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TECHNOLOGY-ENHANCED MULTIMEDIA INSTRUCTION IN FOREIGN LANGUAGE CLASSROOMS: A MIXED METHODS STUDY

by

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A DISSERTATION

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Under the Supervision of Professor Marilyn L. Grady

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TECHNOLOGY-ENHANCED MULTIMEDIA INSTRUCTION IN FOREIGN LANGUAGE CLASSROOMS: A MIXED METHODS STUDY

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University of Nebraska, 2012

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Technology-enhanced multimedia instruction in grades 6 through 12 foreign language classrooms was the focus of this study. The study's findings fill a gap in the literature through the report of how technology-enhanced multimedia instruction was successfully implemented in foreign language classrooms.

Convergent parallel mixed methods study was used to produce well-substantiated conclusions about the topic. Quantitative and qualitative data were collected concurrently but separately and were equally weighted.

Foreign language teachers identified as those who extensively used technology-enhanced multimedia instruction participated in the study. Participation in the study involved completion of an online survey and a qualitative interview. Both the survey and the interview protocol were piloted to assure accurate results and conclusions. The survey, designed and distributed using Qualtrics software, measured foreign language teacher practices and beliefs on the role of technology-enhanced multimedia instruction in foreign language classrooms as well as teacher demographic variables. One-on-one audiotaped interviews included nine semi-structured questions with probes, and explored teacher beliefs and practices with technology in the classroom.

Statistical analysis using SPSS and Mplus was performed to answer the quantitative research questions. Descriptive statistics were calculated to describe trends in

the data and linear multiple regression analysis and path analysis were performed to analyze quantitative data. Qualitative data was analyzed using MAXQDA software and produced three themes and thirteen sub-themes.

Quantitative and qualitative results were mixed in the interpretation stage of the study. The findings indicated that the use of technology-enhanced multimedia helped teachers meet the goals for effective foreign language instruction in the digital society of 21st century. Foreign language teachers had strong positive beliefs about the role of technology-enhanced multimedia instruction for student learning and extensively used it in their classrooms for different language learning purposes. The study findings indicate a significant positive correlation between variables that contribute to the use of technology-enhanced multimedia instruction in foreign language classrooms. The findings of the study have implications for foreign language educators, faculty of teacher preparation programs, administrators and policy makers.

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LIST OF ACRONYMS

ACTFL	American Council on the Teaching of Foreign Languages
IRB	Institutional Review Board
QUAL	Qualitative
QUAN	Quantitative
SLA	Second Language Acquisition
SPSS	Statistical Package for the Social Sciences
ZPD	Zone of Proximal Development

CHAPTER 1: INTRODUCTION

The purpose of this study was to describe pedagogically sound technology-enhanced multimedia instruction that may lead to enhanced learning in grades 6-12 foreign language classrooms in the Midwest. Development of technology brings benefits not only for the economy, business, and international relations but also for education. Ruschoff and Ritter (2001) stated "traditional skills of information gathering and storing as well as the mere learning of facts will no longer be sufficient in order to live, learn, and work…." (p. 221) in the society of 2012. Research shows that such development has benefits for foreign language learning that is changing towards technology-enhanced environments (Grenfell, Kelly, & Jones, 2003; Meskill, Anthony, Hilliker-VanStrander, Tseng, & Yu, 2006; Parsad & Jones, 2005). Foreign language classrooms can benefit from pedagogically sound technology-enhanced multimedia teaching due to the nature of language instruction. Foreign language learning requires multisensory engagement, active participation and engagement with the material, which can be achieved through pedagogically sound practices with technology. Harper, Squires, and Mcdougall (1996) stated that learning should be viewed as an active and dynamic process and knowledge should be viewed as something that students can construct but not something that can be passively received. Meanwhile, teachers often focus on teaching static knowledge where students are required to consume "packed in boxes" pieces of information rather than produce and create knowledge themselves (Sawyer, 2006). This creates "McDonalds" concept of learning in the classroom, so called "McDonaldisation" of education, where learners consume already created knowledge (Ritzer, 1996). Technology may be of great assistance in addressing an issue of passive foreign language learning since it allows for interactivity, flexibility, novelty and dynamics in the classroom.

Twenty-first century foreign language learners need to be provided with more opportunities to become active participants in the classroom, be exposed to foreign culture, native speakers and have a chance to exercise their creative skills and practice communication. Technology-enhanced multimedia instruction can offer all these opportunities if used and scaffolded through sound pedagogical practice consistent with second language acquisition (SLA) research. Second Language Acquisition research perceives students as active learners; capable of creating their own ideas that they can later use to make sense of their own learning (Ruschoff & Ritter, 2001). SLA research implies that language acquisition should be achieved by having plenty of opportunities for communicative language activities that allow for the negotiation of meaning and exchange of information between speakers. With the shift in the approach to teaching foreign language from a highly structured approach to more open, bottom-up, constructivist approach, foreign language pedagogy values a process-oriented multimedia environment. Liu, Moore, Graham, and Lee (2003) emphasized that there is a big interest in technology use in foreign language pedagogy and therefore, it is important to look at how it has been used in the foreign language classrooms.

Technology allows for multimedia instruction and a multisensory learning environment. Research has shown that using technology-enhanced multimedia instruction in the classroom helps to tailor instruction to students with different abilities (Wu & Zhang, 2010) and facilitates quick sharing and building of knowledge within the participatory environment (Asselin & Moayeri, 2011). Research also shows that technology-enhanced multimedia instruction increases student motivation (Boehm, 2009; Torff & Tirotta, 2010), develops curiosity and makes learning experiences memorable (Allen, 2003). It is, as well, “influential in developing creativity amongst learners” (Dale,

2008, p. 3) because it diminishes the need for memorization by replacing "how" by "why" in the classrooms, and by allowing students to become active producers of knowledge (Oklahoma Education Association, 2011).

Second Language Acquisition research shows that technology-enhanced multimedia instruction offers opportunities for input and output, interactions, task-based and content-rich learning activities, access to native speakers and cultural knowledge (Ruschoff & Ritter, 2001). SLA research shows the benefits of technology-enhanced multimedia instruction on foreign language student vocabulary acquisition (Baltova, 1999), grammar instruction (Nutta, 1998), cultural knowledge and writing performance (Arslan & Sahin-Kizil, 2010). It allows for immediate feedback, increases learner autonomy and offers real-life communicative situations. SLA research indicates that technology itself is not either effective or ineffective in the classroom. The pedagogy, that stands behind the use of technology and the way teachers can make use of it, is what makes technology effective (Armstrong & Yetter-Vassot, 1994; Zhao & Frank 2003). Kern (2006) emphasized the importance of a pedagogical approach to technology-enhanced multimedia instruction by stating that "technology-based language teaching is not a method but is integrated into various pedagogical approaches" (p. 200). Foreign language teachers need to implement technology-enhanced multimedia instruction in a way that is consistent with sound pedagogy and foreign language theories and instructional design principles if they want it to enhance student learning (Armstrong & Yetter-Vassot, 1994; Collentine, 1998; Oller, 1996; Schwartz, 1995). Similarly, Bailey (1996) stated that "technology is essentially impotent without creative and imaginative application" (p. 73). This suggests that it is in the hands of foreign language teachers to decide how to use and design pedagogically sound technology-enhanced multimedia

instruction since they are in charge of making instructional decisions in the classroom. Research has documented that there are favorable conditions for successful integration of technology-enhanced multimedia instruction in the classrooms. The data supports teachers' readiness to use technology in the classroom (Hubbard, 2008; Hubbard & Levy, 2006b) and students' readiness to use technology (Stockwell & Levy, 2001). Data also indicates availability of technology in the schools. The United States Department of Education Report for the 2009 academic year shows that 97% of teachers had one or more computers located in the classroom every day and 54% of teachers could bring computers into the classroom. Despite favorable conditions for technology-enhanced multimedia instruction, the percentage of teachers who use it in the classroom is limited. For example, 40 % of surveyed teachers reported that they or their students were using technology-enhanced instruction in the classroom often, and 29% reported that they use it only sometimes (U.S. Department of Education, 2010). These findings demonstrate that even though technology is available in the classrooms, "high-level technology use is still surprisingly low" (Ertmer, 2005, p. 36). Such findings suggest that there exist other barriers that may prevent teachers from using technology-enhanced multimedia instruction in the classroom (Ertmer, 2005). There is resistance from teachers and administrators to the use of technology in the classrooms. Lam (2000) indicated that merely providing teachers with technology-enhanced multimedia resources is not enough. It is necessary to convince them of the benefits of using it in the classroom. Studies suggest that teachers' lack of knowledge and professional development to prepare them for the integration of technology into the curriculum (Akins, 1992; Lam, 2000; Winnans & Sardo Brown, 1992; Zammit, 1992), teachers' lack of confidence in their skills with technology (George & Camarata, 1996; Winnans & Sardo Brown, 1992; Zammit, 1992),

