THE EFFECTS OF VIDEO CONFERENCING AS AN INSTRUCTIONAL TOOL IN THE
HIGH SCHOOL SPANISH II CLASSROOM

A Dissertation
Presented to
The Faculty of the Education Department
Carson-Newman University

In Partial Fulfillment
Of the
Requirements for the Degree
Doctor of Education
By
Bryan Alan Upshaw

April 2019
Dissertation Approval

Student Name: Bryan A. Upshaw

Dissertation Title:

THE EFFECTS OF VIDEO CONFERENCING AS AN INSTRUCTIONAL TOOL IN THE HIGH SCHOOL SPANISH II CLASSROOM

This dissertation has been approved and accepted by the faculty of the Education Department, Carson-Newman University, in partial fulfillment of the requirements for the degree, Doctor of Education.

Dissertation Committee:

Signatures: (Print and Sign)

Mark Gonzales, Ed.D.
Dissertation Chair

P. Mark Taylor, Ph.D.
Methodologist Member

Cole Wise, Ed.D.
Content Member

Approved by the Dissertation Committee Date: 4/11/2019
I hereby grant permission to the Education Department, Carson-Newman University, to reproduce this research in part or in full for professional purposes, with the understanding that in no case will it be for financial profit to any person or institution.

Bryan A Upshaw
April 18, 2019
Abstract

Understand foreign language and other cultures is increasingly important in today’s globalized world. Educators in the United States need to find ways to increase foreign language competence and cross-cultural understanding. Video conferencing is a promising tool that can allow students to connect across geographical, language, and cultural boundaries to promote empathy and increased language comprehension. The advancement of technology makes video conferencing an accessible tool at the high school level. This study researches the effects of video conferencing as an instructional tool in the high school Spanish II classroom. Specifically, it researches listening comprehension and perceptions of cultural diversity.

Keywords: video conferencing, listening comprehension, perceptions of cultural diversity, Spanish, foreign language
Dedication

I dedicate my work first and foremost to my family. My mother and father have always supported me throughout my entire life. My father, Tim Upshaw, instilled discipline, honesty, and a strong work ethic that has enabled me to be successful. My mother, Claire Upshaw, has always encouraged me to be kind, creative, empathetic and see the world through the eyes of others. This influence helped inspire me to learn another language and complete research on a technology that could bridge people across cultures and languages. Support from my parents and late grandparents, Harley and Davona Sutton, has pushed me to pursue higher education and without their encouragement and help, I never would have pursued my doctorate. I am also extremely thankful to my beautiful wife, Danielle Upshaw, who has spent the last three years doing more than her fair share of taking care of our home and family all while encouraging and supporting me. Lastly, I want to dedicate this dissertation to my daughter, Davona Ann Upshaw, and any future children that God may have planned. I hope my passion for language and culture will inspire you to go on many adventures and meet people from all over the world who all bear imago Dei.
Acknowledgments

Recognition is due to many individuals who supported me through this process. Dr. Mark Gonzales’ calm and encouraging support and feedback have helped me tackle this enormous undertaking.

Dr. P. Mark Taylor provided excellent help breaking down complex statistics so that even, I, a foreign language teacher was able to understand, collect, analyze and interpret data.

Dr. Cole Wise graciously volunteered his time to give me feedback in the dissertation process.

Dr. Adam Hughes was a major support at Sullivan South High School giving me feedback, encouragement, and help on numerous occasions.

Mrs. Torey Haile was another faculty member at Sullivan South that was an immense help. Her math expertise was monumental in helping me analyze my data in a timely manner.

Ms. Lindsey Jones also provided English grammar and APA assistance that was critical to my success.

Lastly, I want to acknowledge all of the faculty members at Carson Newman and the Sullivan County Department of Education that went above and beyond over the last three years to help me achieve a dream. I could never have made it this far on my own. I am truly grateful.
# Table of Contents

Abstract ............................................................................................................................. v

Dedication ........................................................................................................................... vi

Acknowledgments ............................................................................................................... vii

Table of Contents ............................................................................................................... viii

List of tables and figures .................................................................................................... xi

Chapter 1: Purpose and Organization

Introduction of Study ........................................................................................................ 1

Background of Study ........................................................................................................... 1

Statement of Problem ......................................................................................................... 4

Purpose of Study ................................................................................................................. 5

Theoretical Foundation ..................................................................................................... 5

Research Questions .......................................................................................................... 7

Hypotheses ....................................................................................................................... 7

Null Hypotheses ............................................................................................................... 7

Limitations ......................................................................................................................... 8

Delimitations ..................................................................................................................... 8

Key Terms ......................................................................................................................... 9

Organization of the Document .......................................................................................... 10

Chapter 2: Review of Related Literature

Introduction ....................................................................................................................... 11

Technology in Education ................................................................................................. 11

Technology in Foreign Language Learning ...................................................................... 13

History of Video Conferencing ......................................................................................... 20
Comparison of Current Video Conferencing Software ........................................... 23
Finding Classrooms Across the World ................................................................. 24
Theory of Video Conferencing........................................................................... 25
Effects of Video Conferencing in K-12 Education ............................................. 50
Effects of Video Conferencing on Motivation .................................................. 53
Effects of Video Conferencing on Cultural Perceptions .................................. 54
Effects of Video Conferencing on Language Learning ..................................... 57
Limitations of Video Conferencing .................................................................. 61
Considerations of Video Conferencing ............................................................ 62
Further Video Conferencing Research that is Needed ....................................... 63
Conclusion ........................................................................................................ 63

Chapter 3: Research Methodology

Introduction ........................................................................................................ 65
Research Questions ............................................................................................ 66
Population and Sample ....................................................................................... 66
Description of Instruments ............................................................................... 67
Research Procedures and Timeline .................................................................. 68
Analysis .............................................................................................................. 69

Chapter 4: Results of the Data Analysis

Introduction ........................................................................................................ 71
Listening Comprehension Results ................................................................... 71
Perceptions of Cultural Diversity Results ...................................................... 74
Other Findings ................................................................................................... 77
Summary .............................................................................................................. 83
Chapter 5: Conclusions, Implications and Recommendations

Introduction .......................................................................................................................... 85
Conclusions .......................................................................................................................... 85
Implications .......................................................................................................................... 88
Recommendations ................................................................................................................ 90
Concluding Statements ....................................................................................................... 91

List of Reference Appendices

References .......................................................................................................................... 93
Appendix A: Perceptions of Cultural Diversity Assessment .............................................. 110
Appendix B: Listening Comprehension Assessment ......................................................... 111
Appendix C: Video Conferencing Topics ......................................................................... 114
List of Tables

Tables

Table 4.1 Means of Pre and Post Tests Scores on Listening Comprehension ..................72
Table 4.2 Listening Comprehension $t$ test ........................................................................73
Table 4.3 Means of Pre and Post-Test Scores on Perceptions of Cultural Diversity .......74
Table 4.4 Perceptions of Cultural Diversity $t$ test ...............................................................76
Table 4.5 Comparison of Male and Female Mean Change on Listening Comprehension 77
Table 4.6 Listening Comprehension Mean Change of Females vs. Mean Change of Males $t$ test ........................................................................................................79
Table 4.7 Comparison of Male and Female Mean Change on Perceptions of Cultural Diversity ........................................................................................................79
Table 4.8 Perceptions Mean Change of Females vs. Mean Change of Males $t$ test .................................................................................................................................80
Table 4.9 Listening Comprehension Mean Differences of Students with B1 vs. B1+ Language Partners ..................................................................................................................81
Table 4.10 Listening Comprehension B1 vs. B1+ $t$ test ........................................................82
Table 4.11 Perceptions of Cultural Diversity Mean Differences of Students with B1 vs. B1+ Language Partner ........................................................................................................82
Table 4.12 B1 vs. B1+ change of mean perceptions $t$ test .....................................................83

List of Figures

Figures

Figure 4.1 Experimental vs. Control: Listening Pre to Post Test............................................72
Figure 4.2 Experimental vs. Control: Perceptions of Cultural Diversity ............................75
Figure 4.3 Males vs. Females Listening Comprehension.......................................................78
Chapter 1: Introduction

Introduction

Understanding foreign language and culture is increasingly important for today’s global economy, safety and well-being (Jackson, 2008). Ninety-three percent of high schools offer foreign language, but less than one percent of today’s adults in the United States are proficient in a foreign language that they learned in a US classroom (Friedman, 2015). Therefore, innovation is needed in today’s foreign language classrooms. One technological tool that could help students learn a foreign language and increase student perceptions of cultural diversity is video conferencing. Research has shown video conferencing to be an effective tool in the foreign language classroom at the university level, but fewer studies have been done at the k-12 level due to the previous expense of technology needed (Lawson, Comber, Gage, & Cullum-Hanshaw, 2010). This chapter examines video conferencing as a tool that could meet the increasing need for improved foreign language proficiency and improved perceptions of cultural diversity in the Spanish II classroom.

Background of Study

As globalization has continued to connect countries, cultures, and languages across the world, it is increasingly important for students to learn more than one language as well as be sensitive to a diversity of cultures. Results from a poll of over 12,000 participants show 31 percent of executives speak two languages and 20 percent are fluent in three (Douglas, 2017). As of 2016 in the United States, Latinos had a buying power of 1.4 trillion, and it is only expected to grow exponentially (Meltzer, 2017). Job demand for bilingual workers in the US has doubled in just five years from 2010 to 2015. The increase of cross-border data flows has grown by a factor of 45 in the last ten years and is projected to grow ninefold by 2020 (Manyika et al., 2016). As modern connectedness has exponentially grown the U.S. has seen economic losses
clime to an estimated 2 billion dollars a year on language and cultural misunderstandings (2017). Students should not only be learning basic foreign language skills but also need to be fostering growth in empathy towards those from different cultural backgrounds. Puncky Heppner, a national expert on cross-cultural psychology who has won three Fulbright awards and received the Award for Distinguished Contributions to the International Advancement of Psychology from the APA put it clearly, “We are all living in cultures with different norms. Culture affects human behavior. The more we learn about other cultures, the better teachers, mentors, and therapist we can be” (Jackson, 2008). Teachers need to prepare students for the ever-changing globalized world. The traditional two years of learning a foreign language out of a textbook with minimal authentic contact with other cultures can no longer suffice. Educators must find new ways to expose students to different languages and cultures that will leave life-long impacts that will prepare students to work and live in an ever-diversifying world. Using video conferencing as an active and authentic learning tool in the foreign language classroom could be the educational answer to better foreign language instruction.

**Learning by doing.** Learning is closely tied with memory. While many students can cram information for a test the day before, and regurgitate the information the day of the test, they then often forget the information the day after the test; this is not the goal of education. For learning to have a long-term impact it needs to connect to multiple parts of the brain; this means the more senses a learner uses - such as listening, speaking, and moving the better the memory is formed (Willis, 2016). The brain learns best through experiences that makes an emotional and social connection. Wesson explained the amygdala and the hippocampus are vital to learning, and during emotional and social experiences these areas of the brain activate intensely (Wesson, 2018). Wesson further stated,
Reading does not necessarily lead to learning. Doing, engaging in two-way discourse and thinking will aid learning and memory; however, when students are doing, playing with objects, exploring, experimenting, talking, drawing, writing, listening, reading, speaking, applying, and reflecting on all of these, neural pathways for learning develop inside the brain. (2018)

Continuous retrieval of long-term memory further strengthens this memory. When information is used over and over, it becomes hardwired in the brain for long-term storage (Karpicke, 2016). Students need to have authentic ways they can practice vocabulary, grammar, and language that will rely on the constant retrieval of what they have learned. Video conferencing is a tool that allows students to speak, listen, write, smile, laugh and form those emotional, social, and relational connections while relying on the constant retrieval of learned information which creates long-term memories and powerful learning.

**Access to video conferencing.** Technology is at a point that nearly every school and student has access to video conferencing. Video conferencing can allow students to connect to other people globally free via an internet connection with appropriate bandwidth and video conferencing software (Rouse, 2016). Video conferencing is being more widely used now to connect students and classes to other people all over the world. Students can take a virtual field trip to the Smithsonian or have a guest speaker from another city or country talk to their class (Puffin, 2016). A scientist in Brazil can talk about the rainforest to students in Texas or a researcher in Arizona speak with students in Brazil about the desert.

**Video conferencing in foreign language.** Foreign language learning websites have seen the potential of video conferencing in the foreign language by connecting language learners one-on-one via sites like Live Mocha. Rosetta Stone was so intimidated by LiveMocha that it paid millions to purchase the website (Vuong, 2016). Unfortunately, school-systems are largely still
using traditional textbook activities to teach foreign language though this is beginning to change. An example of a country leading innovative change in foreign language education is France: they have experimented with installing video conferencing systems in primary schools to learn English. The results were promising; Gruson and Barnes concluded that video conferencing is a “powerful tool” to learn a foreign language (2011). However, it took significant amounts of money to set up the infrastructure to use video conferencing in the French classrooms (Gruson & Barnes, 2011). With recent technological growth, video conferencing is now accessible to almost anyone with a laptop, tablet or smartphone. Schools need to realize they do not have to invest thousands of dollars. Instead, most schools can use the computers they already have and can often use the technology their students already possess. Any student with an iPhone or a Samsung Galaxy, for example, has the capability to practice a foreign language with thousands of people all over the world.

Statement of the Problem

In its current mobile form video conferencing has only been widely available to people for less than a decade. For example, the iPhone did not fully support Facetime until the iPhone 5 which came out in 2012 (Haselton, 2017). More research needs to look into this recently available educational tool. Most previous research predominately relied on bulkier and more expensive video conferencing systems like the study done in France with desktop video conferencing systems (Gruson & Barnes, 2011). Research has shown video conferencing to be a valuable tool in higher education, but fewer studies have been done on its effectiveness in the k-12 classroom (Lawson, Comber, Gage, & Cullum-Hanshaw, 2010). As availability continues to be more widespread at the k-12 level, further research needs to be done on its effectiveness in the foreign language classroom using current low-cost and easily accessible technologies.
Purpose of the Study

The purpose of this study was to understand the effects of video conferencing on students listening comprehension and perceptions of other cultures in Spanish at the high school level. Limited research exists on the effects of video conferencing as an instructional tool in foreign language learning. The results of this study could have widespread implications for the best practices of foreign language learning; it could also shed light on how to create understanding between various countries and cultures creating a more stable, peaceful, wealthy and educated world. In a study of learning English by French students researchers concluded, “We are convinced that video conferencing can be a very powerful tool… and we think more data is needed to try and evaluate the impact of video conferencing sessions on the way students develop their communicative skills and on the theoretical tools we use” (Gruson & Barnes, 2011).

Theoretical Foundation

The theoretical framework for this study relies on two branches of constructivism - active learning theory and social constructivism. Active learning theory was popularized by the work of Charles C. Bonwell in 1991 and is a theory based on the belief that students learn best by actively doing and reflecting (Brame, 2016). For Cambridge International, “active learning means that learners take increasing responsibility for their learning and that teachers are enablers and activators of learning, rather than lecturers or deliverers of ideas” (2017). Michael Prince notes that active learning is student-centered with student engagement as the focus rather than passive transmission from the teacher to the student (2004). Brame describes active learning as focusing, “more on developing students’ skills than on transmitting information and require that students do something – read, discuss, write – that requires higher order thinking. They also tend to place some emphasis on students’ explorations of their own attitudes and values” (2016). This
study builds on the active learning concept that students learn best by using the foreign language they are learning in authentic, active settings through conversations with native speakers via video conferencing.

The other theoretical foundation for this study is social constructivism. The founding father of social constructivism, Lev Vygotsky, built his theory on the shoulders of Jean Piaget’s work in constructivism. Social constructivism emphasizes culture and context in understanding what occurs in society and how to construct knowledge-based on this social understanding (McMahon, 1997). Research has shown that there is significant potential in social constructivism to benefit lower achieving students as they interact with other students in their zone of proximal development (Watson, 2000). Social constructivism places a great emphasis on understanding how social contexts can help students to complete their learning objective. Working in a social setting is part of a good learning objective which prepares students to interact and work in society. Powell & Kalina explain that this means that diversity can greatly enhance education; as different students from different cultural backgrounds who construct knowledge differently share their findings and ways of seeing the world, knowledge grows for all students (2009). Powell & Kalina further explain that if the teacher is attentive and guides each student appropriately through the process, developing tools that foster inquiry and social interaction, along with cooperative skills and individual discovery learning, they will produce an effective social constructivist environment (2009). Students and teachers will both be better off from a free, more dynamic, and socially interactive atmosphere (Powell & Kalina, 2009). Video conferencing, computer conferencing, and the Web are all tools that are increasingly providing means for virtual learning communities in which social construction of meaning occurs. The power of social-constructivist approaches to classroom teaching is evident. Teachers and students are eager to engage in learning activities across distances, and traditional assignments can be
enriched through collaboration with others, hundreds or thousands of miles away who may live in vastly different cultures and experiences aiding to the knowledge of the collaborative group. (Cifuentes & Murphy, 2000).

**Research Questions**

1. Is there a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction?

2. Is there a statistically significant difference between the mean change (pre to post) of perceptions of cultural diversity test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction?

**Hypotheses**

**Ha**1: There is a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction.

**Ha**2: There is a statistically significant difference between the mean change (pre to post) of perceptions of cultural diversity test scores of students that use video conferencing when compared to the mean increase of scores of those students using only traditional instruction.

**Null Hypotheses**

**H**01: There is not a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction.
H_02: There is not a statistically significant difference between the mean change (pre to post) of perceptions of cultural diversity test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction.

**Limitations**

The small sample size in this study poses a limitation. With \( n \) of 20, a paired sample t-test allows for valuable data analysis, but more students would increase the value of the results. This study is limited to the 10\(^{th}\), 11\(^{th}\), and 12\(^{th}\) graders that are in the researcher’s classes. The researcher is also limited to the students who turned in a permission form to participate in the research. The time frame further poses a limitation on the study; the researcher had two months to complete the research. The demographics are limited to the students in the researcher’s classroom which are mostly Caucasian. The funding for this research limits the study to what is already available within a typical high school classroom. No additional finances are funding this study.

