions. *Computers in the Schools, 4*(20), 49–65. https://doi.org/10.1300/J025v20n04_05

Yin, R. K. (2009). *Case-study research: Design methods* (4th ed.). Sage.

Ying, Y. H., Siang, W. E. W., & Mohamad, M. (2021). The challenges of learning English skills and the integration of social media and video conferencing tools to help ESL learners coping with the challenges during COVID-19 pandemic: A literature review. *Creative Education*, *12*(7), 1503–1516. https://doi.org/10.4236/ce.2021.127115

Yoshida, M. (2008). Think-aloud protocols and type of reading task: The issue of reactivity in L2 reading research. In M. Bowles, R. Foote, S. Perpiñán, & R. Bhatt (Eds.), *Selected Proceedings of the 2007 Second Language Research Forum*, (pp. 199-209). Cascadilla Proceedings Project.

Zapata, G. C. (2002). *Teaching assistants' perceptions and use of instructional technology in L2 Spanish classrooms* [Unpublished doctoral dissertation]. The Pennsylvania State University.

Zhao, Y. (2003). Recent developments in technology and language learning: A literature review and meta-analysis. *CALICO Journal, 21*(1), 727. http://www.jstor.org/stable/24149478

Zyad, H. (2016). Integrating computers in the classroom: Barriers and teachers' attitudes. *International Journal of Instruction, 9*(1), 65–78. https://doi.org/10.12973/iji.2016.916a

Appendix A

Initial Interview Questions

1. Tell me about your educational background.

2. How long you have been teaching? Tell me about your teaching experience.

3. How would you describe your technology abilities?

4. How often do you use technology in your personal life? How do you use it?

5. What training do you have in the area of technology in the Spanish classroom?

6. How often do you use technology in the classroom and for what purpose?

7. What advantages and disadvantages do you feel technology has in the classroom?

8. How supportive do you feel your school administration is in the area of technology in the classroom?

9. What are your personal feelings or beliefs about technology in the classroom? How effective is it?

Appendix B

Sample Observation Protocol

Name of Participant	Location	Date/Time

Classroom set-up:

Classroom atmosphere

Teacher mood/student moods/interactions:

Lesson/ objective:

Lesson steps and procedures (material covered):

Technology used:

Student engagement:

Assessments given:

Notes/Other observations:

Appendix C

Sample Observation Debriefing

Participant: #1	Date: 11/2/2018 Debriefing #:1

1) How often do you use Kahoot in your classroom?
   -3 to 4 times a week depending on the unit…vocabulary uses more, but grammar uses less frequently.

2) Do you feel that Kahoot is effective? How? In what ways do you feel it helps the students?
   -Yes, It's effective.
   -The repetitive nature helps with retention. It's fun and engages most students. You have your stragglers. They have to think fast, and it engages their competitive spirit as well.

3) I noticed some of the students were not participating, what do you do about that? How do you try and engage them?
   -It's hard to get 100%. Mostly encourage. Sometimes she makes it a grade. Some students are not going to participate regardless. Sometimes issues with connectivity with their phones and issues with their device prevents them from participating. They can team up with another student but they don't usually do that.

4) What is your objective when using Kahoot?
   -Vocabulary recognition. This app helps them recognize the vocabulary and then they can use it in sentences. I have noticed that when they recognize more words in the text they have better comprehension. It gives them a variety, instead of always doing worksheets, and it's a visual and fun way to do it. They prefer it I know.

5) What other types of technology apps do you use in class?
   -I use Quizlet Live too. It's very similar, but it's quicker and then you have to have them switch teams around. But it also is similar and is what I like to use for vocabulary learning.

6) What differences do you see using the technology versus a more traditional approach such as worksheets?
   - They definitely enjoy it more. The students are more engaged. But you're also stuck to the format of the technology. You can't do certain formats and questions and fill in the blanks with Kahoot like you could with a worksheet. You can do more extensive written work with a worksheet.

7) How did you learn about Kahoot? Were you trained on it? What methodologies does if follow?
-I learned about it from _____(co-worker). She uses it and swears by it. She showed me how to use it once and then I saw how easy it was so I just used it. The kids loved it, so I just keep using it. It helps. I've noticed that it helps them.
-I think it follows a more whole language approach because the vocabulary are in context, so the students have to read the entire text to choose the correct answer. This uses a more wholistic and communicative approach to vocabulary learning.

Appendix D

Final Interview Questions

1. How often do you use _____(insert technology observed) in the classroom?

2. What is your purpose or goal when you implement these technologies?

3. How effective do you feel these technologies are?

4. When you plan to use technology, what methodologies do you use? What strategies do you feel make sense when implementing technology?