their level of education and the amount of teaching experience (Moore & Carel, 1998) may be some of the factors that stand in the way of the effective implementation of technology-enhanced multimedia instruction. Observers also point out that adopting and integrating technology-enhanced multimedia instruction is challenging because often schools are conservative in what they do and prohibit the use of instant messaging, Internet access, cameras and phones in the classrooms (Prensky, 2011). Studies suggest that even when schools are supportive of technology use in the classroom, teachers apply it "to do old things in a new way" using technology for such purposes as typing lesson plans or entering student data (Prensky, 2001). Doing old things in new ways does not have any educational benefits for students and it does not foster student learning. The recent study conducted by Miranda and Russell (2011) examined the factors affecting technology use in elementary schools. The authors found that the strongest predictors of how technology is used in the classroom to enhance learning were teachers' experience with technology and their beliefs about benefits of technology for learning as well as the school principal's discretion and use of technology.

There is an interest in technology use in foreign language pedagogy (Liu et al., 2003) and therefore, it is important to explore how effective technology-enhanced multimedia instruction looks and how it is implemented in the foreign language classrooms. This will help other foreign language educators to receive a better understanding and see excellent examples of pedagogically sound technology-enhanced multimedia instruction which they may implement in their classrooms. Previous studies looked at student achievement and reactions to using technology, and examined the effectiveness of different technology tools and programs for the learning process. Limited studies described a comprehensive picture of pedagogically sound technology-enhanced

multimedia instruction in the foreign language classrooms. Instead of simply focusing on investigating technology teaching tools, it is important to focus on studying a holistic picture of pedagogically sound technology-enhanced multimedia foreign language instruction. Although some studies utilized quantitative measures (for example, see Jamieson-Proctor & Burnett, 2002; Wu & Zhang, 2010) and qualitative measures (for example, see Dale, 2008), few studies exist that combine quantitative statistical results with participant perspectives on the topic. Mixed methods research is needed since it will allow "a more complete picture by noting trends and generalizations as well as in-depth knowledge of participants' perspectives (Creswell & Plano Clark, 2007, p.33). This convergent parallel mixed methods study aims to fill the gap and to describe pedagogically sound technology-enhanced multimedia foreign language instruction in public schools in the Midwest.

Significance of the Study

Foreign language educators grades 6 through 12 will benefit from the findings of the study by gaining a better understanding of the nature and implementation of pedagogically sound technology-enhanced multimedia instruction to enhance student learning. They will also receive a better understanding of the complex relationships between different factors that influence the use of pedagogically sound technology-enhanced multimedia instruction. Ideally, this study will help foreign language educators to construct a clear picture of the effective use of pedagogically sound technology-enhanced multimedia instruction and will help them to modify their instruction and adapt some of the effective technology-enhanced multimedia practices discussed in the study that are consistent with SLA research. Administrators and faculty of teacher preparation programs will benefit from the study while making informed decisions about hiring

foreign language teachers and providing them with professional development opportunities. State teacher education policy makers will benefit from the findings of the study while making informed decisions regarding technology integration in foreign language classrooms.

CHAPTER 2: LITERATURE REVIEW

Theoretical Framework

Bandura's self-efficacy theory (Bandura, 1977, 1986, 1997) and Vygotsky's sociocultural theory (1986) form a foundation for the study. Bandura (1997) argues that "beliefs in one's capabilities to organize and execute the courses of action " (p.3) are key factors of human agency. Bandura's self-efficacy theory predicts that one's beliefs system influences behavior choice, effort invested, persistence, and task success in the learning process (Onwuegbuzie, Bailey, & Daley 1999a). Self-efficacy is defined as the belief in one's ability to achieve a goal or an outcome (Bandura, 1977, 1997). According to self-efficacy theory, individuals are likely to engage in activities to the extent that they perceive themselves to be competent at those activities.

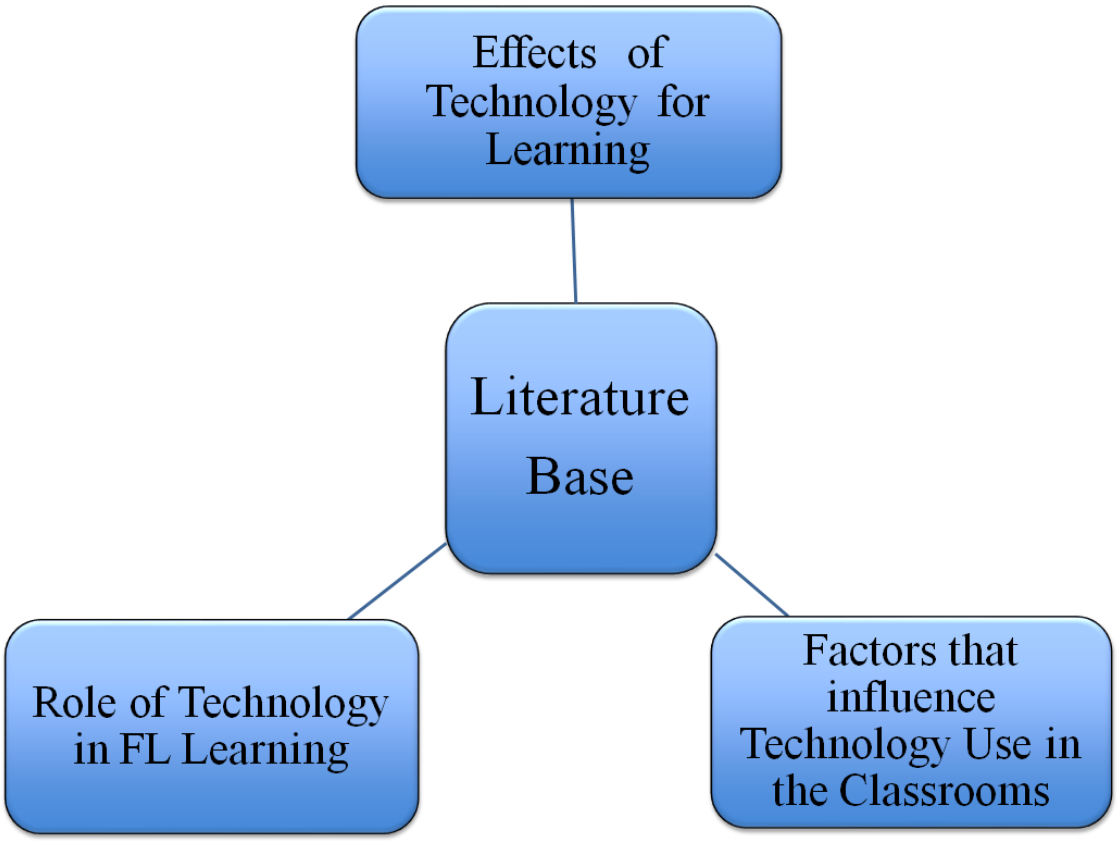
Vygotsky's sociocultural theory states that developmental processes take place through participation in cultural, linguistic, and historically formed settings, such as, schooling and peer group interactions (Vygotsky, 1986). The central concept of the theory is Zone of Proximal Development (ZPD), which is defined as a distance between what a learner is able to do independently and what s/he is able to do with a social support. Therefore, learning happens through interactions between an "expert" (i.e. a teacher) and a "novice" (i.e. a student), where an "expert" provides guidance and assistance to a "novice."

Literature Strands

The literature on the topic of technology falls into three domains. The first domain explored the effects and role of technology for learning across disciplines of study. The second domain focused specifically on the previous research conducted on the issues related to technology-enhanced multimedia in the foreign language curriculum. The third

strand examined factors that influence pedagogically sound technology-enhanced instruction. All three literature strands added to understanding the issue explored in this mixed methods study.