Sample Size – This study utilizes a small sample size of 40 students.

**Delimitations**

Delimitations in this study include technology. This study will only use mobile technologies including either smartphones or tablets. This delimitation could help teachers utilize already available technologies that students already poses to increase student learning. Another delimitation is the use of only listening comprehension and perceptions of cultural diversity assessments. This focus helps the study to be more feasible given the limitations of time and funding.
Key Terms

**Video conferencing.** A video conference is a live, visual connection between two or more people residing in separate locations for the purpose of communication. At its simplest, video conferencing provides transmission of static images and text between two locations. At its most sophisticated, it provides transmission of full-motion video images and high-quality audio between multiple sites (Rouse, 2016).

**Skype.** Skype is a video conferencing service which uses the Internet to allow people all over the world to make and receive voice and video calls for free or for cheap. Skype software is available both on computers and as an app on mobile devices (Unuth, 2018).

**Skype in the Classroom.** Skype in the classroom is a free community that connects teachers with educators and guest speakers from around the world using their Video Conferencing software, Skype. It is a website where teachers can find and run Skype lessons for their students. It enables teachers to find classes thousands of miles away, or just around the corner, to enhance collaboration and learning. (Fraser, 2013)

**Epals.** Epals is a website that provides access to students and teachers around the world, a safe way to communicate, collaborate, and enjoy customizable learning experiences. (Shiroff, 2017).

**Bandwidth.** Bandwidth is the volume of information per unit of time that a transmission medium (like an internet connection) can handle (Fisher, 2018).

**Webcam.** A webcam is a compact digital camera a user can hook up to a computer. It allows users to broadcast video images in real time (as they happen) through an internet connection (Woodford, 2018).
Organization of the Document

Chapter One introduces the study, gives the background of foreign language learning and video conferencing, and introduces theories around which the study is framed. Chapter Two is a review of the literature regarding foreign language learning, history of technology in foreign language learning, educational theories surrounding video conferencing use and analysis of current technologies. Chapter Three provides the methods and procedures for the study, the population, and the analytical procedures for answering the research questions. Chapter Four provides the quantitative findings of the study. This chapter provides the results from the two different two sample t-test that analyzed the effectiveness of video conferencing as an instructional tool on listening comprehension and perceptions of cultural diversity. Chapter Five examines the results of the study, discusses implications, makes recommendations for further study and draws conclusions for the study.
Chapter 2: Review of Related Literature

Introduction

This literature review is focused on the potential of video conferencing technologies to bridge the gap between cultures and geographical boundaries, to build learning, empathy, understanding, motivation and language learning in authentic experiences that prepare high school students for the real world. In the 21st century, education has transformed from a world of schools into schools of the world (Anastasiades, 2009). More than ever, education must be a place where students are taught empathy and understanding for those who are different from them. Henry Louis Gates, the noted African American author and literary critic said, “Any human being sufficiently motivated can fully possess another culture, no matter how ‘alien’ it may appear to be.... But there is no tolerance without respect—and no respect without knowledge” (as cited in Meier, 2002, p. 63). It is the schools’ responsibility to give students the knowledge that provides the opportunity to foster tolerance, respect, and appreciation for other cultures and peoples.

Schools must turn to technology to provide new ways to communicate and collaborate across boundaries, cultures, and languages to meet the demands of a new globalized world. Collaboration and global awareness help prepare students to interact socially as well as foster cultural diversity, “between a rural and urban school, a private and public school, or a U.S. and Asian school. It is possible through video conferencing and global projects to enhance learning and bring the world to the classroom for all age levels.” (Hopper, 2014, p. 88).

Technology in Education

While technology in education can be traced back to the first formation of books, blackboards, and the hornbooks, the more modern era of electronic based technology began in the late 1800s and early 1900s. One of the earliest electronic educational inventions of the late
1800s was the Magic Lantern. This invention was the predecessor to the slide machine and would project images on glass plates. Around the same time, the use of film began to permeate into education. Originally educational films were made with no sound. In the early 1920s radio entered the educational system. Some schools even had part of their school day stopped to listen to an educational program on the radio. Later, in the 1930s overhead projectors were widely being used. Around the same time, schools began to incorporate the widespread use of the typewriter. Students largely depended on the typewriter from the 1930s until personal computers became prevalent several decades later (Russell, 2006). Educational TV became popular in the late 1950s. By the 60s there were more than 50 channels across the US that aired educational programming. Also, in the late 50s and early 60s, B.F. Skinner developed teaching machines that allowed students to work on a regimented program of instruction (Wilson, 2010). In the late 1970s, computers become cheap enough for many k-12 schools to afford them. Computers by this time were becoming a critical part of business, and schools realized the need to prepare students for the business world and give them job-related skills. The next major step in education was in the 1990s when the internet became an increasingly integral part of business, education, and life. Virtual schools began to pop up where students could learn remotely in addition to the normal everyday uses of search engines to learn about nearly anything (Russel, 2006). Since the internet, computers have continued to evolve. iPads and tablets became popular around 2010; this started a significant decline of the traditional textbook (Wilson, 2010). Smartphones were also widespread by this time along with the cloud. The cloud is online storage that connects people all over the world allowing for cheaper devices to access and be connected to even more information. Students who may not have a device can often go to an afterschool program like the Boys and Girls club or local library and have access to everything their class requires right on the cloud. While it is informative to understand how technology has changed, educators must
continuously be committed to researching, observing, and learning how these devices are affecting our students and the best practices that allow new technology to improve students’ learning and lives (Russel, 2006).

**Technology in Foreign Language Learning**

Foreign language learning has utilized many of these same technologies to teach students second languages. One of the key reasons foreign language teachers have used technology is its role in engaging and motivating students (Gruba, 2006). The phonograph and then the radio were especially critical early inventions for foreign language as it gave students new access to proper language production. In 1934 the University of Wisconsin broadcasted their first ever beginning Spanish course. The benefits were assessed to be increased accessibility, geographical convenience, and appeal for students who work best independently (Castillejo, 2018).

Technology had an increasingly significant impact on the foreign language classroom in the 1950s. Scientists and especially behaviorists began promoting the growing use of drills, repetition, and immediate feedback; all over the country language laboratories popped up (Wilson, 2010). The focus of these labs was on oral skills, repetition, and drilling. The tech most often used for these goals were audiocassettes and video players along with purpose-built language laboratories (Adamson, 2006). The personal computer largely replaced language laboratories in the 80s and 90s. Computers provided an array of possibilities to language learners including access to video & audio media, online interaction and learning, word processing, and skill and drill practice with immediate feedback (Ghasemi, Hashemi, & Bardine, 2011). Computers even provided the opportunity for students to have intelligent tutoring with software reacting to and modifying to the learning allowing for tailored lessons and objectives based on feedback (Nagata, 1997).
Early examples of computer assisted language learning (CALL) included the Bucknell Russian Program, The German Electronic Textbook, and German for Beginners; these programs took the form of an online textbook with grammar exercises and large collections of materials with little guidance (Delcloque, 2000). Later, in the 90s, programs like Italia 2000 began including audio and video clips allowing for the listening of native speakers; Italia 2000 is also an example of an early software that used voice recording to allow users foreign language production practice (Delcloque, 2000). Later Internet Based Chinese Teaching and Learning created a course template that allowed educators to easily track students’ work with synchronous and asynchronous communication abilities (Delcloque, 2000).

The 1990s continued to be dominated by the use of multimedia and personal computers. CD-ROM programs like Nuevos Destinos, and Who is Oscar Lake changed the landscape of language learning by increasing interactive elements (Warschaucher, Reinders, & Thomas, 2012). Later programs like Rosetta Stone and Berlitz became popular; sound, video, voice recording, self-grading drills, and games all interreacted together to increasingly give users a personal and immersive experience (Tafazoli, Huertas, & Gómez, 2012). Later, the 21st century integrated the internet into language learning. Blended learning began to join traditional CD-ROM activities with authentic interaction with foreign language speakers across the world (Tafazoli et al., 2012). Toward the end of the 1990s virtual learning environments such as Blackboard and Moodle began to give teachers the tools to create customizable online courses (Warschaucher, Reinders, & Thomas, 2012). Applications including MySpace, Facebook, Livemocha, blogs, wikis, podcasts, and vodcasts all became tools of learning foreign languages in the early to mid-2000s (Tafazoli et al., 2012). Also, in the 2000s, multi-user domains allowed for role-playing adventure games to be engaged in across computer networks and allowed for foreign language practice; these programs allowed for both synchronous and asynchronous
communication (Tafazoli et al., 2012). The 2000s additionally became the decade of Web 2.0 which was focused on the possibilities of what the internet could be. The BBC’s online language learning programs are an example of an online language learning platform that operated completely online and included many new features showing the internet’s capability; from self-grading activities to online collaboration and communication, to interactive video adventures, the BBC showed what the internet could do for language learning (Warschaucher, Reinders, & Thomas, 2012). Recently, the ubiquitous use of mobile devices like smartphones and laptops has led to new mobile-assisted language learning; gaming platforms are even becoming places of foreign language learning including role-playing games and virtual realities like Second Life; within Second Life a language lab was created where language learners could interact with each other and even join conferences within the virtual 3D game (Tafazoli et al., 2012).

Now tablets and smartphones are replacing computers. In one study that used an iPod Touch instead of a language lab, researchers found many new benefits (Hess, 2012). Hess explained while the audio/visual language learning labs of the past generally had students working alone listening to a pre-recorded lesson or conversation, mobile technologies make it much easier for students to work with others while also working on something individually (2012). The advanced technology means that software can often interact with students creating a specifically tailored lesson and feedback; the mobility also means that students can take it anywhere, from home to in the car to a group project (Hess, 2012). Having essentially a powerful computer that can fit in a student’s pockets make it advantageous over both the computer and language labs (Hess, 2012). In 2018 nearly all students, at least high school age students, in the US carried a smartphone with them at all times; from social media to texting to calling, students have become technological experts; it is up to education to take these tools students use socially
and turn them into powerful educational resources that inspire, engage, and educate the next generation of learners (Castillejo, 2018).

In 2015 the worldwide market for just digital English learning products was 2.8 billion and was projected to grow to 3.8 trillion by 2020 (Seave, 2016). Top paid online language learning programs today according to consumersadvocate.org include Rosetta Stone, Pimsleur, Babbel, and Linguotica (2019). The top free program according to Duffy goes to Duolingo (2019).

Consumeradvocate.org explains what makes Rosetta Stone stand out: it is used by branches of the US military, government agencies, schools, and business around the world (2019). Rosetta Stone has courses in 30 different languages and can be done on a computer or a mobile device through its app (2019). Rosetta Stone has advanced voice recognition software to give users instant feedback on native pronunciation; it also has options for online coaches through video conferencing (2019). Rosetta Stone puts a focus on the connection between images and language and is ideal for beginner to intermediate learners; all languages have five levels with one being a beginner and five giving users the skills to be able to live abroad (2019). The major downside to Rosetta Stone is the cost. A 36-month subscription is $499 (2019).

Consumeradvocate.org explains Pimsleur as a language course developed by Dr. Paul Pimsleur who is a recognized expert in the field of linguistics and founding member of the American Council of the Teaching of Foreign Languages (2019). Pimsleur offers more than 50 languages and is primarily audio-based; users are advised to listen to these daily lessons which make up a complete course (2019). There are 30 lessons per level and up to five levels in a complete course; Pimsleur is used by the FBI, the Marine Corps, Homeland Security, and the State Department (2019). In addition to the audio, Pimsleur comes with books and the premium version comes with interactive components; Pimsleur works with Amazon’s Alexa so that
lessons can be managed completely hands-free (2019). Dr. Pimsleur models his program the way children learn languages; the focus is placed on organic learning by organizing materials of languages that can be taught as a steady stream of speech to enter the student’s consciousness and absorbed by the brain (2019). New words are introduced gradually with increasing repetition to help students remember words for a progressively longer time; this is done through a pre-determined interval to move words from short-term memory to long-term memory (2019). Pimsleur’s new subscription plan allows users to access all lessons of a language for $14.95 a month (2019).

Babbel is a language learning application given high reviews by consumeradvocate.org; it is a language learning program that teaches users new languages anywhere at any time (2019). Babbel is available over a variety of mobile devices including smartphones, tablets, laptops, and computers; the software has an empirically-proved method which enhances language learning by utilizing the latest developments in technology (2019). The language software has a review manager that automatically reminds students when words and phrases are due for review based on their spaced repetition; review intervals depend on the client’s level of learning (2019). The courses are a mixture of multimedia including advanced speech recognition software to measure how well a student’s pronunciation is (2019). Babbel’s subscription plan is $8.06 a month (2019).

Linguatica is another language learning program given high marks by consumersadvocate.org; it offers highly individualized lessons. Linguatica’s teaching method is based on an individual student’s learning curve with each session strengthening student memory and language comprehension (2019). Advanced tools also allow students to track their progress (2019). Linguatica is ideal for students who want to learn a new language at their own pace.

The top free language learning software according to Duffy is Duolingo and is the first free language learning app to rival paid software (2019). Duffy explained Duolingo offers plenty of self-paced exercises to help learners develop a base understanding of thousands of vocabulary words as well as grammar (2019). The software can be used across platforms from smartphones and tablets to computers; Duolingo can go with users anywhere; it includes lessons with pictures, audio, and speaking with voice recognition software (Duffy, 2019). Duolingo is highly organized and structured with thematic modules that must be completed in order which teaches users vocabulary and grammar in a scaffolding process (Duffy, 2019). Duffy also explained that Duolingo has a podcast in Spanish that students can listen to; the Spanish audio is slow with breaks to explain details in English (2019). There is also a new story feature where students can listen to stories and then answer questions about the story as it is being told (Duffy, 2019). There is a premium version of the mobile app which is $9.99 a month and allows unlimited mistakes without being locked out of the app for 5 hours; the computer version is entirely free (Duffy, 2019).

**Learning through Video Conferencing**

One powerful technology that more language learning companies and educators must harness is video conferencing. Video conferencing is a technological tool that allows people to connect to other people all over the world and communicate using synchronous video and audio free via an internet connection with appropriate bandwidth and video conferencing software (Rouse, 2016). Hopper, said video conferencing can be used to, “extend existing curriculum and help act as a medium for incorporating critical thinking, problem-solving, communication, collaboration, independent learning, information media, global and cultural awareness, and
technological literacy” (2014, p. 78). Anastasiades, in his research, showed that video conferencing is especially useful in its ability to collaborate and interact between schools regardless of their geographical location (2009). Some research concludes that collaboration via video conferencing is just as effective as face-to-face (Rassaei, 2017; Jung, 2013) while other research has pointed out there are obstacles to overcome in video conferencing that are not present in face-to-face collaboration (Carvile & Mitchell, 2000; Howard, 2013). While research has shown video conferencing can be an effective education tool, research has also shown it’s effectiveness depends greatly on how it used. Dooly & Davitova stated that it is necessary to,

…consider carefully how digital tools are presented in schools to ensure their use meets authentic needs for today’s knowledge society. This implies that learning tasks should be planned so students’ practice with technological and digital resources such as videoconferencing and text chats resembles potential communicative situations they may face outside the classroom. (2018, p. 215)

If used appropriately video conferencing can be key to preparing students for the 21st century — not only regarding the understanding of other cultures and languages but as a way to improve motivation, literacy in technology, connect guest speakers with audiences across the world, and bring people in any discipline and across disciplines to work and collaborate together in a way not previously possible.

Companies in recent years have seen the promise in video conferencing as an instructional tool; while some companies like Rosetta Stone have language coaching through video conferencing as one of its tools, other programs like HelloTalk, and Lingoda, are entirely based around language exchanges of real people through video conferencing software (2018). According to hellotalk.com the program has over 10 million users and can be downloaded on iPhones and Android devices (2019). HelloTalk is free for users who are looking to learn just
one language according to Cable (2015). When users sign up, they must register their native language is and what language they want learn; the program then connects users based on their target and native languages (Cable, 2015). Cable explained that users could then send a message or partner request to matches; users can text back and forth, as well as make audio and video calls to one another (2015). Messages pop up during conversations to remind users to switch the language being practiced; HelloTalk shows users the time of day where a users’ language partner lives and supports emojis (Cable, 2015). The app can also send photos, voice messages, and doodles; many other in-app tools create a pleasant experience like the ability to translate incoming texts and use voice recognition software to respond (Cable, 2015).

Lingoda is another online language program built around video conferencing technology. According to consumersadvocate.org, users can sign up for group classes, individual classes or a combination of both. Teachers are paid professionals, and users can even earn a CEFR certificate, which is a European standard for language proficiency (2019). Prices vary depending on the package, but most group classes are around $8 a lesson, and private classes are around $20 a session (2019).

**History of Video Conferencing**

In an article describing the first ever picture phone, Laskow (2014) recounts the colossal failure. He explained the first ever form of video conferencing was called the picture phone and was debuted in 1964 by Bell Labs at the World’s Fair. Laskow writes that in 1970 it become commercially available and the company predicted there would be thousands of picture phones all over the United States in a few years; Bell Labs said it would replace tiresome business travel and one day everyone would be using them. Unfortunately for the technology, Laskow explained that one call would cost $27 for a three-minute conversation and only a few companies bought into the idea; within a few years, the picture phone was completely shut down. While the price
point was the most significant cause of the failure in the 1970s, others were also intimidated by the intimate experience and were unsure of how to act on the phone (Laskow, 2014). This intimidating aspect of video conferencing is less of an obstacle today but still a consideration teachers should take into account.

Later in the 1990s, the technology was cheap enough that many large businesses could afford to invest. This ultimately saved them money and time from avoiding travel (Tang & Isaacs, 1995). Participants tended to prepare more thoroughly for video conference meetings than in-person meetings. Some studies even showed that once participants were used to the technology it was more effective than traditional meetings (Creighton and Adams, 1998). The success of video conferencing in business led to its later implementation in higher learning institutions (Lawson et al., 2010).