5. How do you feel the technologies you use align with the ACTFL Technology Standards?

6. Do you enjoy using technology?

7. How do you feel that your professional development training prepared you to implement technology in the L2 Classroom?

8. In the future, what goals or desires for the use of technology would you like to achieve?

Appendix E

Informed Consent

Consent to Participate in a Research Study

Texas A&M University-College Station, TX

Title of Study: Instructional, Social and Institutional Factors Affecting Teachers' Application of Technology in the L2 Spanish Secondary Classrooms.

Investigator: Rachel Allen, Department of Hispanic Studies, Texas A&M University

Introduction

You are invited to participate in a research study on the use of technology in the L2 secondary Spanish classroom. You were selected as a possible participant because you are a teacher in a secondary Spanish classroom at Montgomery High School, and have experience with the use of technology in the Spanish classroom. Please read the information in this form and ask any questions that you may have before agreeing to be in the study.

Purpose of Study

The purpose of the study is to obtain a comprehensive view of L2 teachers' use of varying types of technologies in high school L2 Spanish classes through the investigation of the specific ways in which instructors implement technology, the beliefs that shape their practice, and the institutional factors that can facilitate or hinder their and their students' experience. The study will more specifically address the personal, methodological, and institutional reasons that guide their choice and use of technology, and the extent to which participants consider their experience successful. The data collected in the study will be part of the researcher's dissertation work. Your participation in the study will be **anonymous**, and **will not affect in any way** your employment situation.

Description of the Study Procedures

If you agree to be in this study, you will be asked to do the following things:

1. Be a participant in two interviews, one at the beginning of the research and one at the end.
2. Allow the researcher to observe four classes where you will be using technology.
3. Provide a copy of the lesson plans for each class observed.
4. Meet with the researcher after observations for debriefings about what she saw or observed in your practice.

Risks/Discomforts of Being in this Study

Although the researcher will do her best to be invisible during observations, certain distractions may result in changes in your students' behavior due to the researcher's presence in the classroom.

This study involves minimal risk; that is, no risks to your physical or mental health beyond those encountered in the normal course of everyday life. For questions about your rights as a research participant, to provide input regarding research, or if you have questions, complaints, or concerns about the research, you may call the Texas A&M University Human Research Protection Program (HRPP) by phone at 1-979-458-4067, toll free at 1-855-795-8636, or by email at irb@tamu.edu. The informed consent form and all study materials should include the IRB number, approval date, and expiration date. Please contact the HRPP if they do not.

Benefits of Being in the Study

The benefits of participation are the ability to be introspective about your teaching practice, leading to a deeper understanding of the methodology you employ in your classroom.

Confidentiality

Any information that is obtained in connection with this study that can reveal your identity will remain confidential to the extent permitted or required by law. People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as Texas A&M University Human Research Protection Program may access your records to make sure the study is run correctly and that information is collected properly. All data you will provide as part of this study will be destroyed once they have been analyzed. Previous to its destruction, they will be stored in locked filing cabinets and encrypted computer folders in the main researcher's office and computer. This consent form will be filed securely in the same official area. The recordings of your oral interviews and debriefings will also be destroyed once the data have been analyzed. Previous to their destruction, they will be stored in computer files protected with a password.

Right to Refuse or Withdraw Participation

The decision to participate in this study is entirely up to you. You may refuse to take part in the study *at any time* without affecting your relationship with the investigators of this study or Texas A&M University. You have the right not to answer any single question, as well as to withdraw completely from any part of the study at any point during the process; additionally, you have the right to request that the interviewer not use any of your interview material.

Right to Ask Questions and Report Concerns

You have the right to ask questions about this research study and to have those questions answered by the researcher before, during, or after the study. If you have any further questions about the study, at any time feel free to contact me, Rachel Allen at Rachel.allen@misd.org or by telephone at 936-689-9820. If you like, a summary of the results of the study will be sent to you.

Consent

Your signature below indicates that you have decided to volunteer as a research participant for this study, and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep, along with any other printed materials deemed necessary by the study investigator.

Contact Information

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at: Rachel.allen@misd.org / 936-689-9820.

This research has been reviewed and approved by the Texas A&M Institutional Review Board (IRB). You may talk to them at 979-458-4067, or toll free at 1-855-795-8636, or by e-mail at irb@tamu.edu.

Participant's Signature: _____ Date: _____

Investigator's Signature: _____ Date: _____