Figure 2.1 Literature Map



Effects of technology for learning. Studies have shown that technology can have positive effects on student learning (Asselin & Moayeri, 2011; Knapp & Glenn, 1996; Liu & Wang; Sandholtz, Ringstaff, & Dwyer, 1997; Wu & Zhang, 2010) and can offer "unprecedented freedoms and levels of access" (Tacchi, 2004, p.91). Wu and Zhang (2010), for example, conducted two experiments to study whether computer-enhanced instruction benefits elementary student learning. Researchers compared two groups of fourth graders, one group learning English spelling using handheld computers and the

other one that did not use computers. The study revealed that the group using handheld computers demonstrated significantly higher achievement in spelling than the group that did not use computers. Authors conducted the second similar experiment to test the effect of computers on the learning process of the fifth grade students learning math. The results were consistent with those from the previous experiment showing significantly higher scores for the students in the group that used computers. Glenberg, Goldberg and Zhu (2011) conducted an experimental study to measure elementary student reading comprehension. The study found that the group in the computer-mediated condition outperformed other groups in reading comprehension.

Research shows that computer-mediated instruction assists in the development of creativity, higher order thinking skills and problem solving among learners (Dale, 2008; De Corte, Verschaffel, Lowyck, Dhert, & Vanderput, 1999; Kangas, 2010; Scardamalia & Bereiter, 1994; Tacchi, 2004). Technology features such as provisionality, interactivity, capacity, flexibility, speed, novelty and numerous automatic functions promote learning and creativity amongst students (Allen, 2003; Loveless, 2002). Other studies suggest that technology enables students to produce highly creative ways of organizing and delivering information for multiple audiences (Parker, 1999). For example, Jamieson-Proctor and Burnett (2002) found that purposeful integration of computer technology has a positive effect on the personal creativity characteristics of elementary students. Dale (2008) studied the use of iPods in the college performing arts classrooms to nurture creativity in teaching and learning. They found that iPods have a potential “to deliver a more creative learning and teaching experience” (p. 7), to provide innovative methods of teaching as well as to motivate and engage students “more deeply

with the subject matter" (p. 7). The study results revealed the importance of institutional support to enable use of technology for promoting student learning and creativity.

Foreign language learning and technology-enhanced multimedia instruction.

Technology-enhanced multimedia instruction benefits foreign language vocabulary acquisition because students receive information via multiple channels and then can recall information better. Dual coding theory states that when information is presented via visual and auditory channels, it facilitates retention (Pavio, 1986). Therefore, integration of images, sounds and text enhances vocabulary acquisition (Chun & Payne, 2004; Chun & Plass, 1996). Research showed that the combination of textual and visual information is more effective in facilitating vocabulary acquisition than definitions of foreign language words alone (Akbulut, 2007; Jones & Plass, 2002; Nikolova, 2002). Liu (1994) found that technology offers tools and opportunities to enhance vocabulary acquisition. Students who had access to computer- mediated foreign language text glosses showed consistently higher levels of vocabulary and reading comprehension (Lee, 2008; Lomicka, 1998). Technology-enhanced multimedia foreign language instruction provides students with options for receiving information in either visual or verbal form or both, and in this way accommodates individual learning styles and needs. Research shows that low verbal ability students especially benefit from visual aids and input (Peek, 1993).

Technology-enhanced multimedia instruction also benefits foreign language writing skills. For example, Arslan & Sahin-Kizil (2010) explored the use of blogging software in the English as a Second Language (ESL) classroom by conducting a quasi-experimental study. The study concluded that students who experienced blog-integrated classroom instruction demonstrated better writing performance than students who did not

experience it and suggested that blogging is an effective strategy that improves writing skills in the English as a Second Language classroom. Gonzalez-Bueno (1998) examined the impact of e-mail use on the development of foreign language discourse. The study found that students produced a larger amount of language, demonstrated a higher level of language accuracy with more personal and expressive language use, and initiated more interactions while using e-mail. Nagata (1998) looked at the development of writing and reading skills of the Japanese as a foreign language students using multimedia-enhanced computer program. The study demonstrated effectiveness of the program and found that "students… had positive attitudes toward the computer program" (p. 12).

Technology provides opportunities for interaction, allows for immediate feedback, increases learner autonomy, simulates real-life situations and experiences through video, audio, and graphics (Chun & Brandl, 1992; Legenhausen & Wolff, 1990). Some foreign language studies focused on examining how technology could be used to promote and improve learner grammatical knowledge (Gonzalez-Bueno & Perez, 2000). Students revealed that technology-enhanced multimedia instruction allows for equal and increased participation (Blake, 2000; Cahill & Catanzano, 1997) and less teacher centered instruction (Sullivan & Pratt, 1996).

Research reveals benefits of technology-enhanced multimedia for foreign language communication skills. Some studies found that technology-enhanced multimedia instruction allowed for an increase in meaningful communicative exchanges and could be successfully used to promote speaking skills (Borras, 1993; Coniam, 1998; Johnson & Milne, 1995; Liaw, 1997). For example, Liaw (1997) examined the effect of computer books on student conversation skills. The study found that computer books

provided the content for meaningful foreign language discussions, which shifted the focus from dealing with technological difficulties to a focus on the content of the books.

Factors that influence pedagogically sound technology-enhanced multimedia instruction.

Research studies reveal several factors that may influence its integration and use in the classroom. Some factors are connected to the organizational or macro-level (e.g. school/district), whereas other factors are connected to the micro-level (e.g. teachers and students) (Miranda, 2007). The research provides evidence that schools whose principals have well-defined technology plans and support the use of technology show increased frequency of technology use in a classroom (Anderson & Dexter, 2005; Dawson & Rakes, 2003; Russell, Bebell, O'Dwyer, & O'Connor, 2003). On the micro-level research shows that teacher-related characteristics play a role in classroom technology use. Previous research found strong relationships between beliefs and practices (Albion & Ertmer, 2002; Lim & Khine, 2006; Scrimshaw, 2004), whereas other research found inconsistencies between beliefs and classroom practices (Ertmer, Gopalakrishnan, & Ross, 2001; Kane, Sandretto, & Heath, 2002). For example, Ertmer et al. (2001) noted that teachers' beliefs about technology use for teaching purposes did not always match their pedagogical practices with technology in their classrooms. Previous research documented the influence of teachers' pedagogical beliefs on classroom practices in the science classroom (Czerniak & Lumpe, 1996), math (Vacc & Bright, 1999), literacy (Fang, 1996), and the history classroom (Wilson & Wineburg, 1988). Research found that teachers who hold constructivist views on teaching were more willing to use technology-enhanced multimedia in the classroom than teachers who did not hold such views (Becker, Ravitz, & Wong, 1999; Ertmer, 2005; Ertmer, Gopalakrishnan, & Ross, 2001).

Consequently, teachers who believe in the potential of technology-enhanced multimedia to benefit the learning process in a classroom used it more frequently than teachers who did not have such beliefs (Ertmer, 2005; Ertmer, Ottenbreit-Leftwich, 2010). The literature also included reports of teacher experience and comfort level as potential predictors of technology-enhanced multimedia use in a classroom. Research showed that teachers who were more experienced with technology-enhanced multimedia instruction were more comfortable with it and consequently, used it more frequently; and, those who lacked confidence in their skills with technology-enhanced multimedia were less likely to use it because it threatened their sense of competence in front of their students (George & Camarata, 1996; Miranda, 2007; Russell, O'Dwyer, Bebell, & Tao, 2007; Zammit, 1992). The literature included reports that indicated that teacher educational background, number of years in the profession and degrees obtained influenced teacher use of technology-enhanced multimedia (Becker & Riel, 2000; Guha, 2000; Mathews, & Guarino, 2000). For example, Moore, Morales, and Carel (1998) suggested that the level of education and the amount of teaching experience positively correlated with the use of computers for teaching culture in the foreign language classrooms. Research indicated that providing teachers with access to multimedia technology is not enough; it is necessary to convince teachers of the benefits and advantages of using technology in instruction. Research suggested that professional development needed to focus not on simple how-to use technology tools but how to effectively integrate technology in a pedagogically sound way. Teachers' attitudes towards using technology-enhanced multimedia in the classroom depended on their perception of its usefulness for instruction and its ease

of use. Some studies reported that there is a lack of professional development to prepare teachers for the integration of technology into the curriculum (Akins, 1992; Winnans & Sardo Brown, 1992; Zammit, 1992).

Despite extensive research on this topic, the literature shows that the factors have always been examined in isolation, and therefore it is important to see their combined influence on how technology is used and integrated in the classrooms (Miranda & Russell, 2011).