This transition from business to higher education took place in the early 1990s and spread quickly throughout universities and higher education (Carter, Clarke, Graham, & Pomfrett, 1996). Originally video conferencing was merely a way to widen the audience of traditional pedagogy — primarily the lecture. This way more students could listen to an academic expert (Storck & Sproull, 1995). This also provided a way for remotely located students throughout the United States to gain exposure to educational experiences such as clinical procedures that would be otherwise difficult to deliver (Bates, 2005).

Soon educators realized that merely using video conferencing to widen the audience of lectures was poorly utilizing the interactive capabilities of video conferencing (Carville & Mitchell, 2000). Higher learning institutions quickly began using video conferencing for various applications. Dyke Harding and Liddon discovered that remote observation of teacher training could be just as effective as an in-person observation as long as the camera in the classroom could be moved remotely (2008). In a telecollaboration student teacher project Jauregi, Graaff, &
Canto concluded that the networked interactions pointed toward cultural, linguistic, interpersonal and motivational benefits. It noted that while there were organizational burdens, the experiences challenged and motivated student teachers in innovative ways. This synchronous learning experience used in conjunction with effective pedagogical interactive tasks led to meaningful interactions with expert peers and even contributed to empowering intercultural learning experiences (2011). Another university was able to bring problem-based medical training to remote centers in Nova Scotia. The university assessed that successful learning had occurred (Allen et al., 2003). Falconer & Lignugaris-Kraft in their research found that video conferencing was even better than face-to-face because it was less intrusive during teacher observations of student teachers (2002). Bello, Knowlton, and Chaffin further found video conferencing helpful when exposing student teachers to education situations that would otherwise be impossible to experience (2007). In another study similar conclusions showed video conferencing observations of K-12 environments can also be useful for coaching, mentoring, and evaluating new teachers in real-world situations (Israel et al., 2009).

Soon the satellite-based video conferencing systems businesses and universities were mostly using (see for example Southwick, 2003) transitioned into cheaper studio systems ran online and then eventually to even more affordable desktop video conferencing systems (Hearnshaw, 1998). Soon nearly all universities and k-12 schools had access to video conferencing through desktop computers and an internet connection (Rouse, 2016). Then in 2012 video conferencing became nearly ubiquitous with the release of the iPhone 5 with Facetime (Haselton, 2017). This has had a dramatic impact on higher education. One study found teacher trainees much more positive about using their own cell phones to record their teaching, upload, and converse about their experience via video conferencing rather than having to use complicated traditional technology. Teachers found using their personal cell phone not only
saved time learning how to use the device but also in the post-processing where they could more easily edit, upload, and share the data (Lopez, Ortiz, & Allen, 2015). The smartphone has not only had a dramatic impact on higher level education; it has also opened the doors to K-12 schools who now have access to video conferencing in a way they never did before.

**Comparison of Current Video Conferencing Software**

Various video conferencing applications are available to educators from Apple’s FaceTime and Microsoft’s Skype to more recently created software like Zoom. Students and teachers do best with the technology they are familiar with (Lopez et al., 2015). Many educators and students will be familiar with FaceTime and FaceBook video calling. Both allow for simple, easy, and quick video and audio calls. For FaceTime, a user simply needs to make sure the person being called has an Apple ID and the Facetime app which is already downloaded onto an Apple device. For Facebook video calling a user merely needs to call someone with Facebook on a computer or the messenger app on a phone. The downside to these two programs is that they are not very professional. The Facebook video calling feature has filter options on the mobile version that are sure to distract students. Additionally, someone’s Facebook page and Apple ID are personal and could cause problems for use in education. Both programs also have very limited functionality and features. The best educational use of Facebook video calling or Facetime would be for a guest speaker where students are not directly manipulating the software (Henshall, 2017).

More professional video conferencing services with expanded functions and features include Skype, Google Hangouts, and Zoom. All three services include the capability to easily share the screen and chat simultaneously as the user video calls. Google Hangouts has more options about which part of the screen is shared while Zoom and Skype automatically share the entire screen. All three applications enable group chat as well. Skype and Google Hangouts
allow up to 25 people per chat for free, and Zoom allows up to 50 for free but limits the meeting to 40 minutes. Skype and Zoom also have paid versions with increased capabilities. Setting up meetings is especially simple with Zoom and Google Hangouts. A user creates a URL which acts as a meeting room; the URL can then be shared with anyone to easily join the meeting. Zoom has the highest video and audio quality, but the difference is marginal. If most participants in a collaboration already have and are familiar with one of the software options, any of them will suffice with adequate internet speeds. That being said, Zoom has the highest quality and is light on computer resources making it superior over Google Hangouts and Skype in two important areas for video conferencing users (Henshall, 2017).

Finding Classrooms Across the World

Two resources currently available to connect with schools all over the world are Skype in the Classroom and ePals. Skype in the Classroom is a free educational resource that enables educators to collaborate with teachers and classrooms across states, countries, and continents; it offers the ability to join other projects, create a new project, or send messages and contact request to educators interested in similar goals, such as language learning and cultural exchange (Reinen, 2016).

Around the World with 80 Schools is a popular Skype project that challenges educators to connect to 80 different schools worldwide and then report what all they learned about different countries and cultures as well as their own students’ experiences (Heick, 2019). Heick also described Mystery Skype as a game created by Skype that is set up where classrooms take turns asking each other one question to try to figure out where the other classroom is located (2019). Skype in the Classroom offers educators the opportunity to meet with librarians, connect with tutors, or take virtual field trips; many famous museums, including the York Archaeological Trust, open up their collections to the world (Heick, 2019).
Another available resource is ePals. ePals allows users to find thousands of educators all over the world looking to connect for a language exchange, culture exchange, or collaborative project; within the ePals interface you can only send messages and chat via text, but once you make the connection on ePals you can quickly move over to a video conferencing platform such as Skype or Zoom (Jamesgapinski, 2009). Epals has an advanced digital pen-pal network, stocked with resources to help educators; the site is set up to help educators and classrooms build lasting connections (Jamesgapinski, 2009). Search criteria can be filtered by region, language, and collaborative interest; a built-in e-mail system allows educators to communicate within Epals (Jamesgapinski, 2009). Jamesgapinski further explained that users could also search project listings to find a collaboration to join; the site offers a tour to explain the many features, tools, and subpages (2009). While there is no video conferencing software within Epals, it offers a great hub to meet educators all over the world; after meeting an educator, the collaboration can then bring in other video conferencing tools such as Skype or Zoom (Jamesgapinski, 2009).

**Theory of Video Conferencing**

**Constructivism.** Video Conferencing is not a fad or gimmick but a tool that fits well into educational theory especially constructivism (Bates, 2005). Constructivism is defined as,

…a view of learning based on the belief that knowledge isn't a thing that can be simply given by the teacher at the front of the room to students in their desks. Rather, knowledge is constructed by learners through an active, mental process of development; learners are the builders and creators of meaning and knowledge. (Gray, 1997)

Roots of constructivism go back to John Dewy’s work in the early 1900s. Raf Vanderstraeten described John Dewy as influencing the underlying ideas and assumptions that make up the influential educational idea of constructivism. Dewey’s work articulates a great deal of what is important and interesting about constructivist epistemology and constructivist pedagogy (2002).
Later Piaget had a fundamental impact on the constructivist learning theory in education. Piaget asserted that learning occurs by an active construction of meaning rather than just passive acceptance. He showed that when learners encounter an experience or a situation that conflicts with their current way of thinking, a state of disequilibrium is created. Learners must then alter their thinking in order to restore equilibrium. We do this by making sense of the new information by associating it with what we already know. When there is a conflict between our previous beliefs and new experience, our old way of thinking becomes restructured to a higher level of thinking (1977). Building on Piaget’s work, Kelly developed his theory of personal constructs which proposed that we look at the world through mental constructs or patterns that we create. People construct ways of understanding the world based on experience. When new experiences are encountered, people attempt to fit these new experiences into a pattern. As people go about their life, there are hundreds and thousands of these associations that we make from our experiences that are not innate to the human experience but are simply constructs (1991).

Constructivism has played an increasingly important role in education as instruction evolved to a more interactive and engaging format. Education has been evolving from that of transmission of curriculum from educators to students in passive learning instruction like lectures to a transactional curriculum where students are actively involved in the learning to reach new understandings. Constructivist teaching builds on fostering critical thinking skills, and it creates active and motivated learners (Gray, 1997). Fosnot recommended that constructivist approaches be taken to create learners who are autonomous, inquisitive thinkers who question, investigate, and reason. A constructivist education approach frees teachers to make decisions that will enrich and better students’ development (1989). Zemelman, Daniels, and Hyde thought that all subject areas should involve inventing and creating new ideas. They suggested that constructivist theory
ought to be incorporated into the curriculum in all subjects and advocated that teachers create environments where children can construct their own meanings of the world (1993).

A constructivist classroom is starkly different from a traditional or direct instruction classroom. A constructivist teacher will be able to flexibly and creatively facilitate ongoing experiences in the classroom into the fabric of educational lessons with small groups and individuals. This environment formed by the constructivist teacher is democratic; the activities are engaging and interactively centered on students empowering them by the teacher who is more of a facilitator and consultant than rigid lecturer. Learners are immersed in interactive experiences where they can engage in meaning-making inquiry, action, imagination, invention, interaction, hypothesizing and personal reflection. Teachers in a constructivist model are free to allow students to use their own experiences, knowledge, and perceptions along with their physical and interpersonal environments to construct knowledge and meaning. The goal of constructivist teachers is to produce a democratic classroom environment that develops autonomous learning who have meaningful educational experiences. This theoretical understanding of the world gives an alternative view of what is considered knowledge by suggesting that there may be many ways of interpreting or understanding the world. The teacher is no longer the final word but simply the guide, facilitator, and inspiration to lifelong learners who will trailblaze their own path of learning. This is a stark contrast to traditional classrooms where an intimidating and imposing expert teacher who has all the answers demands students receive knowledge from them. Instead, the teacher and student share responsibility in decision making and demonstrate mutual respect as partners in learning. This allows students to be active, autonomous and lifelong learners. Using constructivist teaching strategies, they can be more effective and produce longer lasting results and impacts on the lives and education of students.
Constructivism allows for the needs of the students to be met, and the learning relationship is mutually beneficial to everyone involved, especially the student (Gray, 1997).

The student is the center in a constructivist classroom. For example, in reading literature, Rosenblatt always placed the student’s experience as the most important. How did students attach their own experiences to what they were reading? How did they form meaning? This perspective places students at the central position of the classroom. This can only happen if teachers are willing to give up their central sole authoritative position as the holder of all classroom knowledge. Teachers must be willing to allow students to learn beyond the teachers’ knowledge and allow students to learn from experiences beyond what the teacher brings. When the student is given the role of a meaning-maker, teacher-centered, text-centered and skills-oriented approaches to literature instruction are substituted by more student-centered approaches where processes of understanding are emphasized (1978). Applebee suggested that rather than treating the subject of English as content to simply be memorized, a constructivist approach treats English as an interconnected body of knowledge, skills, and strategies that need to be constructed by the learner out of experiences and interactions inside the social conditions of the classroom. In such a view, understanding a piece of literature does not mean memorizing someone else’s interpretations, but constructing and elaborating upon one’s own interpretations and understandings within the constraints of the text and conventions of the classroom community. A constructivist student-centered educational approach places more focus on students learning than on teachers teaching. A traditional perspective focuses more on teaching with the students having to adapt to gain the knowledge from the teacher while in a constructivist view, knowing occurs by a process of construction by the student. This places more emphasis on the teacher adapting to the needs of the student rather than students having to adapt to the method of teaching by the teacher (1993).
Constructivism uses a process approach to education. Applebee stated that “rather than emphasizing characteristics of the final products, process-oriented instruction focuses on the language and problem-solving strategies that students need to learn in order to generate those products” (1993, p. 5). This means as students interact with their teacher and with other students as a part of the classroom experience, they practice using language in a variety of contexts developing and honing many different skills as they do so (Gray, 1997). In this process approach, a context is formed within which students can explore new ideas and experiences, and a teacher’s responsibility in providing information is decreased and replaced by an increasing role in eliciting and supporting students’ own ideas and thoughts allowing them to develop meaning-making abilities. This allows students to have the most opportunity to focus on the ideas they are writing about and to develop more complex thinking and reasoning skills as they defend their own ideas for themselves (Langer and Applebee, 1987). Teachers still have learning objectives with the constructivist model but simply have a different approach on how to achieve the learning objective as well as a different understanding of what learning objectives should be. Once a teacher has formed a learning objective from a constructivist approach, the teacher would then need to think of meaningful activities to help students arrive at the learning objective. This entrusts a lot of responsibility to students. The more good choices teachers have for students, the better. This allows for the diverse learning styles of different students as well as provides freedom for students to develop their own thinking, reasoning, and problem-solving skills that will stick with them long after the class is over (Gray, 1997).

Constructivist teaching also involves negotiation. Negotiation unites teachers and students in a common purpose. Classes, therefore, need to be custom built every day to fit the individual needs of the students who are attending (Smith, 1993). Boomer explained that it is especially important when negotiating for teachers to talk openly about the means for new
information to be learned and any constraints such as obligatory curriculum that must be covered. Negotiating the curriculum means intentionally planning to invite students to contribute - and to modify - the educational program, allowing them to have an authentic investment in both the learning journey and learning outcomes. Negation further means making it clear what learning constraints there are and what freedoms students have within that framework (1992). Boomer, Lester, Onore, & Cook explained that students will work harder and better and what they learn will mean more to them if they are discovering their own ideas, asking their own questions, and working hard to answer them for themselves. In this regard, students become educational decision makers. Through this negotiation and independent decision making comes a sense of ownership in learners for the work they are doing which makes them commit further to it (1992). Instead of telling students exactly what they need to be doing, constructivist teachers give their students options and choices in their work and in so doing the teacher earns their students trust and invites them to participate in the constructivist process which allows them to be more involved in decisions about their learning. It is vital in a constructivist classroom that students are actively involved in their own learning. Students may even participate in the designing of their assignments, although the guidelines for these may still be established by the teacher. Students can additionally play a role in the assessment and evaluation of their work (Gray, 1997).

With the changing role of educators from holders of all class knowledge to facilitators and learning catalyst, comes a new role for the constructivist teacher: a researcher. Teachers partially do this by asking questions, watching, and listening to their students in order to learn about them and figure out how they best learn. This allows the teacher to be more helpful to their students. While educators still teach, they must understand that the students are also teaching, and the educators must make sure they are also learning. This kind of interaction contributes to a
teacher’s ability to use the classroom experience to provide help guiding instruction as well as meaningful lessons for groups and individual activities. The ability to observe and listen to one’s students and their experiences can contribute to the teacher’s ability to use a constructivist approach. This cycle of researching, teaching, learning and researching again is a process that both teachers and students participate in as all parties become continuous learners (Calkins, 1986).

As one would assume, the interaction between students and teachers is vital to the constructivist classroom. Authentic student to student and student to teacher communication is critical. Belenky, Clinchy, Goldberger, and Tarule explained that constructivists distinguish didactic talk, which is when participants report experiences, but no new understanding occurs to real talk. Real talk is when careful listening creates an environment within which emerging ideas can grow. This difference distinguishes a traditional direct instruction classroom from purposeful talk by students in a student-focused constructivist classroom where productive conversation occurs and meaning emerges (1986).

The organization and management of a constructivist classroom are democratic where power and control are shared. Both teachers and students share responsibility and decision making. Practices which are largely characteristic of democratic classrooms are aware of the importance of human experience in learning; accommodation of small groups, individuals, and at times, whole class instruction; creation of an environment that supports an active involvement of students in collaborative and empowering activities, and responsibility for decision making for learning as well as creating flexible rules (Gray, 1997). The beliefs, attitudes, and values of teachers make it possible to create a democratic environment. It is particularly clear that teachers must specifically believe in students as capable constructors of knowledge. Teachers who take on these characteristics are capable of creating a democratic classroom that is self-regulating rather
than overtly controlling. Students are directly involved in all matters that occur in the classroom that affect them. Since student empowerment and autonomy are key goals in constructivist teaching, making changes to the values or behaviors in the classroom must be balanced with the power structure of the classroom. It is hard to make changes without having control over power; therefore, a teacher must balance when to use power and when to give freedom in order to allow for organic learning (Lester & Onore, 1990). Student empowerment is at the center of a constructivist teacher’s educational philosophy. As a good parent is equipping their child to one day be independent of them, so too, a good constructivist teacher wants to empower and equip their student to provide them with the skills and abilities to be a confident, autonomous learner and citizen. Also, like a good parent who does not try to take praise away from their kids so too, a good constructivist teacher directs the joy and celebration of accomplishment to their students, giving them a feeling of competence, pride, and success (Gray, 1997). Student empowerment and autonomy may be developed by encouraging students to ask questions and by making them active learners. Unfortunately, in many classrooms students are neither taught to ask questions in schools nor allowed to ask questions but are merely required to answer teacher’s questions. This must change, and constructivism holds the key to transforming education into a place where students are encouraged and probed to ask better, more appropriate, and more effective questions. By asking their own questions, students acquire more consciousness of and control over their learning. To overcome this problem of students not being encouraged or even knowing how to ask their own questions, teacher must learn how to give up control and power in ways that are still organized by parameters that keep students on task (Calkins, 1986).

This paradox of freedom and constraint is addressed by Daniel Sheridan who discusses the necessity of a structure of freedom. Sheridan points out that while too much constraint can limit freedom, there is also no freedom without some constraint. Therefore, classrooms must
reflect the need of student autonomy while also having constraints to best direct that freedom and create a safe, inspiring, and productive environment. Unless students are provided with behavioral parameters, nothing gets accomplished because they do not know what it is they are really supposed to do. Students need to understand the learning objective and parameters of achieving that objective but also have a lot of freedom and choices within those constraints. If a constructivist classroom is established appropriately, the more control students are given to themselves the more the teacher is freed to focus on students’ learning. In a successful classroom, students are not only able to look after themselves but also each other. Therefore, the more power and control the teachers are able to productively give and delegate to students the more freed both students and teachers become (1993).

To make the change from traditional to constructivist learning, much work needs to be done in schools. Curriculum needs to be developed with constructivist learning goals; teachers and student teachers of all grades and disciplines ought to be educated and trained in professional development and universities. Constructivist lessons should be modeled and presented to teachers and administrators. Teachers’ concerns and questions need to be addressed, and answers and support need to be provided. When teachers see not only the incredible lifelong impact they can have on students but also the freedom they can create for themselves and their students, many teachers will be converted. Indeed, for many, practice comes before theory so that when teachers are encouraged to try constructivist activities and see the success and impact, they will buy into the theory. Education needs to be improved, and constructivism can help to build a better, freer, more creative, and more empowering future for students and teachers (Gray, 1997).

**Social constructivist theory.** Vygotsky built his social constructivist theory largely on the shoulders of Piaget’s work in constructivism. Social constructivism emphasizes culture and context in understanding what occurs in society and how to construct knowledge based on this
social understanding (McMahon, 1997). The two theories, constructivism and social constructivism, have a lot in common theoretically but also have some fundamental differences. The two theories overlap regarding inquiry teaching methods and students constructing concepts built on existing knowledge in a way that is relevant and meaningful. The two theories diverge, however, on language development: where social constructivism believes thinking precedes language for cognitive constructivism as well as thinking, constructivism does not. Piaget’s work was also more focused on the individual constructing knowledge while Vygotsky’s social constructivist theory was focused on the group socially learning by interacting and responding to one another (Powell & Kalina, 2009).

Social constructivism is a highly effective method of teaching that all students can benefit from due to the collaborative and social nature of the teaching method. Social constructivism is based on the social interactions of a student in the classroom in addition to a personal critical thinking process. An important concept developed by Vygotsky is the zone of proximal development (ZPD). (Powell & Kalina, 2009). Vygotsky described ZPD as a zone where learning occurs when a child is helped in learning a concept in the classroom (1962). Research has even shown that there is great potential in social constructivism to benefit lower achieving students as they interact with other students in the ZPD (Watson, 2000). Students with learning difficulties are especially likely to show dependence rather than autonomy and are less likely to show initiative. This tendency to lack initiative is often unintentionally perpetuated by teachers who largely dominate their classroom causing lower achieving students to become even more and more dependent on others and incapable of independent learning or discovery. This attitude causes a lack of confidence in students and lower expectations by teachers (Goddard, 1997; Norwich, 1997). Many educators have proven that this concept works. When students are given a task, they can expand their ZPD when they work with other people. Something they cannot do
on their own, they are able to do with others and by doing so grow their ZPD. ZPD growth occurs best when there is organized scaffolding that continually assists students when they need help allowing them to continually grow their ZPD. This assistance could be teachers, peers, or other adults. Like constructivism, there is freedom for students to make choices that will give students more ownership in their learning. Social constructivism, however, places a great emphasis on understanding how social contexts can help students to complete their learning objective. In fact, working in the social context is part of a good learning objective which prepares students to interact and function in society. Internalization also occurs more effectively when there is social interaction. Students have much to offer one another and will arrive to a level of learning at different speeds. If students are encouraged to share their learning with one another, this social interaction will cause all students to learn (Powell & Kalina, 2009).

Vygotsky strongly believed that social interaction and cultural influences have a significant effect on students and how they learn (1962). Powell & Kalina explained that this means that diversity can critically enhance education. As different students from different cultural backgrounds who construct knowledge differently share their findings and ways of seeing the world, knowledge grows for all students. Students need to understand themselves and others around them before they can start learning the curriculum. Socially talking about viewpoints, opinions, values, and beliefs in the context of curriculum and learning objectives can allow students to do just that. They are able to understand themselves better, those around them better, and therefore the curriculum better. While teachers may be afraid to allow too much talking to go on in the classroom, they must find ways to facilitate and foster good productive conversation. It is in these critical thinking class conversations that students are able to grow deeply. Powell & Kalina put it clearly, “The idea of discussion is echoed throughout social constructivism and is enriched through diversity” (2009, p. 245).
Comparison of Piaget and Vygotsky. Comparing and understanding Piaget’s cognitive constructivism and Vygotsky’s social constructivism will give teachers a foundation for using both effectively in the classroom. Both theories have an inquiry questioning and answer method. Both theories contain the belief in guided forms of teaching and facilitating as students build their own concepts and understanding of what they are learning. Students further need guidance when teachers explain complex ideas. Knowledge must be brought out of students since they have their own experiences that impact how they have constructed their knowledge. Piaget’s theory has a greater emphasis on the reasoning capabilities of individual students and how those students interpret knowledge. Vygotsky, on the other hand, believed that there were variables such as social interaction, culture, and language that affected how the individual learned knowledge. Piaget laid the foundation for cognitive constructivism while Vygotsky’s work paved the way for modern-day social constructivism. Piaget believed that thought preceded language and evolved from inner activity as experience and information are processed based on what already exists. Cognitive constructivism, therefore, focuses more on facts and constructing knowledge within an individual’s schema. Piaget did acknowledge that social interaction occurs and is a part of the learning process, but he thought it was the individual who constructed knowledge-based largely on his or her personal experience. Piaget further believed that inner speech or reading to oneself is not a prerequisite to thinking and that this process is outgrown over time. Vygotsky, on the other hand, believed that inner speech was a significant part of the integral process of learning and thinking (Powell & Kalina, 2009).

Vygotsky said that social interaction and culturally organized activities are necessary in the classroom because these activities allow people with more knowledge than the individual to be involved in the zone of proximal development allowing for learning from one person to others to occur. Social constructivism engages students in activities and experiences that create
relationships with other people that will directly affect what they learn. Students also need activities that help them express their personalities such as a group project where they can pick a task that is representative of their interest and personality. In this way, Vygotsky believed that language preceded knowledge and it was the process of social interaction using language that helped students to learn. Social constructivism has a greater emphasis on the relationship between the individual and social interaction with the group. Both cognitive and social constructivist teaching should be used by teachers interactively so that students can process individually what they learned either in a group or from another adult or peer. Students are individuals that process events in a personal and unique way, but they are also part of a culture and larger group which affects their knowledge. Both theories also implore teachers to be facilitators and guides rather than the bearers of all class knowledge that students must learn exclusively from in a direct instruction type method (Powell, 2006).

Teachers from every subject and discipline need to develop psychological or strategic tools to create a constructivist environment for all students. Theories from both Piaget and Vygotsky can be utilized to create a robust learning environment. Allowing students to discover knowledge individually and socially through questions, answers, discussion, and problem-solving is extremely beneficial to students. Teachers should facilitate experiences for students such as discussions, projects, or debates. Learning occurs when students are challenged, open, and comfortable, while highly engaged in something they find interesting. Trust and openness must be developed by the teacher so that every student is comfortable being engaged and interacting. When students are not engaged, it is not only detrimental to their learning but can lead to disruptive behavior that can affect the entire class (Powell & Kalina, 2009).

Teachers can model thinking and problem-solving for their students to help give them the skills to solve their own problems and questions. Teachers can think out loud saying they need
time to think, they need to look something up, or are intrigued, confused, or puzzled. They can encourage their students to take time and think; when they do this, students are empowered to develop their own skills instead of rushing to give a quick, poorly thought-out answer or solution. Teachers also need to be good listeners that encourage their students to communicate with them allowing the teacher to understand the ZPD of their students. When the task at hand is outside of a student’s ZPD, the teacher can either intervene to help or change the learning task to keep it within the ZPD of the students. When teachers introduce their own ideas before understanding and listening to students, the students are not likely to engage in reflection and will be greatly tempted to take the easier route of accepting what the teacher says either to appease the teacher or to avoid the time, work, and struggle of discerning their own ideas (Watson, 2001).

The social aspect of social constructivism is extremely important for pupils who have learning challenges whose metacognitive awareness, use of learning strategies, and self-regulation of their learning is likely to be below average. Working and interacting with their peers will allow students with learning difficulties to pick up on strategies and skills from their peers that they may not get from home or their friends. Also discussing, conversing, problem-solving and debating with their peers will help stimulate students’ own thinking and ideas helping them to understand themselves better and articulate what they think. Classroom observations have shown that where a high proportion of teacher talk is aimed to encourage student reflection, more reflection has happened, and the students enjoyed the challenge of reflecting and articulating their view. When teachers had higher expectations for their students’ opinions and showed more respect for the viewpoints of their students, teachers received higher level thinking and better reflection. Students enjoyed being challenged and given the opportunity to interact and engage with the teacher and other students. When students were not given this
opportunity, they felt frustrated and disengaged from the class. Teachers need to make sure they respond to a specific request for help and when possible should not fish for one specific answer without first listening and understanding the thought process behind a student’s idea (Watson, 2001). When teachers show they are interested in the ideas and thoughts of their students, research has indicated that this leads to more and more complex student talk like better questioning and the production of deeper critical thinking (Wood, 1991). Classrooms are busy, bustling places where students are rarely encouraged to slow down and think. Teachers often don’t realize that they ask and answer their own questions. Small groups are a great way for teachers to allow students to work and talk with other students. This encourages social constructivism and the need for students to be given time to think and challenge their ideas and answers. This also solves the problem of one or two students answering every question that the teacher asks. Every student needs to be provided the opportunity and encouraged to have his or her ideas heard and engaged (Watson, 2001).

Teachers need to help students create relationships, connections, and metaphors to process new information. Understanding how students are encountering learning based on their previous knowledge is paramount to educators. Cooper and McIntyre explained that it is a very active, intricate process; students need to turn ideas around and consider their possible conflict with other ideas that may be firmly held; doing this helps students develop more critical independent thinking (1993). Students need to learn how to use analogies and metaphors to stretch their imagination, build relationships with ideas, and enhance their understanding (Cooper and McIntyre, 1993). Unfortunately, many pupils with learning difficulties do not naturally relate their current learning with other experiences in or out of the classroom and teachers often miss out on opportunities to help students extend their capacity to think in this way. Here, again, modeling can be powerful in both encouraging in having students develop the
habit of forming connections and relationships for themselves as well as increasing their understanding. As teachers interact appropriately with students in their ZPD by listening, understanding, modeling, and encouraging in a constructivist manner, students are empowered to become independent learners (Watson, 2001).

Teachers should also nurture students’ natural curiosity through frequent use of the learning cycle model. This model places great emphasis on metacognition. Initially, students are taught to generate questions and hypotheses. Next, the teacher should work to extend and focus the students’ thinking and lastly there is a generalization as students apply their understanding to new information. In this way their comprehension and control of their own learning will be enhanced; they will have a greater ability in their metacognition. In fact, the structures that may be most useful to students that have learning difficulties are not found in well organized, carefully planned curricula but in their minds. Without teachers understanding this, a lesson may very well appear fragmented to students, and its purpose will be confusing. A solution is to have more student interaction in the planning of lessons as well as teaching students to self-evaluate during and after the lesson is completed. In this way, students not only have a better understanding of the objective of the lesson but will have developed their metacognition (Watson, 2001).

While constructivism gives educators a good start by understanding the importance of the individual as a learner with unique experiences and processes that affect their knowledge, social constructivism gives a more holistic picture by adding the need to understand culture and social interaction as major impacts on students’ learning. Many theorists discuss the advantages and disadvantages of both theories, but the actual process of learning with meaning and students constructing concepts to form knowledge is common to both. Knowledge must be built on preexisting knowledge, and one's background and experience contribute to this process. Social
constructivism adds to a constructivist foundation by making it more dynamic and creating a more socially interactive environment for learning that produces an inquisitive and accepting atmosphere, allowing each student to reach his or her full potential. If the teacher is attentive and guides each student appropriately through the process, developing tools that foster inquiry and social interaction, along with cooperative skills and individual discovery learning, they will produce an effective social constructivist environment. Students and teachers will both be better off from a more free, dynamic and socially interactive atmosphere (Powell & Kalina, 2009).

Video conferencing, computer conferencing, and the web are all tools that are increasingly providing means for virtual learning communities in which social construction of meaning occurs. The power of social-constructivist approaches to classroom teaching is evident. Teachers and students are eager to engage in learning activities across distances. This approach transforms traditional assignments into collaborative projects with educators and students hundreds or thousands of miles away who may live in vastly different cultures and experiences aiding to the knowledge of the collaborative group. (Cifuentes & Murphy, 2000).

Social constructivism can help all students but especially students who experience difficulty in school. Even small changes in teachers’ practice can be effective in conveying to students that what they think and say matters, that learning depends on them. Students experience that learning can give them great satisfaction, individually and as part of a community. A general framework of social constructivism can make significant differences in all students, especially those that struggle in traditional school settings (Watson, 2001).

**Active learning theory.** Another educational theory that grew out of constructivism is active learning. The theoretical framework for this study is based on active learning theory. Active Learning Theory was popularized by the work of Charles C. Bonwell in 1991 and is based on the belief that students learn best by actively doing and reflecting (Brame, 2016).
Cambridge International says, “Active learning means that learners take increasing responsibility for their learning and that teachers are enablers and activators of learning, rather than lecturers or deliverers of ideas” (2017). Michael Prince notes that active learning is student-centered with student engagement as the focus rather than passive transmission from the teacher to the student (2004). Brame describes active learning as focusing, “more on developing students’ skills than on transmitting information and require that students do something like read, discuss, write – that requires higher order thinking. They also tend to place some emphasis on students’ explorations of their own attitudes and values” (2016).

Harvard University describes active learning as including, “any type of instructional activity that engages students in learning, beyond listening, reading, and memorizing” (2019). Harvard gives examples of students discussing a challenging question, responding to an in-class writing prompt, making a prediction about an experiment, or applying knowledge from a reading to a case study. Active learning often includes collaboration between students in pairs or larger student groups, but independent activities that require reflection or writing are also valuable active learning opportunities (2019).

Cattaneo defined active learning as being learner-centered, consisting of knowledge creation over knowledge provision, the focus on process and content, interdisciplinary, collaborative, focusing on student reflection, and relying on intrinsic motivation rather than a focus on assessment (2017). Active learning pedagogies have gained momentum in education in the past decade. For example, the Finnish National Board of education made the decision in 2015 that at least one classroom period be taught through active learning pedagogy (2015). In the cognitive science discipline various authors have suggested active learning approaches can increase student motivation, knowledge retention and content transferability (Michael, 2006).
Harvard explained that active learning could be used in a variety of class sizes, although certain activities may be best suited for particular size. A class is rarely too big or too small to facilitate student discussion, small group activities, or writing responses to prompts, questions, or in-class polls. Even small classes breaking up into pairs or small groups can benefit from some activities more than would be attained from whole class discussion (2019).

Harvard further detailed why instructors should use active learning: this learning theory provides instructors with feedback about what students have learned. It further helps students to gauge their own understanding by grappling with ideas; this helps students connect new concepts to prior knowledge in meaningful ways which leads to students constructing their own understanding. Student collaboration promotes community and connection between students, which can increase a sense of belonging as well as motivation (2019).

A 2014 meta-analysis of 225 research studies found that students in classes with active learning performed 6% better on exams than students who participated in traditional lecturing. In the same meta-analysis, the data showed that students were also 1.5 times more likely to fail in traditional classrooms when compared to students in active learning classes (Freeman et al., 2014). In another study active learning decreased the achievement gap for underrepresented minorities and first-generation college students (Eddy & Hogan, 2014).

Harvard explained various active learning strategies that educators can use in their classrooms. One of the easiest active learning strategies is think-pair-share, where students are given a few minutes to think about and possibly write a response to a question. After the individual reflection, students then share their ideas with a partner. Lastly, some students share with the entire class. In collaborative note taking, the instructor pauses during class to ask students to summarize in writing what they have just learned. Students next exchange notes with a partner to compare. This allows students to highlight key ideas while also picking up
information that they may have missed. Group work almost always consists of active learning and can be done in various formats. Sometimes all groups work on the same question; other times, the teacher might assign different topics to each group. Educators should assign tasks that are purposeful and structure small group projects in a way that there is an obvious advantage to working as a team rather than individually. Groups should then share what they learned or created with the rest of the class. Jigsaw is another active learning teaching strategy. In this strategy student small groups discuss different, but related topics. Students are then shuffled so that new groups are comprised of one student from each of the original groups. The new groups then share what they learned from their original groups. This ensures that all students must fully understand key ideas from the original discussion and requires they teach these ideas in their new groups. In minute paper, students write a short answer in response to a prompt during class, requiring students to communicate their understanding or apply it in a new situation. This can be used as a reflection at the end of class. Intentional mistakes is another strategy where the instructor gives statements, readings, proofs, or other material that contains errors. The students are then instructed to find and correct the errors. Concepts that students often have trouble understanding are perfect for this strategy. In sequence reconstruction, students put a set of items in order such as steps in a process or a timeline of historical events. Often an instructor will give students a list of items written on strips of paper for students to sort and place in order. Lastly, polling is a strategy where students respond to multiple choice questions in an active manner. This could be raising hands, raising an answer card, or using their smartphone to answer questions online where answers can be seen by the group (2019).

Science behind active learning. For learning to have a long-term impact it needs to be tied to multiple parts of the brain. This means the more senses a person uses such as listening, speaking, and moving, the better the memory is formed (Willis, 2016). The brain learns even
better through an experience where an emotional and social connection is made. The amygdala and the hippocampus are vital to learning and are highly activated through emotional, social experiences. (Wesson, 2018). Long-term memory is further enhanced by continuous retrieval. When information is used over and over, it becomes hardwired in the brain for long-term storage (Karpicke, 2016). Students need to have authentic ways they can practice vocabulary, grammar, and language that will rely on the constant retrieval of what they have learned. Video conferencing software allows students to speak, listen, write, smile, laugh and form those emotional, social, and relational connections while relying on the constant retrieval of learned information which can create long-term memories and effective learning (Israel, Knowlton, Griswold & Rowland, 2009).

**Five pedagogies of active learning** There are many different learning pedagogies within active learning theory Savery, 2006). Savery explained that five of these learning pedagogies are problem-based learning, discovery-based learning, inquiry-based learning, project-based learning, and case-based learning (2006). Problem-based learning is a common active learning pedagogy which fits into the constructivist educational paradigm (Savery, 2006).