CHAPTER 3: RESEARCH METHODOLOGY

Purpose

The purpose of this mixed-methods study was to describe pedagogically sound technology-enhanced multimedia instruction that may lead to enhanced learning in grades 6-12 foreign language classrooms in the Midwest. A convergent parallel mixed methods design was used, a type of design in which different but complementary data were collected on the same topic. A survey was used to determine the relationships between variables that contribute to the use of pedagogically sound technology-enhanced multimedia instruction in foreign language classrooms. Concurrent with this data collection, qualitative interviews explored the nature of pedagogically sound technology-enhanced multimedia instruction in foreign language classrooms. The reason for collecting both quantitative and qualitative data was to bring together the strengths of both forms of research to corroborate and confirm quantitative results with qualitative findings.

Research Questions

Quantitative

1. How often do teachers use technology-enhanced multimedia tools in the foreign language classrooms? For which purposes?
2. How is foreign language classroom instruction influenced by the use of technology-enhanced multimedia tools?
3. What is the relationship between variables that impact pedagogically sound technology-enhanced multimedia instruction in the foreign language classrooms?

Qualitative

1. What is the nature of pedagogically sound technology-enhanced multimedia instruction in the foreign language classrooms?
2. What role does technology-enhanced multimedia instruction play in foreign language pedagogy?
3. How do teachers implement technology-enhanced multimedia instruction in the foreign language classrooms?

Mixed-methods

To what extent do the quantitative and qualitative data converge? How and why?

Philosophical Foundations

Worldview or paradigm is a basic set of beliefs and assumptions that guide inquiries. It shows how a researcher views the world and goes about conducting research. (Creswell & Plano Clark 2011; Lincoln & Guba, 1990). The goal of a pragmatism approach in this study is to explore the research problem and to focus on the outcomes of the study. Pragmatism does not view the world as an absolute unity and is not committed to one specific system of philosophy and reality (Creswell, 2011). It emphasizes researchers' freedom "to choose the methods, techniques, and procedures of research that best meet their needs and purposes" (Creswell, 2007, p.23). Pragmatism is not concerned with which methods to use, but stresses "the importance of conducting research that best addresses the research problem" (Creswell, 2007, p. 23) rather than being concerned with which methods to use. Therefore, researchers who adopt pragmatism worldview see research as real-world practice oriented, and focus on "what works" for their study (Creswell & Plano Clark, 2011). Pragmatism approach relies on "abductive reasoning,"

the type of reasoning that allows for both deductive and inductive thinking. It also allows for converting observations into theories, and later assessing those theories through action (Morgan, 2007).

The pragmatism worldview of the researcher is informed by the following stances:

- "there is one best paradigm or worldview that fits mixed methods research" (Creswell & Plano Clark, 2007, p. 26)
- "worldviews relate to the type of mixed methods design and may vary depending on the type of design" (Creswell & Plano Clark, 2007, p.27).

These two stances shaped the decisions I made in designing the mixed methods study in a way that methods that work best and provide the most comprehensive picture of the research problem were chosen.

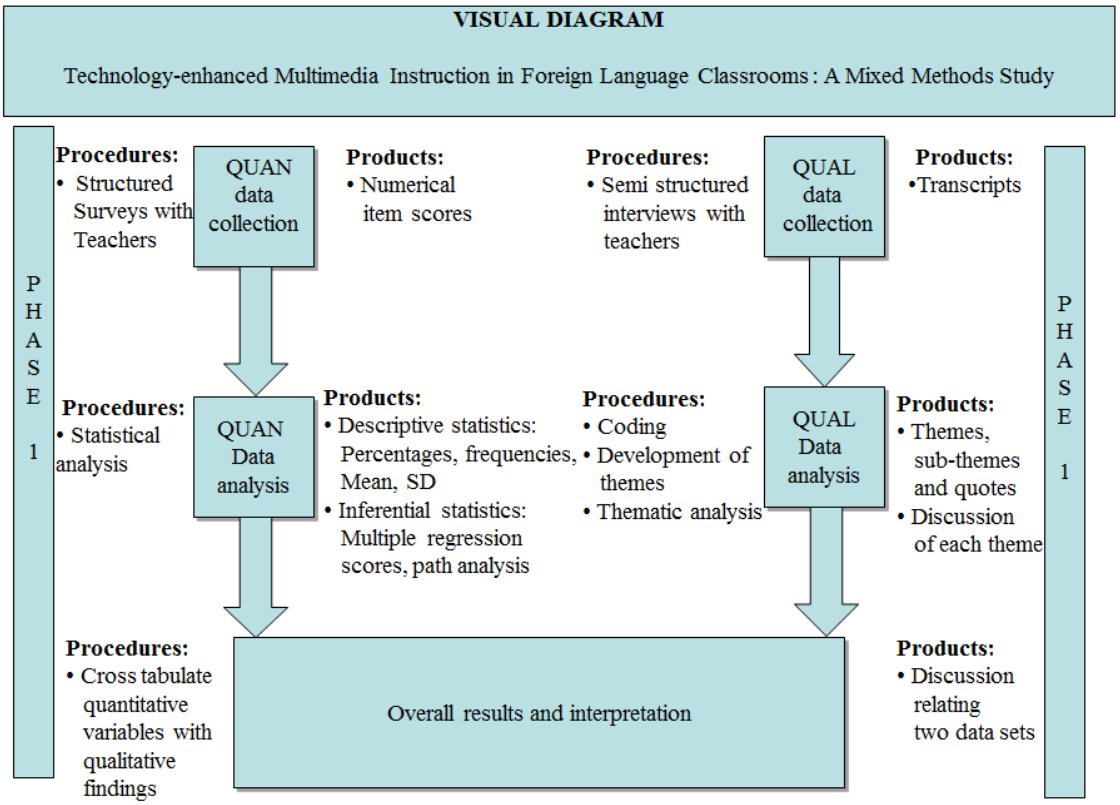
Type of Design

A mixed methods approach was applied in this study since I wanted to produce valid, rich, vivid, and well-substantiated conclusions about pedagogically sound foreign language technology-enhanced multimedia instruction in 6-12 public school classrooms in the Midwest. Mixed methods research is an approach, which focuses on collecting, analyzing, and mixing both quantitative and qualitative data with the purpose of providing a better understanding of the research problem (Creswell & Plano Clark, 2011). The benefits of utilizing a mixed methods approach for this study were many. Mixed methods research compensates for weaknesses of both quantitative and qualitative research. It compensates for the weaknesses of the quantitative research in a way that it allows the voices of the participants to be heard. It compensates for deficiencies of qualitative research in that it makes up for biases created by personal interpretations of

qualitative research. Mixed methods research uses "all of the tools of data collection available rather than being restricted to the types of data collection typically associated with qualitative research or quantitative research" (Creswell & Plano Clark, 2007, p.9). Finally, mixed methods research is practical, since it allows for both inductive and deductive thinking in addressing a research problem (Creswell & Plano Clark, 2011).

Specifically, the mixed methods design utilized for this study was a convergent parallel design. Convergent parallel design is a one-phase design, in which quantitative and qualitative data are collected and analyzed during the same time (concurrently) and are equally (QUAN+ QUAL) weighted (Creswell & Plano Clark, 2011). In order to best understand the research problem, a researcher collects and analyzes both numeric and text data concurrently but separately, and merges the two data sets in the interpretation phase of the research (Creswell & Plano Clark, 2011). Mixing of the data occurs only after the quantitative and qualitative data are analyzed and the results are compared and contrasted to produce a final valid interpretation of the studied phenomenon.

Figure 3.1 Visual Diagram of the Procedures in the Convergent Parallel Type of Design



A convergent parallel model is used when a researcher wants to end up with complete, thorough and in depth conclusions about a certain phenomenon. This study included a report on pedagogically sound technology-enhanced multimedia foreign language instruction in grades 6-12 classrooms in the Midwest. The rationale for using convergent parallel approach is that greater validity is needed to address the research problem. A convergent parallel approach offset weaknesses by drawing on the strengths of both quantitative and qualitative methods, and helped to obtain different but complementary data on the same topic to best understand the research problem (Bryman, 2006; Creswell & Plano Clark, 2011). Employing this type of mixed methods design enhanced the integrity of findings (Bryman, 2006). A convergent parallel approach enriched understanding about the research problem "by allowing for new and deeper

dimensions to merge" (Jick, 1979, p. 603). This type of design increased validity of constructs and results by maximizing the heterogeneity of sources (Greene, Caracelli, & Graham, 1989). Some examples of using convergent parallel design in the area of education is the study conducted by Chen (2008), in which the researcher converged quantitative survey results with qualitative interviews to examine Taiwanese English as a Foreign Language (EFL) teachers' internet use. Another study that employed convergent parallel design was the study conducted by Mady (2009), who aimed to discover students' attitudes towards learning French language and culture using Accelerated Integrated Method (AIM) of language instruction. Mady (2009) converged quantitative student survey results with qualitative interviews with selected students. Challenges one may encounter using the convergent parallel approach include effort and expertise required because of concurrent data collection and equal emphasis on both quantitative and qualitative research procedures (Creswell & Plano Clark, 2011). Since the convergent parallel design implies dealing with different samples and different sample sizes, integrating (converging) two sets of different data in a meaningful way can be challenging (Creswell & Plano Clark, 2011). Potential limitations of using convergent parallel type of mixed method design may be the fact that bias may be introduced by one form of the data collection which may confound results from the other form of data that was collected from the same participants. The other limitation of this type of design may be related to unequal evidence from both types of data (Creswell & Plano Clark, 2011).