**Project-based learning.** Project-based learning is an environment where knowledge is acquired, synthesized, and assessed while working in facilitated small groups; it is self-directed learning in a progressive and stimulating structure of context-setting problems (Maudsley, 1999). Developing problem-solving skills is a focus in the problem-based learning environment. Students are also expected to develop research skills. These skills empower learners to apply their knowledge and skills to create viable solutions to defined problems (Savory, 2006). Project-based learning has been criticized as a pedagogy that is often designed and implemented poorly while lacking objectively aligned assessment methods (Boud & Feletti, 1997). Some research has shown that without proper scaffolding, consistent feedback, or context, students in project-based
learning classrooms have shown less progress than students in traditional classrooms (Savery, 2006). However, more research shows that when project-based learning is implemented properly, it is at least as effective and sometimes more effective than traditional teaching methods (Hmelo-Silver, Duncan, & Chinn, 2007). When done properly, learners thrive using the process of problem-solving through self-directed or group research to solve various types of problems in need of solutions; frequent descriptive feedback, student reflections, and an effort to instill intrinsic motivation are all essential elements of successful project-based learning (Hmelo-Silver et al., 2007). Like constructivism, project-based learning places importance on being learner-centered, process-oriented, collaborative, reflective, and containing self-assessment as an indicator of intrinsic motivation (Cattaneo, 2017).

**Discovery-based learning.** Jerome Bruner developed discovery-based learning pedagogy; he argued that the goal of education is to not only develop content knowledge but also to help each learner become autonomous and self-motivated (1961). Bruner hypothesized that by learning through discovery, students would develop ownership over their own learning through the process of discovering and creating knowledge. Bruner thought the extrinsic motivation of traditional education with rewards and punishments took away from the intrinsic personal gratification of being an autonomous learner. Therefore schools, according to Bruner, should focus on teaching skills to students that would allow them to inquire, discover, and solve problems (1961).

Unlike problem-based learning, discovery-based learning does not require educational objectives or the development of a specific skill set. Methods of discovery are directed by the student and can range from experiments, individual and collective problem solving, or individual inquiry and research. In its purest form, discovery-based learning is a student-directed learning creation process with boundaries and goals set by students. These components are also the main
critiques of the pedagogy as a lack of teacher support, guidance, content focus, and learning objectives can make education difficult to assess and chaotic if done poorly (Cattaneo, 2017).

The most successful cases of discovery-based learning, like problem-based learning, have been associated with learners who have prior content knowledge, are guided with scaffolding content and skill, and when the pedagogy is first applied in a structured manner. Discovery-based learning may not be the best pedagogy to first achieve content knowledge. However, once students have a basic understanding, discovery-based learning can empower students to understand themselves, the world, and knowledge at a higher level. The expertise and skills of students will determine how much autonomy students should be given. The more advanced students are the more freedom they can be given while more novice students need support and boundaries (Mayer, 2004).

**Inquiry-based learning.** Inquiry-based learning begins with a question followed by investigating solutions, creating new knowledge, discussing discoveries and experiences, and reflecting on the new knowledge (Savery, 2006). The process of inquiry-based learning is similar to the steps of the scientific method and is most often used in science education classes (Cattaneo, 2017). Banchi and Bell describe four different inquiry stages that students with novice to expert levels of problem-solving skills can accomplish: confirmation, structured, guided, and open (2008). The confirmation level is best suited for novice learners who need a highly focused assignment, maximum teacher guidance, and definite solutions; the structured level allows for inquiry with unknown solutions but predetermined processes and questions; the guided level offers students more freedom over the process to find an unknown answer to a predetermined question; at the open level students determine their own questions, process of scientific inquiry, and methods of communicating the results (Banchi & Bell, 2008).
Research in schools has shown that effective inquiry-based learning encourages student curiosity, teaches students inquiry, increases the importance of topics and questions, facilitates the process of researching and presenting information, and is ideal for technology integration (Owens, Hester, & Teale, 2002). Inquiry-based learning has a constructivist foundation and relies heavily on being learner-centered, process focused, reflection focused, and relies on self-assessment. While content knowledge and collaborative information sharing are often needed, it is the individual learner as a determiner of knowledge that is most important (Cattaneo, 2017).

**Project-based learning.** Project-based learning is an active learning pedagogy primarily focused on a specific student output in project form (Cattaneo, 2017). Thomas defines project-based learning as five essential elements: projects are the curriculum, not simply tools to supplement the curriculum; projects are instigated by driving questions or ill-defined problems; students must inquire, complete constructive investigations, and build knowledge and understanding; learning needs to be driven by students, teachers must facilitate and provide guidance; and projects need to be intrinsically motivating or focus on issues of interest to the students (2000). Savery offers a different approach than Thomas; rather than projects being the pedagogy as Thomas states, Savery argues that projects are typically used as a tool (2006).

Project-based learning is focused on answering questions and solving problems; it has a primary focus on process, but content knowledge is also important to the success of the project. Project-based learning should be student-driven, intrinsically motivated, but can also at times be used as a teaching method. Learner-centeredness, process and content, collaborative methods, reflection, and assessment are all essential. Unlike other pedagogies, however, content transferability is not an essential element in project-based learning (Cattaneo, 2017).

**Case-based learning.** Case-based learning is a pedagogy that involves exploring, diagnosing, problem-solving and repeating in order to gain understanding (Thistlethwaite et al.,
This pedagogy suggests that when experiencing a new situation, a person’s memory attempts to retrieve a similar case from his or her past to relate to the current situation; the person then adapts the previous experience and knowledge to the new experience (Cattaneo, 2017). Lessons learned from the new experience are then attached to the previous experience and stored for later retrieval. From these clusters of experience, people develop a caseload or index of cases to which people can make connections and draw references. Case-based learning works off this process of retrieving, adapting, applying, and later storing information (Cattaneo, 2017).

Riesbeck suggests five principles that make case-based learning pedagogy effective: provide experiential learning experiences; provide examples to develop a large caseload; provide connections so that interdisciplinary links are created at the tie of knowledge construction; not to punish failure as it is a needed part of learning; and provide sufficient support and scaffolds for students to succeed (1996). These principals give value to expert knowledge, on-the-job training, and life experience, via the educator in the classroom (Cattaneo, 2017).

Case-based learning is strongly constructivist driven. Five key elements to the success of case-based learning are directly tied to constructivism. Case-based learning is learner-centered, content focused, interdisciplinary, collaborative, and reflective. Case-based learning is described but not predetermined by the pedagogy, and assessments are student-driven (Cattaneo, 2017).

**Comparison of active learning pedagogies.** The five active learning pedagogies are all learner-centered. Students are the most important knowledge creators and the focus of all the pedagogies, which aligns with a constructivist core. The difference between the theories lies on the descriptions of their focus: process/content, interdisciplinary lessons, collaborative lessons, reflection, and assessment. Problem-based learning places emphasis on process, collaborative learning, reflection, intrinsic motivation, and assessment; discovery-based learning aims to provide lessons drive by students’ intrinsic motivation; inquiry-based learning has a specific
process of engaging students, but is also considerate of student intrinsic motivation and reflective processes; project-based learning focuses on creating a project; and case-based learning describes all factors as integral to successful pedagogical implementation (Cattaneo, 2017).

**Active learning theory summary.** Active learning theory was popularized by the work of Charles C. Bonwell in 1991 and is based on the belief that students learn best by actively doing and reflecting (Brame, 2016). Cambridge International described active learning as allowing learners to take more responsibility for learning, and that teachers should be enablers of learning rather than the lecturers of all ideas (2017). Harvard gave various teaching strategies to implement active learning in the classroom from think-pair-share to minute paper (2019). Willis explains the science behind active learning: for learning to have a long-term impact it needs to be tied to multiple parts of the brain; this means the more senses a student uses the better the memory is formed (2016). Cattaneo analyzes five different active learning pedagogies including problem-based learning, discovery-based learning, inquiry-based learning, project-based learning, and case-based learning. Active learning solves a common problem for educators: the inability to connect content to real-world applications; video conferencing allows learners to interact in the real world using what they have been learning (Israel et al., 2009). In this way, technology can allow students to actively learn in experiences that are reflective of real-world environments.

**Effects of Video Conferencing in K-12 Education**

Educators have used video conferencing in various forms over the years. From distance education courses, professional development workshops for teachers, virtual visits with context experts, virtual field trips to museums, and collaborative projects between schools all over the world, video conferencing has dramatically impacted education (Lawson et al., 2010). One of the key advantages of video conferencing in k-12 education over other distance learning
technologies like traditional learning managements systems is in creating a social presence and personal environment for learning (Tyler, 1999). Olsen further explained that video conferencing is essential for distance-education, business, education, and other social disciplines in which interpersonal skills are an essential component of the experience (Olsen, 2003). Spaulding and Lake made another meaningful discovery. In their research, they concluded that video conferencing was especially beneficial to students who traditionally did not perform well in school (1992). In another finding, video conferencing was found to minimize the social effects of physical disabilities which is extremely important with students who have special needs (Mykytyn, 1999). Bello et al. further found video conferencing to be helpful with homebound-students. Video conferencing enabled them to participate in class while being physically restricted to inside their houses (2007). Video conferencing can also be a useful way to observe teachers in k-12 settings. Cakiroglu, Kokoc, Kol, & Turan found students thrived using video conferencing as it easily allowed students to communicate with teachers and students providing them with immediate feedback and easy collaboration (2016). Cifuentes & Murphy additionally showed that multimedia software like video conferencing has an advantage over pencil and paper because students can easily include visual and aural depictions of themselves, their interest, and their beliefs. These then can easily be shared with others all over the world (1999). Video conferencing has also had success in science disciplines at the primary level. Students showed a broader intercultural view as well as more critical thinking and deeper level learning after video conferencing was used to connect students with others outside of their country (Sáez López, & Ruiz Gallardo, 2014). Newman, Newman, Brown & McNeely had similar conclusions. They stated that inquiry-based learning, structured discussions, and higher-level thinking skills are demonstrated in video conferencing content (2006). Others have found traditional roles of video conferencing to reach learners in rural or remote communities by
allowing students to observe traditional lessons and lectures (Husu, 2000). Interactive video conferencing, in particular, can play important roles in supporting collaborative synchronous learning activities under the right pedagogical conditions. Video conferencing does this by strengthening the social relations among students and educators of the local and remote class at both schools. The combination of interactive video conferencing and face-to-face learning activities transforms the role of the modern school as a socializing mechanism and at the same time broadens students’ understandings and opportunities for communication (Anastasiades et al., 2010).

There has been an observed gap between the knowledge and abilities provided by schools worldwide and the needs of the knowledge society. New tools that can link cultures, languages, improve social skills, encourage creativity, improve decision making, improve technological literacy, enhance oral communication and build collaborative structures are needed to get students from where they are to where they need to be (Anastasiades, 2009). Dooly & Davitova concur that one of the most significant educational challenges facing educational authorities is how to move beyond traditional classroom structures in order to provide new creative learning environments where students are forced to use their own resources to solve problems, work collaboratively, and prepare for real-world situations (2018). Video conferencing has the potential to fill this gap that education so desperately needs.

Cifuentes & Murphy concluded that education through the use of video conferencing could play a significant part in nurturing students positive identity formation by providing them with experiences through cross-classroom collaboration that allows them to connect with diverse people all over the world. This learning experience has the power to transform individual students from a perspective of parochial to global (2000). While even just a decade ago it would have seemed like a daunting challenge to purchase and train teachers and students
to use relatively expensive and complicated hardware and software, education in the past six years has had the opportunity to take advantage of the rise of widespread mobile technologies. Teachers and students have expressed strong preferences for using their smartphones over traditional electronic equipment that can be a time-intensive process to learn how to use. Instead, educators and students have already been trained to at least a basic level on video conferencing, editing, uploading, and sharing data through social media and every day uses. This dramatic change in society could prove to revolutionize education. It is imperative that educators take advantage of this new opportunity and not fall behind the innovate capabilities that are increasingly available among staff and students (Lopez et al., 2015).

**Effects of Video Conferencing on Motivation**

Hopper discussed the effects of video conferencing on students as benefitting their communication skills, motivation, and confidence. Furthermore, video conferencing was found to enrich students’ knowledge and comprehension of the curriculum. The magic occurred for students when they had personal contact with other students, teachers, and experts. This interpersonal connection that video conferencing had on students is what enriched their self-confidence, motivation for learning, and understanding of the diversity found throughout the world (2014). Carville & Mitchell observed, “In general, quite a lot of initial curiosity is evident in students’ responses at both sites with such replies as ‘curious’ and ‘intrigued at the possibility of the technology’ being repeated” (2000, p.44). This intrigue and curiosity led to students having positive attitudes toward even their first encounter with video conferencing. Keisch also found that students were more motivated to learn through video conferencing than using traditional instruction. In a project called the SeaTrek program, an online science program designed for elementary students which allowed them to interact through video conferencing technology, the program demonstrated that students were more motivated to learn more
regarding how scientists work together as teams to solve problems. Students were not only more engaged in the lesson but their overall interest in science increased due to the experience (2004). In a national evaluation of video conferencing in schools in the United Kingdom, researchers determined that both students and teachers had powerful learning effects from their experience with video conferencing that motivated them to learn (Comber, Lawson, Gage, Cullum-Hanshaw, & Allen, 2004). In another study that documented the impact of video conferencing on the cognitive and affective outcomes, findings showed that students who used video conferencing had higher scores on cognitive indicators, were more motivated to learn the curriculum, and were more interested in learning about the subjects at hand (Newman, 2008). Doggett similarly found that students’ experiences were largely positive with most students being comfortable asking questions and interacting by the end of the video conferencing course. In a survey given at the end of the course, a strong majority had a positive perception of both the course and teacher who used video conferencing to facilitate the class (2007). While evidence has shown that video conferencing can be a powerful and effective tool, especially with regards to motivation, it is important to remember that research has likewise shown that different people react to video conferencing differently. Training, scaffolding, and well-organized lessons are key to giving students the best video conferencing experience that turns into a truly inspiring and engaging lesson that produces effective instruction.

**Effects of Video Conferencing on Cultural Perceptions**

Video conferencing has proved to erase the barriers that separate students. From geographical boundaries to languages, to countries and nationalities, video conferencing allows students to interact with people they could never have before, and the effects have shown to have a powerful impact on the cultural understanding of diverse people. Lawson et al. state, “videoconferencing extends the reach of the learners beyond the school and requires new ways
of engaging with others (2010, p. 307). For students to have this cultural awareness of the world is becoming increasingly important; as Dooley & Davitova explain, “it is increasingly recognized by educators that knowing how to communicate effectively in an interconnected world is a key means to access social, political and economic opportunities (2014, p. 215). For education to be successful, it must put an emphasis on fostering the growth of students who understand diverse people in other cultures. Eristi concluded that students must develop awareness of different cultures, understand the need for the existence of other cultures, the differences between them, and the relationships across cultures. This is only authentically possible by establishing intercultural interactions which can be done through the utilization of video conferencing. Eristi continued by explaining the benefits of establishing these multi-cultural relationships and educational environments which include recognizing and giving meaning to cultural values, how to interact and show interest in other cultures, and how to develop students critical thinking skills by showing students they can interpret and integrate multi-cultural interactions. Students also learned a macro understanding of how cultures affect societies, politics, and the world at large. Eristi went on to explain that inter-cultural interaction is especially important for young children who form cultural views at an early age. Young children naturally form cultural values, expectations, and an understanding of the culture they are a part of. If students are exposed to other cultures, they will develop a broad understanding of culture and be able to interact in a diverse world enriching their social and career opportunities (2012).

Video conferencing has been shown to have a positive impact on the cultural understanding in education in specific ways including universal educational applications, international cooperation, cultural change, cultural interaction, cultural transfer, and multi-cultural understanding among others (Motamedi, 2001). Specific examples of this occurring are cited by Eristi regarding a study done in which students from Turkey and Canada
communicated and collaborated via video conferencing. The Turkish students reported that the Canadian students were comfortable communicating and were not unsociable. The Turkish students also observed that unlike themselves the Canadian students did not have to wear a uniform at school and their order of seating was different. These observations verified that cross-cultural awareness and understanding was happening. Further, the communication of these observations by the Turkish students spurred the Canadian students to ask additional questions about cultural and school norms in Turkey continuing the exchange of cultural information (2012).

Yamada similarly observed that students were able to pick up on cultural differences through video conferencing. Specifically, students learned when to laugh or nod as well as other body language movements that assist in communicating with another culture (2009). Case studies by Global Leap demonstrated that video conferencing was most enjoyed and useful when it not only contained an interactive element as previous studies had noted but also contained the interaction with an international audience (2003). Lee likewise concluded that the benefits of video conferencing are especially important across cultural boundaries where greater awareness and tolerance between disparate groups have formed even across significant geographical boundaries (2007).

In another study by Jung, it was concluded that students from South Korea had gained valuable cultural understanding from various Asian countries through the use of video conferencing. The students perceived video conferencing as helpful in both gaining cultural and language knowledge. Jung concluded that while the students had been aware that there were cultural differences it was not until the use of video conferencing that they had the opportunity to experience the diversity first-hand (2013).
In another study, teachers developed empowering multicultural relationships while the students developed multicultural understanding and positive self-concept due to cross-cultural video conferencing. Examples of the empowerment and growing self-concept included raised academic aspirations and increased poise during public speaking (1999). In another study in 2000, Cifuentes and Murphy intentionally constructed their video conferencing project to promote empathy for people of other cultures by having their students walk in each other’s footsteps. Teachers and researchers observed students’ enthusiasm for the activities and concern for each other throughout the study. They concluded that video conferencing had had a positive cultural impact on students (2000).

Reading, Myung-Sook, Pegg, & Cybula conducted a study to address the need of rural Australian students to be more culturally aware of surrounding Asian cultures. Australian students then participated in cultural exchanges with Asian students via video conferencing. The video conferencing interaction enhanced the cultural values and attitudes of students involved (2013). In another study of Asian students, they connected with English students and experts to practice communicating in the language. The effects were positive with students benefitting from practicing the target language as well as enhancing understanding of cultural ideas and values related to another subject (Shih, 2009). Research has conclusively shown that learning about other cultures is a task that video conferencing is more than capable of delivering on. Whether it is comparing and contrasting similarities and differences, learning new values, body language, or just building relationships with people from other worlds, video conferencing is an innovative tool that can transform education and students.

**Effects of Video Conferencing on Language Learning**

One of the best ways video conference has been found to be used interactively is by using it cross-culturally to learn about other cultures and foreign languages where authentic
communication can be done with native speakers in countries hundreds or thousands of miles away (Harris, 2002). Case studies cited by Global Leap echoed these findings by stating that video conferencing was most enjoyed and useful when there was an interactive element, especially with an international audience (2003). Teachers have picked up on the usefulness of video conferencing, and it is quickly becoming an important part of education, especially in the context of language learning, social interactions, conversations, intercultural exchanges and communications (Dooly & Davitova, 2018). Conboy, Gimeno, & Reuber concluded that interactive student exchanges with native speakers in a target language may increase the learners’ self-confidence, production, and oral comprehension of the target language. Additionally, students’ intercultural communicative competence improved. While video conferencing is not the only way to approach these interactive exchanges, it is a viable option (2017). In fact, in the absence of direct contact with native speakers, video conferencing can even require students to be more creative in their use of the target languages and move from a simple understanding to a more intimate and personal one where they can interpret meaning and become increasingly able to construct longer conversation in more depth (Clementi & Terrill, 2013).

Yamada’s study further suggested that students picked up on cross-cultural body language including when to laugh or nod. Video conferencing also increased students’ motivation to learn a foreign language (2009). Coyle showed that foreign language interaction through video conferencing could improve knowledge construction in language lessons (2004). According to a teacher assessment, Butler and Fawkes claimed that a majority of students learning French in their classes had improved their grade by a full letter after the use of regular video conferencing contact with students in France (1999). Gruson & Barnes studied a national project in France that installed 1,000 video conferencing systems across France in primary
schools. The intended purpose was to allow students to communicate with native English speakers so that they could practice and improve their oral and socio-cultural skills. The results were positive with growth in both students and teachers. Using the video conferencing did have a learning curve for both students and instructors, but once they were familiar with the technology learning increased (2011).

In another study, TalkAbroad, a commercial service that connects language learners with native speakers through video conferencing, was used to determine the effects on language comprehension. While there were some challenges in planning and implementation, it was determined that TalkAbroad did improve language learning as well as self-confidence, motivation, and intercultural understanding along with decreasing communication anxiety. For TalkAbroad to be most effective, it is important for educators to plan and scaffold the experiences into the larger curriculum. Students should also be assessed and monitored to ensure that students are having successful experiences that foster learning (Conboy, Gimeno, & Reuber, 2017).

Hsiu-Jen & Hong, 2012 demonstrated in their research that video conferencing provided an adequate medium for US college students to learn Mandarin from Native teachers in Taiwan. The results showed that technology could be useful in teaching foreign languages by remote teachers to language learners. Four instructional strategies were successfully implemented. These were body language, graphic and pictures, animations, and text-based input to enhance communication and comprehension (2012). Rather than just study perceptions, feelings, attitudes, opinions, or behaviors, others have done quantitative studies measuring students’ cognitive and affective outcomes. These studies compared students who received video conferencing with those who did traditional educational activities without video conferencing. The results showed that students who participated in the video conferencing activities were not
only more motivated to learn the material and more interested in learning about related topics but also had higher scores on cognitive indicators (Newman, 2008). In another study by Rassaei, students who were given corrective feedback in person were compared with students who were given corrective feedback online. The results showed that the corrective feedback given via video conferencing was just as effective as the feedback given in person. Rassaei further concluded that students could improve their foreign language comprehension through online conversations with native speakers via video conferencing just as well as they could in face-to-face conversations with feedback (2017). Another benefit of video conferencing is that it aligns well with the World-Readiness Standards for Learning Languages. The standards seek to improve students’ communicative and interpersonal skills, intercultural awareness, and linguistic competence. Video conferencing allows for all these standards to be accomplished by creating an immersive experience for people to practice a foreign language. Interactive exchanges with native speakers online through video conferencing can expose students to cultural values beyond their own. Having both the language practice and cultural exposure to foreign countries in the target language can help students negotiate meaning and deeply learn the material taught in class (Conboy, Gimeno, & Reuber, 2017). Jung concluded video conferencing enables language learners to learn directly from the same class level as those from other countries. In this respect, using video conferencing could become the next trend for future language teaching and learning as one of the better ways to develop foreign language competence (2013). Jung explained another possible benefit of video conferencing is student satisfaction which is one of the best ways to attract enrollment and strengthen any foreign language program (2013). Video conferencing may be a critical tool in engaging students and inspiring them to study a foreign language (Jung, 2013).
Limitations of Video Conferencing

While the proven benefits of video conferencing are well documented, there are also limitations to using the technology that should be addressed. Laouén and Stacey found that time delays and buffering in low-cost systems had a negative impact on language learning (1999). In 2003 sound and picture quality was still an issue and caused loss of continuity (Gage 2003). Four years later in a separate study, Yang and Chen found that time lags were still a frustration for language learners trying to use video conferencing (2007). The lightning pace that technology has evolved has caused pedagogy to often trail technological innovation. The best ways to use video conferencing are still being discovered (Deadman, Hall, Bain, Ellion, & Dudycha, 2000). Schools that have video conferencing centers or studios must coordinate their use as well as train educators on how to use the technology (Pitcher, Davidson, & Goldfinch, 2000). In studies by Global Leap, background noise while trying to do video conferencing made it difficult for students to communicate online (2003).

Not all students are naturally comfortable with video conferencing, and some have described it as uncomfortable and causing self-consciousness (Eales, Neale, & Carroll, 1999). Other students found it hard to look at a monitor for long periods of time. Poor resolution with choppy frame rates has even caused students headaches. This frustration and discomfort have led to some students developing negative attitudes toward the educational resource. Some educators have also been apprehensive about lecturing or communicating via video conferencing as they were not sure how to act on camera (Carville & Mitchell, 2000). Organizing the projects for students to complete while using video conferencing is also not an easy endeavor. Planning, pedagogical, organizational, and technical issues have to be addressed before video conferencing interactions can be carried out (O’Dowd & Ritter, 2006). The equipment costs in the past have been thousands of dollars (Carville & Mitchell, 2000). Lastly, traditional teachers and schools...
have often found it hard to integrate the more constructivist approach needed for successful video conferencing (Howard, 2013).

**Considerations of Video Conferencing Use**

While video conferencing does have its limitations, there are ways to minimize them. As internet speeds have increased and technology has become cheaper, there is less cause to worry about high expenses & choppy framerates. As long as you have an internet speed with download rates at least 2 mbs, you will be fine with most software (Smith, 2017). As more and more people become used to using video conferencing on everyday devices like their smartphone the amount of resources that must be put into teacher and student training has decreased. (Lopez et al., 2015). Having real people in person that can help on both ends of distance learning, a collaborative project, or a lecture or lesson being taught remotely can greatly aid in any frustration or confusion that may develop. Having a tutor or teacher that can help remote students in their video conferencing task can diminish any negative effects (Carville & Mitchell, 2000). It has also been proven that students will be less uncomfortable when there is a clear objective for the video conferencing. While culture, values, and languages can be acquired through informal conversation at least having the parameters of a clearly defined goal gives students a purpose for engaging in video conferencing and make them more comfortable conversing (Conboy et al., 2017). Jun additionally said that preparatory work for students before the video conferencing helps students to participate more effectively (2013). The students that are most comfortable with video conferencing are the students that are best with technology. For students that may not have computers, tablets, and smartphones to use in their personal lives, more training and preparatory work are needed (Doggett, 2007). As the benefits and limitations are compared, Jung concluded that
“although these drawbacks to using video conferencing systems in class are evident, it can be said that the advantages outweigh them and that using video conferencing in EFL classrooms may actually help students practice and enhance their listening and speaking skills; increase their cross-cultural, communicative, and pragmatic competence; and develop their overall linguistic competence” (2013, p.749).

**Further Video Conferencing Research That is Needed**

The field of video conferencing is underfunded in practice and under-researched by the academic community (Lawson et al., 2010). The pace of change of video conferencing has made it hard for education and pedagogy to keep up with the ever-changing innovations. Research must improve to stay with the changing times (Deadman et al., 2007). Educators should strive for sound pedagogy to drive the use of technology and research must improve for this to happen (Herrington & Bunker, 2002). Gruson and Barnes concluded that more data is needed to try and evaluate the impact of video conferencing sessions on the way students develop communicative skills as well as the theoretical tools educators use (2011). The research community needs to further explore innovative aspects of video conferencing, if they are to meet the diverse needs of a student population who are increasingly video literate (Lawson et al., 2010). This has become especially true in the past decade with the exponential growth of video conferencing on smartphones and social media. Educators must not fall behind the technological norms of their students. To stay relevant and to understand how to best use innovative tech, constant research must be done.

**Conclusion**

Video conferencing is a promising, innovative tool that has proven to be effective in various educational settings (Anastasiades, 2009; Bolona et al., 2015; Cakiroglu et al., 2016; Cifuentes & Murphy, 2000; Conboy et al., 2017; Eristi, 2012; Gruson & Barnes, 2011; Jung,
2013; Lawson et al., 2010; Newman, 2008; Shih, 2009). While there are limitations to video conferencing, appropriate uses can open up the world to your classroom (Carville & Mitchell, 2000; Conboy et al., 2017; Jung, 2013). Video conferencing is an increasingly inexpensive way of providing remote students the nearest thing to face-to-face teaching (Carville & Mitchell, 2000). Video conferencing is especially effective in connecting international partners and is a great resource for language learning classes (Dooley & Davitova, 2018). Through video conferencing, students can meet people from another part of the world providing them the opportunity to learn and participate in two-way communication. Utilizing video conferencing systems in class makes it easy for students to avoid communication problems, develop language competencies, and understand other cultures (Jung, 2013). Cifuentes & Murphy observed the potential good for video conferencing in their study:

when adolescents were given the opportunity to describe to distant audiences their home lives, their goals, their thoughts and values, their likes and abilities, and their stories, they were forced to reflect critically on their understanding of their experiences in a social context beyond their immediate community. As students learned about themselves through their writing and development of multimedia presentations, they shared their personal identities with each other, thereby broadening each other’s views of human experience. (2000, p. 13)

This is what social constructivism and inspiring life-impacting education is all about – connecting learners to broaden “each other’s views of human experience”.
Chapter 3: Research Methodology

Introduction

Chapter three discusses research procedures, sampling, and demographic information as well as instruments used in the study. This is a quantitative study that utilizes two different instruments to measure the effects of using video conferencing as an instructional tool on both listening comprehension and perceptions of other cultures. The first instrument is a multiple-choice auditory test, and the second is a multiple-choice assessment of perceptions of cultural diversity. Chapter three further explains the procedures used to manage and organize the process of data collection. This chapter also concludes with a description of data analysis procedures and statistical testing to analyze the research question.

The assessment data consists of test answers from a multiple-choice listening comprehension exam and perceptions of cultural diversity assessment. The control and experimental group both took pre-tests and post-tests to see if the intervention of video conferencing as an instructional tool had an effect on listening comprehension or perceptions of cultural diversity as compared with traditional classroom instruction. Students completed two different pre-tests and post-tests to understand the impact of video conferencing as an instructional tool in the foreign language classroom specifically regarding listening comprehension and cultural diversity perception. Data from this study could potentially contribute to the body of knowledge around using video conferencing as an instructional tool in the foreign language classroom. This could lead to higher foreign language listening comprehension and improved perceptions of other cultures.
Research Question 1:

Question 1: Is there a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction?

Ha₁: There is a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean increase of scores of those students using only traditional instruction.

Research Question 2:

Question 2: Is there a statistically significant difference between the mean change (pre to post) of perceptions of cultural diversity test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction?

Ha₂: There is a statistically significant difference between the mean change (pre to post) of perceptions of cultural diversity test scores of students that use video conferencing when compared to the mean increase of scores of those students using only traditional instruction.

Population and Sample

The target population consisted of high school Spanish II students. The researcher is a faculty member at the participating school in East Tennessee. Students from a high school in East Tennessee chose to participate in the study. Ages ranged from 16 to 18 years old. The sample included 40 high school Spanish II students. Twenty students were in the control group, and twenty students were in the experimental group. The research matched the two groups to represent age, gender, and grade level. The twenty students in the control group were from 4 different Spanish II classes. The control group consisted of ten males and ten females, and all were 16, 17, or 18 and were either juniors or seniors. The experimental group also consisted of 20 students with 10 males and 10 females. The students in the experimental group were also
either 16, 17, or 18 and consisted of juniors and seniors. The students in the experimental group likewise came from one of the same four classes. This study assigned students to a student partner from a private secondary school in Morelos, Mexico. Ages of the Mexican students ranged from 15-16 and grade level 10th-11th grade males and females. Only students from Mexico who volunteered for the project participated. After students volunteered, the study assigned partners between students in Tennessee and Mexico.

**Description of Instruments**

Research question one used an auditory assessment made up of multiple-choice questions from the textbook Avancemos 1 by Holt McDougal. All questions comply with ACTFL’s Alignment of the National Standards for Learning Languages (Gahala, 2010). This study selected questions from Leccion Preliminar, Unidad 1, Unidad 2, Unidad 3 and Unidad 4 in the Avancemos 1 textbook. These questions assessed the five topics given for discussion during the five video conferencing sessions. In the first video conferencing sessions, students discussed topics from Leccion Preliminar which included basic introductions, spelling each other’s name, and practicing numbers 1-10 by discussing phone numbers in Spanish. Students also compared their country, state, city, and holidays in English. In the second session, students discussed topics from Unidad 1 and Unidad 3 Leccion 1 in Spanish. These topics included descriptions of themselves, activities students enjoy doing, and what they like to eat and drink. Students discussed the same topics in more detail in English as well as popular activities students do for fun. In the third session, students discussed topics from Unidad 2 Leccion 1 which included students’ daily schedules. In English students also discussed daily routines and schedules at school and home. The fourth video conferencing session included discussions on family, ages, dates, and birthdays in Spanish from Unidad 3 Leccion 2. Students also discussed family culture, traditions, and activities in English. In the last session students discussed prices of various
products and commodities including food, clothing, and electronics using phrases and vocabulary from Unidad 4 Leccion1. Students further discussed these topics, popular places to shop, and cultural expectations in English. Each video conference session also included freedom for students to discuss additional topics that came up during the conversations.

The second instrument used was a short assessment of eight questions modified from the College Student Experience Questionnaire (Kuh et al. 2003). Respondents answered the eight statements on a Likert scale from 1= “Strongly Disagree” to 5 = “Strongly Agree.” These questions have been shown to be both reliable and valid in numerous surveys and extensive literature (Kuh et al. 2003, Edison et al. 2001).

Research Procedures and Timeline

This study conducted its research during January, February, and March of 2019. The principal received details surrounding the study. The principal, parents, and students gave permission to conduct the research. After approval, administrators further learned of the details and procedures of the study. Students took the cultural diversity perceptions at scheduled times. Video conferencing interventions happened once a week on five separate days in January, February, and March at two separate times. Eleven of the students in Tennessee completed their video conferencing sessions at 11:10 a.m. EST with ten students in Cuernavaca, Mexico where it was 12:10 a.m. These first eleven students were B1 level proficient in English. B1 comes from the Common European Framework of Reference for Languages, CEFR, which is an international standard for measuring a person’s proficiency in a language. B1 speakers are considered intermediate and can,

- understand points regarding family, work, school or leisure-related topics,
- deal with most travel situations in areas where the language is spoken,
- create simple texts on topics of
personal interest, and describe experiences, events, dreams, and ambitions, as well as opinions or plans in brief. (Kennedy, 2017)

The second group of 9 students in Tennessee completed their video conferencing sessions with 9 different students from a different class but the same school in Cuernavaca, Mexico. These 9 students were at the English level B1+ meaning they are at the same general level but more advanced than the B1 class.

For the cultural diversity perceptions assessment, all participants received thorough explanations that participation was voluntary and that questions should be answered independently and honestly. This study educated participants by explaining that there was no right or wrong answer on the perceptions of cultural diversity assessment. Forty students took the cultural diversity perceptions assessment; twenty were in the experimental group using video conferencing, and twenty were in the control group receiving traditional in class discussion.

**Analysis**

This study manually entered data into Microsoft Excel for analysis using a two-sample t test for independent samples. Excel helped analyze the data separately for the listening comprehension and the perception of cultural diversity assessments. Specifically, Excel calculated the mean, standard deviation, t score, and p value. The level of significance was .05, and two separate two-tailed tests of statistical significance calculated the p value. The p value determined whether there was a statistically significant difference in the means and whether the null hypothesis was rejected.

**Question analysis.** Forty students, half of which received traditional in-class instruction and half of which used video conferencing to talk with a native speaker, took a 50-question auditory multiple-choice pre-test and post-test graded on a scale of 0-100. The difference between the pre and post-tests (i.e., post-test score – pre-test score) showed each student’s
improvement or decline. This information provided the data for a two-sample $t$ test for independent samples.

The same forty students, half of which received traditional in-class instruction and half of which used video conferencing to talk with a native speaker, additionally took an 8-question assessment graded on a Likert scale. Students answered each statement from 1-5 with 1 being “I strongly disagree” and 5 being “I strongly agree”. This assessment gave a score of 8-40 with 40 showing the highest level of cultural perception. The difference between the pre- and post-tests (i.e., post-test score – pre-test score) showed each student’s improvement or decline. The difference in scores provided the data for a two-sample $t$ test for independent samples. This study further analyzed the data to make sure the correct assumptions were met, and the results determined whether the null hypothesis was rejected.
Chapter 4: Findings and Data Analysis

Introduction

The purpose of this study was to research the effects of video conferencing as an instructional tool in the Spanish II classroom on both listening comprehension and perceptions of cultural diversity. The researcher calculated the mean differences in pre-tests and post-tests for both listening comprehension and perceptions of cultural diversity. The two-sample t test is used to test the differences between two separate samples. The t test requires two independent samples with normally distributed data (Chieh, 2019). Using Microsoft Excel this study ensured moderate normality verifying the validity of using two different two sample t tests. The results of the two different t tests determined the rejection of the null hypotheses.