Validation Procedures

In a mixed methods context, validity is "the ability of the researcher to draw meaningful and accurate conclusions from all of the data in the study" (Creswell & Plano Clark, 2007, p. 146). Creswell (2004) contended "consequential validity" is inherent to

this type of design, as the results of a study relying on multiple sources of data should provide better results than a study relying on only quantitative or qualitative data. Reliability implies that the data that has been collected is consistent and stable. Triangulating the data using multiple data sources helps validate the data collected for the study. Hatch (2002) mentioned that "Triangulation of unobtrusive data with data from other sources is one way to improve confidence in reporting findings based on such information" (p.121). In this study the data was collected through online surveys and one-on-one interviews with foreign language teachers. Having foreign language teachers from different school districts, of different ages, and with different amounts of teaching experience who participated in the study also triangulated the data. The overall combination of quantitative and qualitative data helps to provide validation to the overall study (Tashakkori & Teddlie, 1998).

Quantitative validation procedures. The discussions of validity in the quantitative approach have been common and its importance has been accepted (Onwuegbuzie & Johnson, 2006). Validity in quantitative research is the extent to which a researcher can draw meaningful inferences (Creswell & Plano Clark, 2008). Validity assesses how well an instrument measures what it intends to measure. In other words, validity measures the accuracy of the instrument. Researchers may report different forms of validity, such as face, content, criterion, and construct validity (Dillman, Smyth, & Christian, 2008). In order to assure the accuracy of the instrument that was developed, face and content validity were conducted. Face validity implies informal check of the survey's instrument by non-experts. Although face validity is considered to be the least scientific measure of validity it can still provide feedback on the accuracy of the instrument. Content validity, which involves a formal review of the survey by experts or

group of trained judges was utilized as well. The experts evaluate content validity by "the plan and the procedures used in constructing the instrument" (Creswell, 2008, p. 172). Thus, the experts look at the objectives and the purpose of the instrument, content areas that the instrument includes, as well as the difficulty of the survey questions. These steps were taken to establish the accuracy and stability of the data measured by the developed instrument.

Reliability is the extent to which the scores are consistent and stable (Creswell & Plano Clark, 2007). I conducted internal-consistency reliability**,** which indicates how well different items measure the same issue. Internal-consistency reliability measures the extent to which all items of a test measure the same variable. Cronbach's alpha coefficients (α) were reported to test for internal consistency (Cronbach, 1984). Cronbach's alpha is "the most widely used measure of reliability"(Aron & Aron, 2003, p. 607) and provides coefficients that estimate the consistency of scores. The conventional cut-off criterion for acceptable Cronbach's alpha coefficients is .70 or above (Nunnally, 1978). Reliability coefficients, i.e. Cronbach's alphas, were calculated for independent and dependent variables to provide an internal consistency estimate of reliability of test scores. For the teacher belief variable including all eight items, Cronbach's alpha was .815; but after removing two items, Cronbach's alpha coefficient was .863. Cronbach's alpha for the variable measuring teacher use of technology-enhanced multimedia in the foreign language classroom was .795 and for the variable measuring foreign language student use of technology-enhanced multimedia Cronbach's alpha was .866. Calculated Cronbach's alpha coefficients demonstrated high internal consistency estimate of scores reliability.

Qualitative validation procedures. In qualitative research, validity is the extent that the information is accurate and credible, whereas reliability plays a minor role and implies the extent to which multiple coders agree on codes (Creswell & Plano Clark, 2007). Several validation techniques of the qualitative data were applied in this study. I used member checking to assure the accuracy and consistency of the interview transcripts. I forwarded interview transcripts to participants for their review, and obtained approvals regarding interview content from them, as it is suggested in the scholarly literature (Glesne & Peshkin, 1992; Lincoln & Guba, 1985; Merriam, 1988; Miles & Huberman, 1994). I provided rich and thick descriptions of the qualitative data results allowing readers to make their own decisions regarding transferability of the findings to other learning settings. Rich and thick description of the findings is another qualitative validation procedure suggested in the literature (Erlandson et al., 1993; Lincoln & Guba, 1985; Merriam, 1988).

Merriam (1988) mentioned that in order to enhance validity of the qualitative data, a researcher should clarify her bias for the reader to help the reader better understand the researcher's position and the researcher's personal biases that may impact the qualitative data analysis and interpretation. I described my past experiences and personal biases that might have influenced my interpretation of the data and presented them for the readers' consideration. I was engaged in attentive and persistent data collection and analysis processes by "building trust with participants, learning the culture, and checking for misinformation" (Creswell, 2007, p. 207). I made decisions regarding what is important and relevant to the study and what was necessary to focus on. All correspondence to and from participants was collected, recorded, and kept in a log.

Finally, a pilot test of the qualitative interview questions was conducted and suggestions from the pilot were incorporated in the final interview protocol.

Data Collection

In this section I discussed sampling and quantitative and qualitative data collection procedures. I also described research instruments that were used and pilot procedures.

Permissions. Campus-based IRB (Institutional Review Board) approval was received before the foreign language teachers could be invited to participate in the study and the data collection process could begin (for approved IRB letter refer to Appendix A). Once the IRB approval was granted (IRB # 20120512708 EX), an email was sent inviting foreign language teachers to participate in the study (for research invitation refer to Appendix B). Participants were foreign language teachers who used technology-enhanced multimedia instruction in their classrooms. Data collection took place during spring and summer months of 2012.

Sampling. A study sample was selected that was able to address the research questions. I sought both breadth and depth of information across the research strands (Teddlie & Yu, 2007). Sampling using a combination of purposive techniques was used (Teddlie & Yu, 2007). I used reputational case sampling and snowball sampling to select participants for the data collection. Reputational case sampling involves obtaining a recommendation of the knowledgeable experts to recruit individuals who are best representative for studying a certain issue (McMillan & Schumacher, 1997). Snowball sampling is a type of purposeful sampling in which the researcher asks participants to identify others to become members of the sample (Creswell, 2008). Participants

recommended information-rich individuals who might be interested in participation in the study.

Foreign language teachers who were identified as those who implement technology-enhanced multimedia instruction received links to the online surveys. Twenty-two (n=22) teachers who met research criteria replied to the survey (for the survey instrument refer to Appendix C). Upon completion of the data collection process, the system indicated that 23 responses were received but when exporting data for analysis it was noticed that only 22 teachers actually completed the survey and one teacher clicked the button agreeing to participate in the study but never completed the survey.

The same participants who completed the surveys were invited for the interview (for the interview protocol refer to Appendix D). A total of n=21 agreed to be interviewed and were interviewed by the researcher. Participants for this study were foreign language public school teachers in grades 6-12 in the Midwest, who were identified as foreign language teachers implementing technology-enhanced multimedia instruction in the foreign language curriculum. These teachers were known for their use of technology by other foreign language teachers and they were often presenters at conferences showcasing their use of technology to teach a foreign language. Therefore, participants were purposefully selected based on their reputation for technology use. Because of my professional background in foreign languages, I knew many of the Midwest foreign language teachers through my involvement in professional organizations. The teachers were accessible because they were public figures teaching foreign languages in public schools in the Midwest. Teachers from both larger urban school districts as well as small rural school districts participated in the study. In order to be included in the study, participants needed to meet the following criteria:

1) be identified as a foreign language public school teacher who implemented technology-enhanced multimedia instruction

2) be willing to complete a brief survey on the use of technology-enhanced multimedia instruction

3) be available for a face-to face interview during the data collection process

Quantitative data collection. In this section I describe how quantitative data for the study was collected. An online survey was designed and distributed to foreign language teachers to collect numeric data.

Qualtrics. A survey was used to collect quantitative data. Qualtrics software was used to build and distribute an online survey to the study participants. Qualtrics software allows one to customize surveys and to collect an online data in a timely and efficient manner. It allows for building different types of questions, customizing the layout of the survey, and making it easy to distribute the survey and to track the number of responses received from participants. The survey was designed in a way that prevented teachers from skipping the questions. Thus, teachers could only move to answer the next question after the previous question was answered. This strategy reassured that all questions were answered and no incomplete data was received. Qualtrics also included options to inactivate the survey by closing it when the data collection is completed. Qualtrics allowed me to include an informed consent form with the IRB number at the beginning of the survey. Participants had to click the "Agree to participate in the study" button before being able to proceed with taking the survey itself. Another convenient feature of the Qualtrics software was that it allowed the generation of an initial data report calculating descriptive statistics for the data such as mean, standard deviation, maximum, minimum, frequency and percentages and presented the descriptive statistics results using tables,

graphs and figures. This was a helpful feature of the software since it allowed me to immediately see the trends in the data.

Piloting the survey. The Qualtrics survey was piloted with n=8 participants, who were not included in the actual study. Pilot participants evaluated survey items and the easiness and convenience of survey distribution and the navigation panel. Creswell (2008) defined a pilot test as "a procedure in which a researcher makes changes in an instrument based on feedback from a small number of individuals who complete and evaluate the instrument" (p. 402). Participants in the pilot test provided feedback on the survey items and the overall format of the survey design and delivery. As a result of this, wording of some questions was tweaked as suggested by the participants in order to reassure clarity. Pilot participants had only positive comments in regards to the Qualtrics tool as a mode of delivering the survey, and expressed satisfaction in the easiness and practicality of their experience with the tool.

Survey. The variables of the study included foreign language teacher beliefs about the use of technology-enhanced multimedia instruction, foreign language teacher practices with technology-enhanced multimedia and variables that describe teacher demographical characteristics. The survey included items that measured all variables of the study. The survey consisted of 11 close-ended items. An ordinal 5-point Likert scale to elicit participants' responses with 1 being equivalent to strongly disagree and 5 being equivalent to strongly agree was used. The survey also included items that asked participants to choose all that apply answers, select the frequency with which they used a certain technology-enhanced application during foreign language instruction. Questions 1 and 2 focused on measuring teacher beliefs about the use of technology-enhanced multimedia instruction. Questions 3 to 5 measured foreign language teacher instructional

practices with technology-enhanced multimedia. Questions 6 to 11 sought demographic information about the participants. The survey items were developed based on an extensive literature review.

I used sequential steps to implement the study and ensure a high response rate. An email-invitation, which included a cover letter explaining the intent of the study, a link to the survey, and approved research consent form was sent to identified foreign language teachers (for approved consent form refer to Appendix D). A week later, a follow-up email was sent to participants indicating gratitude if they have already completed the survey and serving as a reminder if they did not complete a survey (for an email reminder refer to Appendix E). These procedures reassured a high response rate.

Only foreign language teachers who received the link to the survey were able to take the survey. This assured that only the data from targeted participants was recorded The survey could be taken only once. Data was sent to a secure server and was encrypted while in transit. IP addresses were not collected, and only I had access to the data. The survey took approximately 10 minutes to complete.

Qualitative data collection. Qualitative data was collected using open-ended interviews with purposefully selected foreign language teachers who implemented technology-enhanced multimedia instruction in their classrooms (for the interview protocol refer to Appendix F).

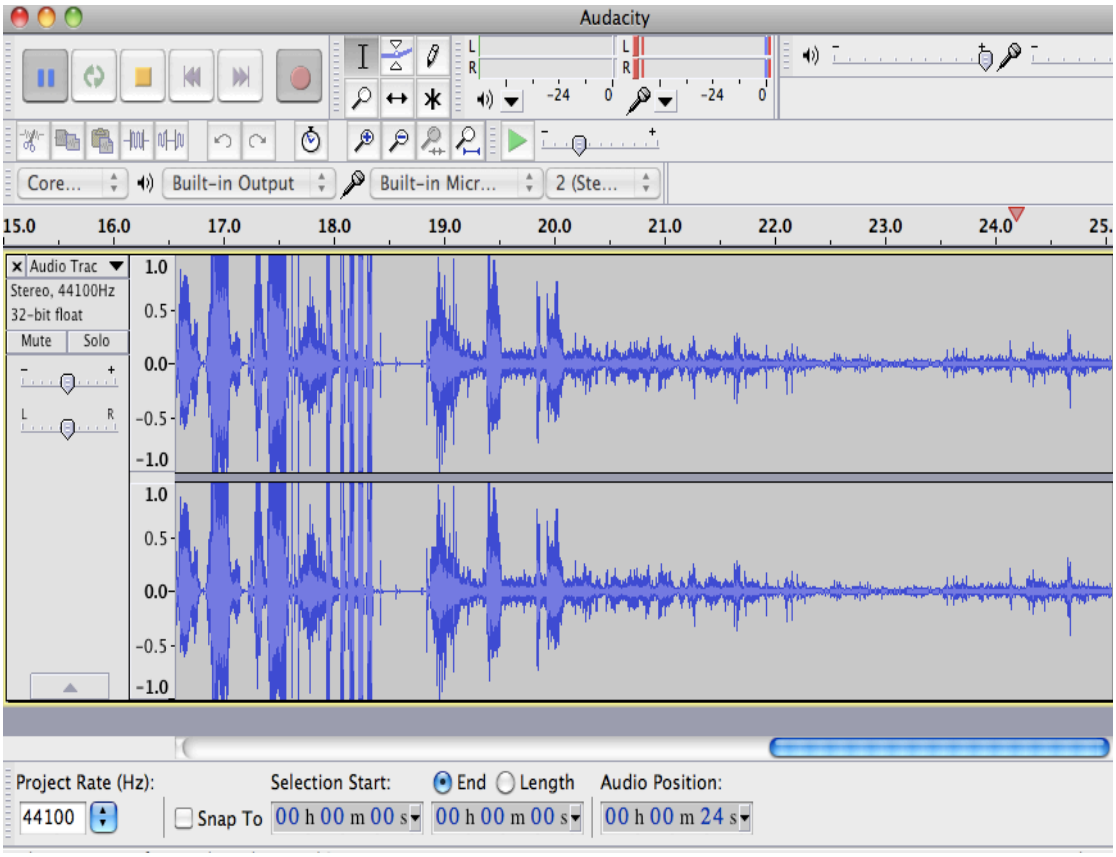
Because of the qualitative nature of the study, during the process of data collection I relinquished expectations of a single "authentic" response to each interview question. I elicited multiple perspectives and alternative responses to interview questions by acknowledging multiple social locations that participants occupied (Gubrium & Holstein, 2002). I sought to acknowledge the social and conversational dimensions of the

interview interaction (Grinstead, 2007; Houtkoop-Steenstra, 2000) and sought to reduce my social distance from the study participants. Generating rapport with participants allowed me to be a co-creator rather than a sole-creator of meaning during the interview interactions. Participants were asked to sign the informed consent form and in that way showed agreement to participate in the study and to be audiotaped. I conducted audio-recorded semi-structured one-on-one interviews with foreign language teachers. The interview protocol for teachers included nine open-ended questions. Questions included probes to retrieve information from participants. Creswell (2008) defined probes as sub-questions used to "elicit more information," "clarify points" or "expand on ideas" (p. 229). The interview questions allowed me to collect rich data by exploring participants' use of pedagogically sound technology-enhanced multimedia instruction. Each interview took approximately thirty minutes to complete. Initial interview questions were broad and provided context for subsequent questions, which were more specific. Interview protocols included a place for data about the time, day, and place of the interview (Creswell & Plano Clark, 2011). Interviews took place in quiet locations that were convenient for participants at a time specified by participants. Those locations included quiet meeting rooms at the university that I booked, quiet locations at schools where teachers taught, in public libraries and other places specified by participants.

Audacity version 2.0.0 computer software and an iPod were both used to audiotape interviews with foreign language teachers. Using both devices to audio record assured a high quality of interview recording and served as a back-up in case one of the devices did not work properly or did not record on the highest quality. Audacity 2.0.0 is an easy-to-use open source audio recording software. Four main buttons include: Record, Pause, Stop and Play, and make it a friendly and hands-on application for audio recording

purposes. It can be downloaded on a computer from the Internet and used to record live audio. It allows converting audio recordings into digital files and saving them on the computer in a format suitable for transcriptions. The interviews were saved as digital files on my computer.