Listening Comprehension Results

This study analyzed the effects of video conferencing sessions on listening comprehension by giving a 50-question multiple choice assessment to 40 students before intervention as a pre-test and after intervention as a post-test. Twenty students in the control group were participating in traditional textbook activities, and twenty were in the experimental group participating in five 10-20 minute video conferencing sessions with students in Mexico. Excel calculated the mean change by subtracting the pre-test scores from the post-test scores and then averaging the results.

Table 4.1 shows the mean listening comprehension scores of the pre and post-tests along with the mean difference in test scores.
Table 4.1

Means of Pre and Post Tests Scores on Listening Comprehension Assessment

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>82.8</td>
<td>87.4</td>
<td>4.6</td>
</tr>
<tr>
<td>Experimental</td>
<td>87.0</td>
<td>93.1</td>
<td>6.1</td>
</tr>
</tbody>
</table>

The results show that students who participated in the video conferencing sessions had an average increase of 6.1 points while students who participated in traditional in-class activities had a mean increase of 4.6 points. These results show that students on average increased 1.5 more points by participating in video conferencing sessions. See figure 4.1 for the same data in graphical form.
In addition to the greater mean increase of the experimental group, the control group raw pre-test scores were lower, leaving them more room for improvement. However, the experimental group still outperformed in the mean increase of listening comprehension scores. To determine if this was statistically significant a 2-sample $t$ test compared the mean change of the experimental group with the mean change of the control group. Table 4.2 shows the results.

Table 4.2

*Listening Comprehension* $t$ test: Two-Sample Assuming Equal Variances

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>4.6</td>
<td>6.1</td>
</tr>
<tr>
<td>Variance</td>
<td>14.7794737</td>
<td>51.14736842</td>
</tr>
<tr>
<td>Observations</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>32.96315789</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>$t$ Stat</td>
<td>-0.82618414</td>
<td></td>
</tr>
<tr>
<td>$P(T&lt;=t)$ one-tail</td>
<td>0.206928525</td>
<td></td>
</tr>
<tr>
<td>$t$ Critical one-tail</td>
<td>1.68595446</td>
<td></td>
</tr>
<tr>
<td>$P(T&lt;=t)$ two-tail</td>
<td>0.41385705</td>
<td></td>
</tr>
<tr>
<td>$t$ Critical two-tail</td>
<td>2.024394164</td>
<td></td>
</tr>
</tbody>
</table>

A two-tailed test of statistical significance is used when data has the ability to both increase or decrease (Birkett, 2015). Since it was possible for students’ test scores to both increase or decrease, this study used a two-tailed test. As shown in table 4.2, the $p$ value for the two-tailed test is .41 which is greater than .05. Therefore, the researcher fails to reject the null hypothesis stating there is not a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction. There is not statistical significance to show there is a greater change for students who participated in video conferencing sessions when compared to students who participated in traditional classroom
settings. With a \( p \) value of .41, there is a 41 percent chance the greater change in the experimental group was random and only a 59 percent chance it was due to the intervention. If a one-tail test is utilized assuming listening comprehension scores will improve from practice, which is logical but not a given, the \( p \) value drops to .21 which is still higher than the alpha level of .05. However, this shows a smaller chance the results were random at just 21 percent and a much higher probability the mean difference was due to the intervention of video conferencing sessions at 79 percent.

**Perceptions of Cultural Diversity Results**

This study analyzed students’ perceptions of cultural diversity by giving an 8-question assessment modified from the college student experience questionnaire (CSEQ) as a pre-test and post-test. Twenty students made up the control group completing traditional activities out of the Avancemos 1 textbook while 20 different students made up the experimental group which participated in 5 different video conferencing sessions with students in Mexico. Excel calculated the mean difference between the two groups by subtracting the pre-test from the post-test and averaging the results.

Table 4.3 shows the mean perceptions of cultural diversity for both the control and experimental groups.

**Table 4.3**

*Means of Pre and Post-Test Scores on Perceptions of Cultural Diversity*

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>28</td>
<td>28.05</td>
<td>.05</td>
</tr>
<tr>
<td>Experimental</td>
<td>30.8</td>
<td>32.5</td>
<td>1.7</td>
</tr>
</tbody>
</table>
Table 4.3 shows that the experimental group increased perceptions of cultural diversity by 1.7 points while the control group increased by only .05 points. See figure 4.2 for a graphical analysis of the same data.

Figure 4.2

Figure 4.2 shows that students who participated in the five video conferencing sessions improved on average 1.65 more points than the students who participated in traditional classroom activities. To determine if this mean increase was statistically significant a simple t test compared the means of the experimental group versus the traditional group. Table 4.4 shows the results.
Table 4.4

Perceptions of Cultural Diversity t test: Two-Sample Assuming Equal Variances

<table>
<thead>
<tr>
<th></th>
<th>Control Group</th>
<th>Experimental Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.05</td>
<td>1.7</td>
</tr>
<tr>
<td>Variance</td>
<td>11.10263158</td>
<td>21.27368421</td>
</tr>
<tr>
<td>Observations</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>16.18815789</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>-1.296836509</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.101253482</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.68595446</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.202506965</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.024394164</td>
<td></td>
</tr>
</tbody>
</table>

Since it was possible for students’ test scores to both increase or decrease, this study used a two-tailed test. As shown in table 4.4, the p value for the two-tailed test is .2 which is greater than .05. Therefore, the researcher fails to reject the null hypothesis stating, there is not a statistically significant difference between the mean change (pre to post) of perceptions of cultural diversity of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction. There is not statistical significance to show there is a greater change for students who participated in video conferencing sessions when compared to students who participated in traditional classroom settings. With a p value of .2, there is a 20 percent chance the greater change in the experimental group was random and an 80 percent chance it was due to the intervention. If a one-tail test is utilized assuming listening comprehension scores will improve from practice, which is logical but not a given, the p value drops to .1 which is still higher than the alpha level of .05. However, this shows a smaller chance the results were random at just 10 percent and a much higher probability the mean change
difference was due to the intervention of video conferencing sessions at 90 percent. While this is not statistically significant, it is practically significant.

**Other findings**

**Males versus females.** The data further provided information for the analyses of the effectiveness of video conferencing as an instructional tool for males versus females. See table 4.5 for effects of video conferencing on listening comprehension for males versus females.

Table 4.5

*Comparison of Male and Female Mean Change on Listening Comprehension*

<table>
<thead>
<tr>
<th>Group</th>
<th>Control Mean Change</th>
<th>Experimental Mean Change</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>4.0</td>
<td>8.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Females</td>
<td>5.2</td>
<td>3.6</td>
<td>-1.6</td>
</tr>
</tbody>
</table>

Table 4.5 shows that experimental males increased 6.3 more points than experimental females when compared to the control groups. See figure 4.3 for a graphical representation of the same data.
In this study, experimental males benefited more than experimental females on listening comprehension. Experimental males increased listening comprehension by 8.6 points whereas experimental females increased by only 3.6 points. When compared to their control groups, experimental males increased 4.6 points more than males in the control group. On the other hand, experimental females increased by 1.6 points less than the females in the control group. This shows that a two-sample t-test for independent samples gave the p value for determining statistical significance. See table 4.6 for the results.
Table 4.6

Listening Comprehension Mean Change of Females vs. Mean Change of Males t test: Two-Sample Assuming Equal Variances

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>-1.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Variance</td>
<td>40.71111111</td>
<td>65.82222222</td>
</tr>
<tr>
<td>Observations</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>53.26666667</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>-1.899542136</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.03681894</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.734063607</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.07363788</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.10092204</td>
<td></td>
</tr>
</tbody>
</table>

With an alpha level of .05 and a p value of .07, there is not a statistically significant difference though it is extremely close. According to the data, there is a 93% chance that males do benefit from video conferencing sessions more than females and only a 7% chance the results are random.

The data likewise showed the effects of video conferencing on perceptions of cultural diversity on males compared to females. See table 4.7 for the mean differences.

Table 4.7

Comparison of Male and Female Mean Change on Perceptions of Cultural Diversity

<table>
<thead>
<tr>
<th>Group</th>
<th>Control Mean</th>
<th>Experimental</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change</td>
<td>Mean Change</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>0.6</td>
<td>1.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Females</td>
<td>-0.5</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>
This data shows that experimental males increased by 1.9 points and experimental females increased by 1.5 points. When compared to their control groups experimental males increased 1.3 more points than the control males. The females increased by 2.0 points more than the control females. The results show that females benefitted minimally more than males when participating in video conferencing sessions on perceptions of cultural diversity. The \( p \) value determines whether this difference is statistically significant. See Table 4.8 for the results.

**Table 4.8**

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2</td>
<td>1.3</td>
</tr>
<tr>
<td>Variance</td>
<td>24.4444444</td>
<td>29.1222222</td>
</tr>
<tr>
<td>Observations</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>26.7833333</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>0.30244801</td>
<td></td>
</tr>
<tr>
<td>( P(T&lt;=t) ) one-tail</td>
<td>0.38288884</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.73406361</td>
<td></td>
</tr>
<tr>
<td>( P(T&lt;=t) ) two-tail</td>
<td>0.76577767</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.10092204</td>
<td></td>
</tr>
</tbody>
</table>

With an alpha level of .05 and a \( p \) value of .77, there is no significant difference in the effects of video conferencing on perceptions of cultural diversity when comparing males and females.

**English proficiency of partners.** The data also provide information on whether the increased English ability of students in the foreign classroom created a significant change to US students’ listening comprehension and perceptions of cultural diversity. Eleven of the US
students conversed with Mexican students who were at a B1 level English proficiency. Nine of the US students spoke with Mexican students who were in a B1+ class denoting a higher level of English ability. See table 4.12 for the effects of the student partners’ English proficiency on listening comprehension.

Table 4.9

*Listening Comprehension Means of Students with B1 vs. B1+ Language Partners*

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with B1 Partners</td>
<td>86.9</td>
<td>93.1</td>
<td>6.2</td>
</tr>
<tr>
<td>Students with B1+ Partners</td>
<td>87.1</td>
<td>93.1</td>
<td>6.0</td>
</tr>
</tbody>
</table>

Students with B1 partners increased 6.2 points while students with B1+ partners increased by 6.0 points. The data shows that students with B1 partners increased listening comprehension by .2 points more than students who had B1+ partners. A two-sample t test showed if there was statistical significance. See table 4.10 for the results.
Table 4.10

Listening Comprehension B1 vs. B1+
t test: Two-Sample Assuming Equal Variances

<table>
<thead>
<tr>
<th></th>
<th>B1</th>
<th>B1+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>6.18181818</td>
<td>6</td>
</tr>
<tr>
<td>Variance</td>
<td>71.5636364</td>
<td>32</td>
</tr>
<tr>
<td>Observations</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>53.979798</td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>0.05505849</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.4783492</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.7340631</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.95669839</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.10092204</td>
<td></td>
</tr>
</tbody>
</table>

With an alpha level of .05 and a p value of .96 there is no statistical difference in the effects of having a B1 level English partner versus a B1+ level English partner on listening comprehension.

Data also shows whether having partners with higher English proficiency had an effect on perceptions of cultural diversity. See table 4.14

Table 4.11

Perceptions of Cultural Diversity Means of Students with B1 vs. B1+ Language Partner

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students with B1 Partners</td>
<td>30.9</td>
<td>33.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Students with B1+ Partners</td>
<td>30.7</td>
<td>31.2</td>
<td>0.5</td>
</tr>
</tbody>
</table>
Students with B1 partners had a mean increase of 2.6 points while students with B1+ partners increased by .5 points. This is a 2.1 greater increase for students who had B1 partners on perceptions of cultural diversity. The \( t \) test shows whether the difference is statistically significant. See table 4.12.

Table 4.12

<table>
<thead>
<tr>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B1</strong></td>
<td><strong>B1+</strong></td>
</tr>
<tr>
<td>Perceptions</td>
<td>Perceptions</td>
</tr>
<tr>
<td>Mean</td>
<td>2.636363636</td>
</tr>
<tr>
<td>Variance</td>
<td>19.25454545</td>
</tr>
<tr>
<td>Observations</td>
<td>11</td>
</tr>
<tr>
<td>Pooled Variance</td>
<td>21.26487093</td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
</tr>
<tr>
<td>df</td>
<td>18</td>
</tr>
<tr>
<td>( t ) Stat</td>
<td>1.003929578</td>
</tr>
<tr>
<td>( P(T&lt;=t) ) one-tail</td>
<td>0.164359251</td>
</tr>
<tr>
<td>( t ) Critical one-tail</td>
<td>1.734063607</td>
</tr>
<tr>
<td>( P(T&lt;=t) ) two-tail</td>
<td>0.328718502</td>
</tr>
<tr>
<td>( t ) Critical two-tail</td>
<td>2.10092204</td>
</tr>
</tbody>
</table>

With an alpha level of .05 and a \( p \) value of .33, there is no statistical difference on the level of English proficiency and the mean change on perceptions of other cultures.

**Summary**

While this research shows a small increase of means, there is no statistical significance in video conferencing sessions on listening comprehension when compared to traditional classroom instruction. There was more significance on the effects of video conferencing on perceptions of cultural diversity. Though statistical significance was not found, there is practical significance
with a $p$ value of .2 for a two-tailed test and .1 for a one-tailed test. When comparing males and females, there is no statistical significance on video conferencing sessions impacting listening comprehension; however, there is very high practical significance. With a $p$ value of .07 this study shows males improve more than females on listening comprehension. Lastly, the data from this research showed there is no significance of the English proficiency of the video conferencing partners at the B1 level when compared with B1+. 
Chapter 5: Conclusions, Implications, and Recommendations

Introduction

The purpose of this study was to determine if video conferencing as an instructional tool has an effect on both listening comprehension and perceptions of cultural diversity in the high school Spanish II classroom. This study placed twenty students in a control group who participated in traditional classroom activities out of the Avancemos 1 textbook while twenty students, in the experimental group, participated in five different video conferencing sessions with students at a private school in Cuernavaca Mexico. Pre and post-test scores were compared for listening comprehension and perceptions of cultural diversity. Comparing the mean changes in the experimental group to the mean changes in the control group showed if video conferencing as an instructional tool had an effect on listening comprehension and perceptions of cultural diversity. The data also provided analysis for comparing mean changes of males versus females on listening comprehension and perceptions of cultural diversity. Lastly, the data provided analysis for studying the effects of students’ partners’ English language proficiency by comparing students who had partners with lower English proficiency with students who had partners with higher English proficiency.

Conclusions

The results in the study failed to provide statistical significance while two comparisons provided high practical significance. In some of the data that did not provide high practical significance, the results do show changes in the mean of one group versus the other.

Research question 1. Is there a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction? To answer this question, the researcher gave a fifty-question multiple
choice test before intervention and after the intervention. The mean change in listening comprehension of students in the experimental group was compared with the mean change in students in the control group. The experimental group consisted of twenty students who participated in five video conferencing sessions with students in Cuernavaca, Mexico. The control group consisted of twenty students who participated in traditional classroom activities out of the Avancemos 1 textbook. The experimental group increased listening comprehension by 6.1 points while the control group increased by 4.6 points on a 100-point scale. This means students who participated in the five video conferencing sessions benefited by an increase of 1.5 points over students who participated in traditional classroom activities. A two-tailed test of statistical significance gave a $p$ value of .41. At a .05 alpha level, the researcher fails to reject the null hypothesis stating there is not a statistically significant difference between the mean change (pre to post) of listening comprehension test scores of students that use video conferencing when compared to the mean change of scores of those students using only traditional instruction.

**Research question 2.** Is there a statistically significant difference between
the mean change (pre to post) of perceptions of cultural diversity test scores of students that use video conferencing when compared to the mean increase of scores of those students using only traditional instruction?

To answer this question, the researcher gave students an 8-question assessment graded on a Likert scale. Possible scores ranged from 8 to 40. Twenty students in the experimental group participated in five video conferencing sessions with students in Cuernavaca, Mexico and twenty students in the control group participated in traditional classroom activities in the Avancemos 1 Spanish textbook. The students in the experimental group increased by 1.7 points while the students in the control group increased by only .05 points. This data shows a 1.65 greater increase of perceptions of cultural diversity in students who participated in the video
conferencing sessions than the students who participated in traditional classroom activities. To
determine if this change was statistically significant a two-tailed test of statistical significance
calculated the \( p \) value as .20. With an alpha level of .05, this is not statistically significant.
However, it does show that there is an 80 percent change that interventions with students in
Mexico did increase students’ perceptions of cultural diversity at a greater level than
participating in traditional classroom activities. While a \( p \) value of .20 is not statistically
significant, it is practically significant and shows promise in utilizing video conferencing to
increase perceptions of cultural diversity in the classroom.

**Males versus females.** The data provided information for the analyses of the
effectiveness of video conferencing as an instructional tool for males versus females on listening
comprehension. Ten experimental males were compared to ten experimental females to see
which group had a greater change in mean listening comprehension. Experimental males
increased listening comprehension by 8.6 points where experimental females increased by only
3.6 points. When compared to their control groups experimental males increased 5 points more
than males in the control group. On the other hand, experimental females increased by 1.6 points
less than the females in the control group. A two-sample \( t \) test gave the \( p \) value for determining
statistical significance. With an alpha level of .05 and a \( p \) value of .07, there is not a statistically
significant difference though it is extremely close. According to the data, there is a 93% chance
that males do benefit from video conferencing sessions more than females and only a 7% chance
the results are random. It is important for the researcher to note that each group in this analysis
only had 10 participants giving the results less certainty.