Figure 3.2 A Screenshot of Audio File Recorded by Audacity 2.0.0 Software Application



Mixed methods data collection. In convergent parallel mixed methods design, quantitative and qualitative data are collected independently and concurrently (Creswell & Plano Clark, 2011). Quantitative and qualitative data were given the same weight in the study. Parallel questions addressing technology-enhanced multimedia use to foster student learning in both the survey and interviews made data more comparable.

Ethical considerations. I endeavored to imbue respect for participants in all phases of the study. I demonstrated respect for participants primarily through reciprocity. Ethical considerations were addressed at each stage of the study.

Any information obtained during the study that could identify a participant was kept strictly confidential. Only I saw the data and the data was not associated with names. Instead, participants were assigned pseudonyms that assured anonymity and confidentiality of the data. Digital audio recordings will be erased upon completion of the study and all transcripts related to this study will be destroyed three years after the study is complete.

According to Creswell (2008), "obtaining permissions before starting to collect data is not only a part of the informed consent process but is also an ethical practice" (p. 179). I obtained permissions from the campus-based IRB office and afterwards, engaged in the data collection process. Foreign language teachers participating in the study received an informed consent form describing the study purpose and procedures. The approved consent form indicated that participation in the study was voluntary and that participants were free to withdraw from the study at any time without adversely affecting their relationships with me, with the university or the school where they taught.

I designed the survey and an interview protocol that was engaging and respectful of participants' intelligence. The interview protocol was designed in a way that kept participants' identities confidential, and the interviews were conducted at a time and place convenient for the participants. I demonstrated respect for participants by continually acknowledging the contributions that they made to the study. I was also considerate of the proper placement of the audiotaping equipment in order not to disrupt the flow of the interview.

Researcher's reflexivity. According to Creswell (2008), reflexivity in research means that "the researchers reflect on their own biases, values, and assumptions and actively write them into their research" (p. 58). I am a foreign language educator and an instructional technology instructor. I believe that technology-enhanced multimedia instruction plays an important role in the foreign language learning process and can benefit student learning if implemented through pedagogically sound practices consistent with foreign language acquisition approaches. I am interested in what pedagogically sound technology-enhanced multimedia instruction looks like in the foreign language classrooms. I would like to know what tools are used, how and why they are used, and to have a better knowledge and understanding of technology-enhanced multimedia foreign language practices. The study has important implications for me as a researcher in the study, other foreign language educators, administrators and faculty of teacher preparation programs as well as education policy makers.

There might be a chance that my own experiences and beliefs on technology-enhanced multimedia instruction influenced my interpretation of participant data and might have made me attribute successful foreign language learning to the use of technology-enhanced multimedia instruction. However, my experiences in a classroom as a foreign language teacher, foreign language teacher supervisor, teaching assistant for foreign language teacher certification courses and instructional technology instructor provided some common ground. I also learned a great deal about the role of technology-enhanced multimedia in the learning process from colleagues who are foreign language educators and instructional technology instructors and who generously shared their perspectives and critiques. Given the fact that participants do not depend on me in any

way in terms of employment or educational aspirations, my influence on teacher views about technology-enhanced multimedia instruction were likely to have been minimal.

Data Analysis

Caracelli and Greene (1993) noted that the type of mixed methods design used in this study seeks convergence, corroboration, and correspondence of results across different types of methods. Since I used a convergent parallel design, I followed the guidelines that apply to the data analysis procedures of this design.

Quantitative analysis. SPSS version 20 statistical software was used to analyze quantitative data. SPSS is a statistical data analysis program that allows one to conduct various statistical tests and analyses in a quick manner. The Mplus version 6 statistical program was utilized to conduct the path analysis portion of the overall quantitative data analysis. Mplus statistical modeling software allows one to describe the structure of the data in a way that is easy to understand and interpret. Mplus includes graphical displays of the data and the results from the analysis.

The file with survey results from the Qualtrics survey management tool was downloaded in the format suitable to be opened in SPSS. Quantitative data consisted of numeric values for each of the survey items. Data entry errors were cleaned from the database and the data was examined and later statistical procedures were utilized to analyze the collected data. It was important to conduct descriptive statistical analysis to decide whether the data was normally or non-normally distributed and then choose appropriate procedures for statistical analysis. Such measures of central tendency as mean and standard deviation were utilized to help develop general trends in the data. Percentages and frequencies were calculated for some questions. Linear multiple regression analysis with two predictor variables was used. Multiple regression provides

information about complex relationships between dependent and independent variables by "using several predictor variables to help obtain more accurate predictions" (Gravetter & Wallnau, 2007, p. 564). Linear multiple regression predicts a single dependent variable from several independent variables (Stockburger, 1998). The purpose of linear multiple regression is to inquire more about the relationships between variables by fitting a linear equation to observed data and finding "the best-fitting straight line for a set of data" (Gravetter & Wallnau, 2007, p. 551). Multiple regression can explain a proportion of variance in a dependent variable at a significant level as well as can provide information on relative predictive importance of the independent variables (Nathans, Oswald, & Nimon, 2012).

Path analysis was used as a straightforward extension of multiple regression. Path analysis allows specifying relationships between variables and looking at more than one dependent variable at a time. It provides estimates of the magnitude and significance of relationships between sets of variables. Graphical language using path diagram provides a convenient and clear way of presenting complex relationships in path analysis (Klem, 1995; Loehlin, 2004).

The research questions driving the quantitative component of data collection and analysis of this study were: How often do teachers use technology-enhanced multimedia tools in the foreign language classrooms? For which purposes? How is foreign language classroom instruction influenced by the use of technology-enhanced multimedia tools? What is the relationship between variables that impact pedagogically sound technology-enhanced multimedia instruction in the foreign language classrooms? Tables and figures were presented to display the results of statistical analysis to show quantitative results at a glance and to show trends in the data.

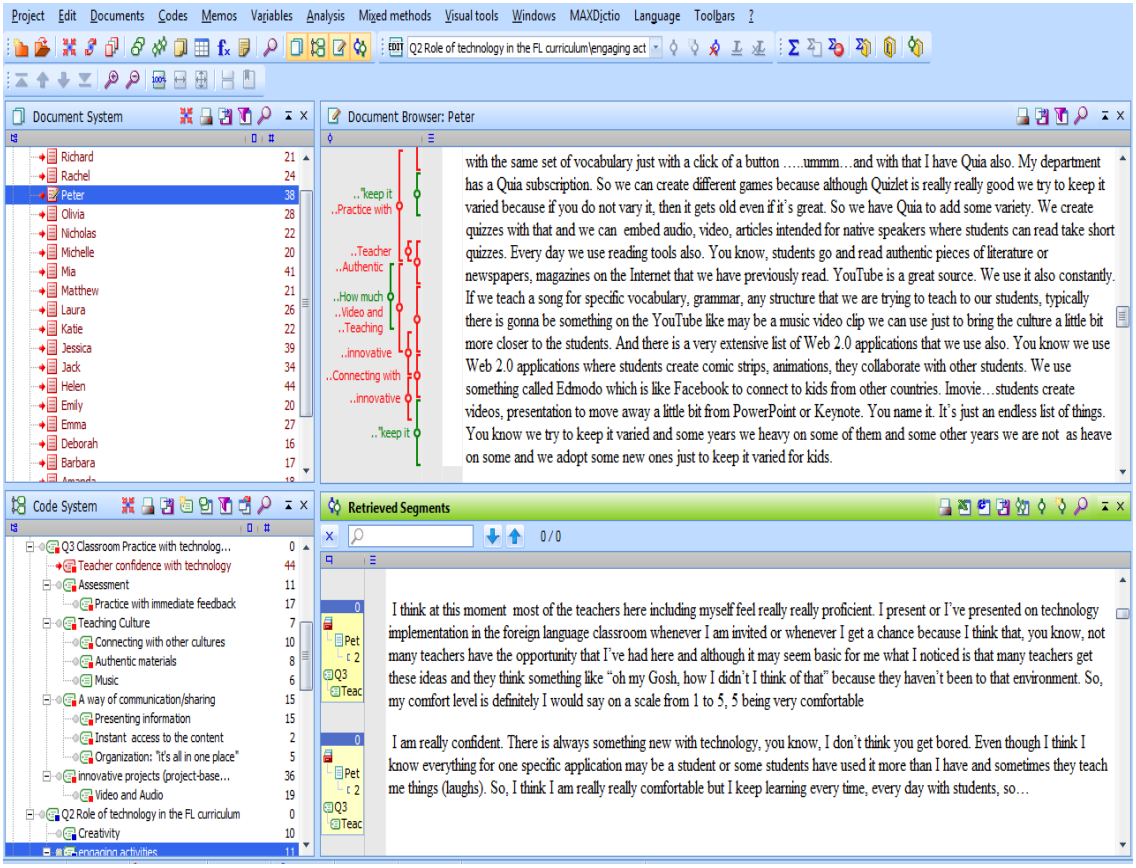
Qualitative data analysis. Twenty-one interviews (n=21) were conducted with foreign language teachers to explore pedagogically sound technology-enhanced multimedia instruction in their classrooms. To prepare qualitative data for analysis, I organized and transcribed interviews verbatim into word-processing file. When the data was transcribed I checked the transcripts for accuracy and transported files into the MAXQDA 10 qualitative data analysis software program. MAXQDA 10 is a qualitative data analysis software that allows one to code qualitative data and helps to systematically evaluate and interpret text data. Using MAXQDA 10 allowed me to move codes via the "drag & drop" option, to use color-coding, to make memos, and to create a visual overview of the code distribution throughout the dataset. MAXQDA 10 assisted with searching for segments of the text that contained multiple codes.