The data also provided information for the analysis of perceptions of cultural diversity
broken down by male versus female. Scores of ten males that participated in five video
conferencing sessions were compared to the scores of ten females that participated in the five
video conferencing sessions. On average experimental males increased by 1.4 points and experimental females increased by 2.0 points. The calculated p-value of .77 confirmed that there was no statistical significance on mean changes of perceptions of cultural diversity for males versus females.

**English proficiency of language partners.** The data showed whether there was a statistically significant difference in how mean scores of listening comprehension changed depending on the English proficiency of students’ video conferencing partners’. Eleven US students had video conferencing partners at the B1 level while nine US students had partners in a B1+ classroom denoting a slightly higher English proficiency than the B1 students. Students with B1 Partners increased an average of 6.2 points out of 100 on their listening comprehension while students with B1+ increased by an average of 6.0 points. These results showed very little difference at just .2 points more for students with B1 partners. A calculated p value of .96, confirmed there was no statistical difference in students who had B1 partners and students who had B1+ partners.

This study also analyzed the effect of the video conferencing partner’s English proficiency on the mean change of US students’ perceptions of cultural diversity. The results showed that students with B1 partners increased 2.6 points on an 8-40 point scale while students with B1+ partners increased by .5 points. The calculated p value of .33, showed there was no statistical difference between US students who had B1 partner and US students who had B1+ partners on perceptions of cultural diversity.

**Implications**

Although this study did not prove statistically significant effects of video conferencing, students did make greater mean growth in both listening comprehension and perceptions of other cultures. Active learning does increase student learning from traditional lecture and textbook
activities (Willis, 2016). In this study actively learning with student partners in Mexico increased US students’ listening comprehension by 1.5 points more than students who participated in traditional classroom activities in just five 10-20-minute video conferencing sessions. It is probable that foreign language teachers would see greater increases over a longer period of time. Instead of having just five video conferencing sessions in a semester it is recommended that video conferencing sessions span the entire semester. Increasing video conferencing sessions from once a week for five weeks to once a week for 18 weeks may lead to greater increases in listening comprehension. It may also lead to greater increases in perceptions of cultural diversity. In five weeks, students who participated in the five video conferencing session increased their perceptions of cultural diversity by 1.65 points more than students who participated in traditional classroom activities on an 8-40 point scale. This resulted in a p-value of .2 on a two-tailed test and p-value of .1 on a one-tailed test which use is logical since perceptions of other cultures are likely to increase. Schools need to find ways to have their students interact with people from other cultures. One promising way of doing this is video conferencing (Gruson & Barnes, 2011).

While the data in this study does not prove five video conferencing sessions to be statistically significant, it does show very high practical significance that video conferencing sessions with students in other countries can increase US students’ perceptions of other cultures in the high school Spanish II classroom.

The data does not show any significant or practical difference on the level of English proficiency of the student partners at the B1 and B1+ level. It is the researcher’s opinion that students lower than B1 may have trouble communicating in English at basic conversational levels. This research shows that males’ and females’ perceptions of cultural diversity are similarly affected by video conferencing sessions. However, the data shows that males benefit more than females on listening comprehension. This data shows that males in the experimental
group increased by 5.0 more points than females in the experimental group. A calculated \( p \) value of .07 shows that the mean changes are nearly statistically significant. It is also important to note this analysis compares only 10 males with 10 females, so the small sample size increases the chance the results are random.

**Recommendations**

This study used a small sample of 20 students in the experimental group and 20 students in the control group to understand the effects of video conferencing sessions on listening comprehension and perceptions of cultural diversity. While this study did not produce statistically significant findings, it did note mean growth trends in groups that used video conferencing sessions. It is recommended that this study is repeated on a larger scale. Sample sizes should be increased from 20 to over 60, and the five-session intervention should be increased to over 15. This may increase the mean differences at a level great enough to be considered statistically significant.

Repeated or similar research should be done using technology both students in the researched classroom and in the foreign classroom are comfortable using. Problems in this study occurred while using the video conferencing software Zoom. Students in Mexico were unsure of how to accept contact requests or begin meetings through email. While Zoom is one of the best free technologies available, sometimes a lesser technology that all participants understand how to use can be the best choice (Lopez et al., 2015). Students can experience nervousness and anxiety when talking to someone over video conferencing in a language they are learning and with a person they do not know well (Eales, Neale, & Carroll, 1999). To decrease the nervousness and anxieties, researchers should prepare students for the conversations (Conboy et al., 2017). Examples of how this was done in this study can be found in Appendix B, but future researchers
should build and innovate new resources to help prepare and facilitate video conferencing conversations.

The researcher also recommends using additional assessment tools. This could include other assessments to measure listening comprehension and perceptions of cultural diversity as well as assessments to measure other components of foreign language learning. For example, future research should measure video conferencing as an instructional tool on speaking, reading, and writing proficiency. Further studies could focus on the different effects on males versus females, socioeconomic level, age, length of retention, and grade level. Foreign language learning is about various important aspects with many factors that affect outcomes. Further aspects and factors should be researched.

Lastly, technologies related to video conferencing should be researched. Collaborative Google slides, websites, and other projects could impact student motivation, perceptions of other cultures and language learning. Non-live recorded educational video software’s like Flipgrid are other resources that could connect schools and cultures across the world while increasing learning outcomes for students.

**Concluding Statements**

This study sought to determine the effects of video conferencing as an instructional tool in the high school Spanish II classroom. The data was analyzed by using two sets of pre-post tests. One analyzed listening comprehension and the other analyzed perceptions of cultural diversity. The mean change of students who participated in the five video conferencing sessions were compared to the mean change of students who participated in traditional classroom activities out of the Avancemos 1 textbook. While the results were not statistically significant, mean changes showed greater growth of students who participated in the video conferencing sessions for both listening comprehension and perceptions of other cultures. Further research
needs to be done on this important field that can bridge cultures and open the world to our classroom.
References:


*Journal, 19*, 46–49.


Subject teaching in Finnish schools is not being abolished. (2015). Retrieved from https://www.oph.fi/english/current_issues/101/0/subject_teaching_in_finnish_schools_is_not_being_abolished


Appendix A

Perceptions of Cultural Diversity Likert Scale

<table>
<thead>
<tr>
<th>#</th>
<th>Question</th>
<th>1= Strongly Disagree</th>
<th>2=Disagree</th>
<th>3=Neutral</th>
<th>4 = Agree</th>
<th>5=Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I enjoy having discussions with people whose ideas and values are different from my own</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The real value of an education lies in being introduced to different values.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>I enjoy talking to people who have values different from mine because it helps me understand myself and my values better.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Learning about people from different cultures is a very important part of my education.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I enjoy taking courses that challenge my beliefs, perspectives, and values.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>The classes I enjoy most are those that make me think about things from a different perspective.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Contact with individuals whose background (e.g. race, national origin, beliefs, practices) is different from my own is an essential part of my education.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I enjoy classes and experiences that are intellectually challenging to my perspective.</td>
<td>1 2 3 4 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Modified from the college student experience questionnaire (CSEQ)
Appendix B:

Fifty Question Multiple Choice Listening Assessment

listening exam

Listen as Andrés and Cristina talk about their classes, and read the following statements. Select the letter that corresponds to the words that complete each sentence correctly.

1. A Cristina le gusta la clase de _______.
   a. historia
   b. español

2. Cristina saca _______.
   a. malas notas
   b. buenas notas

3. A Andrés no le gusta la clase de _______.
   a. ciencias
   b. matemáticas

4. Andrés no estudia mucho para la clase de _______.
   a. matemáticas
   b. historia

5. La clase de matemáticas empieza a las _______.
   a. dos
   b. dos y cuarto

Escuchar

Listen as Félix describes his family. Decide if each statement is C for cierto (true) or F for falso (false).

6. A la señora Rodríguez no le gusta la comida nutritiva.
7. Al señor Rodríguez no le gustan las hamburguesas.
8. Al señor Rodríguez le gustan las uvas y las bananas.
9. A la señora Rodríguez le gustan las manzanas.
10. Al señor y a la señora Rodríguez les gusta el jugo de naranja.

Juan is introducing himself to a group of people. Choose the letter of the word(s) that best complete(s) the sentences based on what he says.

11. Después de las clases, a Juan le gusta _______.

12. A Juan también le gusta _______.
    a. jugar al fútbol
    b. escribir correos electrónicos

13. A Juan no le gusta _______.
    a. mirar la televisión
    b. comer pizza

14. A Juan le gusta beber _______.
    a. agua
    b. refrescos

15. A Juan le gusta comer _______.
    a. galletas
    b. papas fritas

16. Félix tiene dos hermanos mayores.

17. Daniel tiene diez años.

18. La tía Elena es la hermana mayor de la madre de Félix.

19. Iván y Sandra son primos de Félix.

20. Mañana es el cumpleaños de Andrés.

   It is the beginning of January and Clara and her mother are organizing their calendars. Listen to their conversation. Then tell when everyone’s birthday is. Choose the letter of the correct answer.

21. El cumpleaños del abuelo Antonio es _______.
    a. el diez de enero
    b. el diez de diciembre

22. El cumpleaños de la abuela Ana es _______.
    a. el primero de marzo
    b. el primero de febrero

23. El cumpleaños del padre de Clara es _______.
    a. el veinticinco de marzo
    b. el veinticinco de abril
24. El cumpleaños de la tía Cecilia es _______.
   a. el ocho de julio
   b. el ocho de agosto

25. El cumpleaños de Clara es _______.
   a. el dieciocho de octubre
   b. el dieciocho de noviembre

**Escuchar**

Listen as some students from the kindergarten class spell their names.

26. After you hear the names spelled, choose the letter of the correct name.
   a. Pablo
   b. Pedro

27. After you hear the names spelled, choose the letter of the correct name.
   a. Elena
   b. Emilia

28. After you hear the names spelled, choose the letter of the correct name.
   a. Roberto
   b. Ricardo

29. After you hear the names spelled, choose the letter of the correct name.
   a. Laura
   b. Luisa

30. After you hear the names spelled, choose the letter of the correct name.
   a. Miguel
   b. Mateo

**Escuchar**

Your friends are introducing themselves to students from a different school. You will hear five questions. Choose the most logical answer for each question.

31. ______
   a. Soy alto.
   b. Soy de México.

32. ______
   a. Soy artística.
   b. Soy Laura.

33. ______
   a. Me gusta escuchar música.
   b. No me gusta leer un libro.

34. ______
   a. Sí, me gusta hablar por teléfono.
   b. Sí, me gusta preparar la comida.

35. ______
   a. No me gusta comer pizza.
   b. Me gusta comer fruta.

**Escuchar**

Listen as Rebeca describes members of her family. Choose the letter of the correct words to describe Rebeca’s relationship to each person.

36. Mariana es _______.
   a. la abuela de Rebeca
   b. la madre de Rebeca

37. Carlos y Pedro son _______.
   a. los primos de Rebeca
   b. los hijos de Rebeca

38. Julia es _______.
   a. la tía de Rebeca
   b. la prima de Rebeca

39. Samuel es _______.
   a. el hermano de Rebeca
   b. el padre de Rebeca

40. Javier es _______.
   a. el padre de Rebeca
   b. el abuelo de Rebeca

Felipe is an exchange student from Puerto Rico. Listen as he asks his host sister, Marta, about her eating habits and then decide if each statement is cierto (true) or falso (false).

41. Marta bebe el jugo de naranja en el desayuno.
42. Marta come un desayuno nutritivo.
43. A Marta le gustan los huevos.
44. Marta come en la cafetería de la escuela.
45. Marta no come después de las clases.
Escuchar

Susana and Carolina decide to go to a shopping center in Madrid. Listen to their conversation and then choose the response that best completes each answer. Choose the corresponding letter on your answer sheet.

46. Carolina mira______ azul.
   a. una blusa
   b. una chaqueta
   c. un gorro
   d. un sombrero

47. Susana ______ comprar el vestido verde.
   a. quiere
   b. prefiere
   c. no quiere
   d. necesita

48. Las chicas miran un vestido que cuesta ______ euros.
   a. 200
   b. 300
   c. 400
   d. 500

49. Susana prefiere llevar un vestido ______.
   a. verde
   b. rojo
   c. negro
   d. azul

50. Después de comprar el vestido, Susana quiere comprar ______.
   a. una blusa
   b. zapatos
   c. una chaqueta
   d. un sombrero
Appendix C:

Video Conferencing Conversation Topics Handouts

Spanish Topics for Video Conferencing Session One

**Spanish: Introductions**

¿Cómo estás?

¿Cómo te llamas? / Mucho gusto / Igualmente

¿Cómo se llama tu escuela?

¿Cómo se escribe tu nombre? / Se escribe.

¿Cómo se escribe tu ciudad?

¿Qué tiempo hace en tu ciudad?

¿Cuál es tu numero de telefóno?

**Helpful Phrases**

¿Cómo se dice ________?

¿Qué quiere decir ________?

Mas despacio por favor.

Repite por favor.

No entiendo.

No sé.

¿Me escuchas?

No te escucho.
English Topics for Video Conferencing Session One

**English: Compare city, state, and holidays**

What is Mexico like?

What do you like and not like about Mexico?

How is Morelos (their state) different than other states in Mexico?

What do you like about Morelos and not like?

What is your city like? (Cuernavaca) What does your city have?

What celebrations and holidays do you celebrate?

Compare birthday, Christmas, Easter, New Year’s traditions and talk about Thanksgiving, 4th of July (which Mexico doesn’t have).
Spanish Topics for Video Conferencing Session Two

Spanish: Learn about each other

¿Cómo eres? ¿Eres alto(a) o bajo(a)? (atlético / cómico / serio)

¿Tienes pelo castaño (/ negro / rubio?)

¿Qué te gusta hacer/mirar/escuchar?

¿Te gusta jugar deportes?

¿Te gusta mirar Netflix?

¿Qué te gusta comer/beber?

Helpful Phrases

¿Cómo se dice ________?

¿Qué quiere decir ________?

Mas despacio por favor.

Repite por favor.

No entiendo.

No sé.

¿Me escuchas?

No te escucho.
English Topics for Video Conferencing Session Two

**English: What are you like and what is popular to do?**

Repeat talking about what you are like in English.

What do you like to do, eat, watch, listen to etc.?

Talk about what is popular to do for fun (sports, music, movies etc.)

Finish talking about holidays and celebrations:

What celebrations and holidays do you celebrate?

Compare birthday, Christmas, Easter, New Year’s traditions and talk about Thanksgiving, 4th of July (which Mexico doesn’t have).
Spanish Topics for Video Conferencing Session Three

Spanish Topics: School & Home Daily Schedule

¿Cuál es tu horario?

¿Qué clases tienes?

¿Qué clase es tu favorita?

¿Qué comes para el desayuno, el almuerzo, la cena?

¿Qué quehaceres tienes?

¿Qué haces antes/duepues de las clases?

¿Trabajas?

¿Cómo es tu escuela?

¿Cómo es tu casa?

¿Cuántos cuartos / salas / baños?

¿Tiene comedor/cocina?

Helpful phrases

Mas despacio por favor.

Repite por favor.

No entiendo. (I don’t understand)

No sé.

¿Me escuchas?

No te escucho.
English Topics for Video Conferencing Session Three

English Questions and Phrases: School and Home

Talk more in depth over the same topics you already talked in Spanish about.

Talk about what school is like?

How many students go to your school and what are the ages?

Are classes big or small?

Does everyone spend time together or are there certain groups of friends?

Do you have to wear a uniform?

Is interaction with teachers formal or casual?

Does your school have school sports?

Do you call your teachers by first name, last name (apellido), or just teacher/maestro(a)?

Are there days of celebration at school or do you have pep rallies for sports? How many days a year do you go to school?

How are the grades or ages grouped? First primary school / secondary school / preparatory school and then university?

How many days a year do you go to school? (180?)

What is your house like?

Do you have chores (quehaceres) that you have to do each day?
Spanish Topics for Video Conferencing Session Four

Spanish Topics: Family, ages and birthdays

¿Cuántas personas hay en tu familia?

¿Cuántos años tienes tu hermano/a, prima, madre, padre etc?

¿Cómo se llama tu hermano/a etc?

¿Qué hace a tu madre/padre? / ¿Trabaja a tu madre/padre?

¿Tienes una moscata / perro / gato?

¿Cuándo es tu cumpleaños?

Helpful phrases

Mas despacio por favor.

Repite por favor.

No entiendo.

No sé.

¿Me escuchas?

No te escucho.
English Topics for Video Conferencing Session Four

**English Topics: Family traditions, activities and culture**

Talk more in depth over the same topics you already discussed in Spanish.

Talk about family more in English.

Talk about family culture in Mexico and US

Does your family eat together?

Do you get together a lot with cousins and aunts and uncles?

Do you do things together with your family like go to the park or watch a movie?

Does your family have any traditional things that you always do together? (every week you do something at your church / volunteer / go to the same beach once a year / say a traditional prayer before you eat or go to bed)

Do you also do a lot on your own without your family? (going to movies, parties, shopping, your friend’s houses)
Spanish Topics: Ir de compras / ¿Qué puedes hacer?

¿Qué te gusta comprar?

¿A dónde te gusta ir de compras para ropa/deportes/regalos/comida etc?

¿Qué tiendas hay dónde vives?

¿Hay tiendas o restaurantes de los Estados Unidos en tu ciudad? (Walmart, Subway, Pizza Hut, Home Depot)

¿Qué son tiendas populares de México?

¿Qué son restaurantes populares de México?

¿Cuánto cuesta(n) gasolina/leche/comida en un restaurante en México?

¿Qué puedes hacer? (Qué talentos tienes)


Helpful phrases

Mas despacio por favor.

Repite por favor.

No entiendo.

No sé.

¿Me escuchas?

No te escucho.
English Topics for Video Conferencing Session Five

English Topics: Shopping, Talents and Expectations

Talk further about going shopping and how much everything cost.

Talk further about abilities, talents, and skills you and your partner have.

Talk about cultural expectations of things you are expected to be able to do. Are you expected to be able to dance / cook certain things / cheer for certain sports teams / learn certain songs, dances, or poems?

Are these expectations from your country/state/city/or family?

Are there gender expectations? (Are different things expected of girls and boys?)