I explored qualitative data by reading through all of the data with a purpose of developing an overall understanding of the database. While reading through the data, I typed primary thoughts by making memos on the transcripts in the MAXQDA 10 software. Memoing the data is an initial step in deciding on the codes and themes (Creswell & Plano Clark, 2007). Qualitative data analysis focused on the exploration of the technology-enhanced pedagogically sound multimedia instruction in foreign language classrooms. The qualitative research questions driving the study were: What is the nature of pedagogically sound technology-enhanced multimedia instruction in foreign language classrooms? What role does technology-enhanced multimedia instruction play in the foreign language pedagogy? How do teachers implement technology-enhanced multimedia instruction in foreign language classrooms?

I started qualitative data analysis by coding the data and labeling phrases, sentences, and paragraphs of the text. I assigned labels to the codes as well as used actual words of

the participants or so called in vivo codes. Codes were grouped into themes and themes were interrelated and compared. Presenting qualitative results involved the discussion of themes and their evidence. I created a convincing discussion to demonstrate the fact that themes emerged from the data. Therefore, themes were divided into sub-themes, quotes of the participants were cited, and participants' multiple perspectives were discussed. Qualitative findings were represented through visuals that show major themes, sub-themes and demonstrate how they all are interrelated.

Figure 3.3 A Screenshot of the Qualitative Analysis in MAXQDA Software



Mixed methods data analysis. In the convergent parallel mixed methods design, initially quantitative and qualitative data is analyzed separately but concurrently (Creswell & Plano Clark, 2011). This means that the researcher conducts statistical analysis of the quantitative data and at the same time codes qualitative data, develops and

interrelates themes. Two datasets are merged in the second stage for the development of a complete picture. By merging the data I was able to answer the mixed methods questions associated with this convergent parallel design. Specifically, I needed to answer the following questions associated with convergent parallel type of design: To what extent do the quantitative and qualitative data converge? How and why? In order to answer these questions I examined to what extent did the survey results support the open-ended themes, and what similarities and differences existed across levels of analysis. Quantitative and qualitative data were compared. I provided a discussion comparing quantitative and qualitative data results and examining similarities between two different data sets. Statistical results were reported and were followed up with specific information about themes. Quotes from the interviews that approved or disapproved the quantitative results were included.

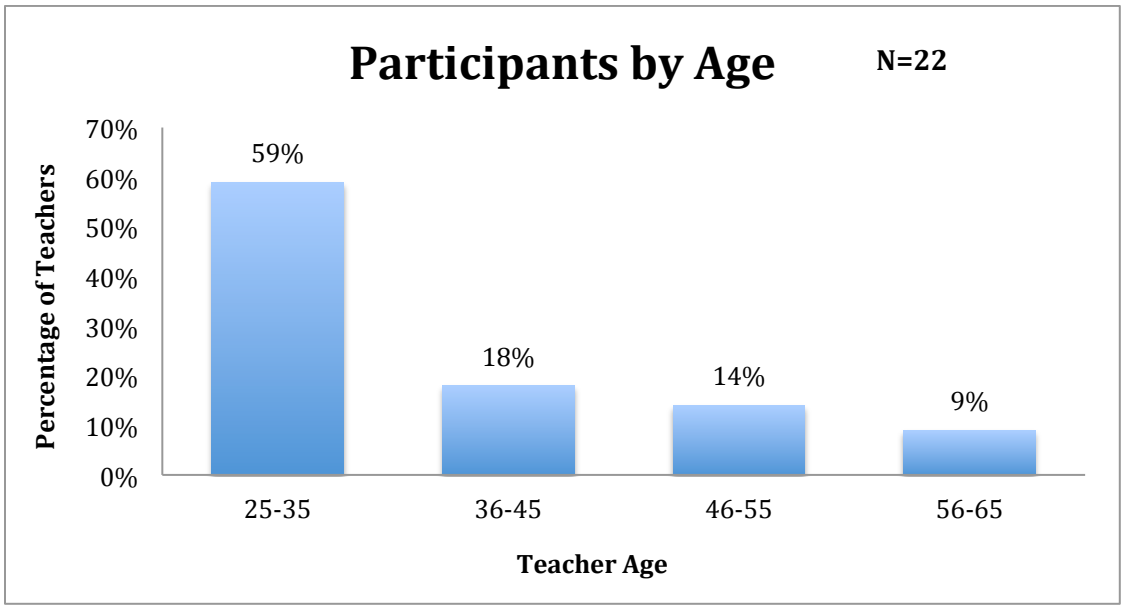
After quantitative and qualitative data was collected and analyzed, I reported both types of results and merged them in the discussion section of my dissertation. Results of the study are presented and illustrated in the Chapter 4.

CHAPTER 4: RESULTS

Quantitative Results

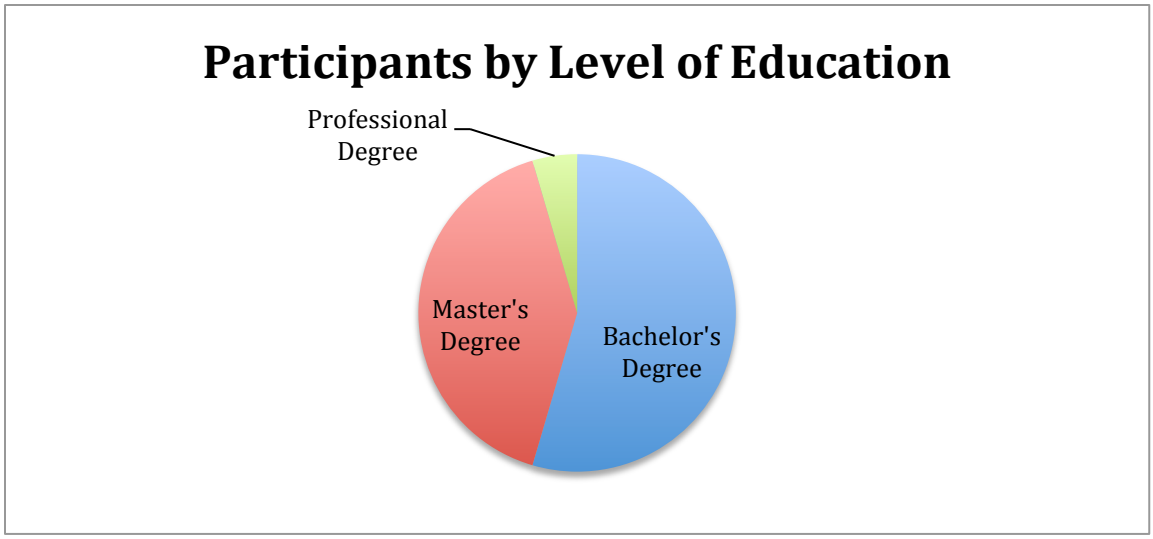
Quantitative data was analyzed using SPSS statistical software. Descriptive statistics were used to calculate percentages describing participant demographics. A total of N=22 foreign language teachers completed an online survey. There were 27 % male and 73 % female foreign language teachers who taught at the middle school level and at the high school level i.e. grades 6 through 12. Participants included teachers delivering instruction in Spanish, French and German beginning as early as the 6th grade level at the middle school and up to level one, two, three, four and five at the high school level, as well as teachers who taught advanced placement, honors and heritage speakers. Teachers represented different age groups with the majority of teachers (59 %) being between 25-35 years old and the smallest percentage of teachers (9 %) being in the 56-65 age group. Figure 4.1 reflects the age distribution of foreign language teachers who participated in the study.

Figure 4.1 Percentage of Foreign Language Teachers by Age



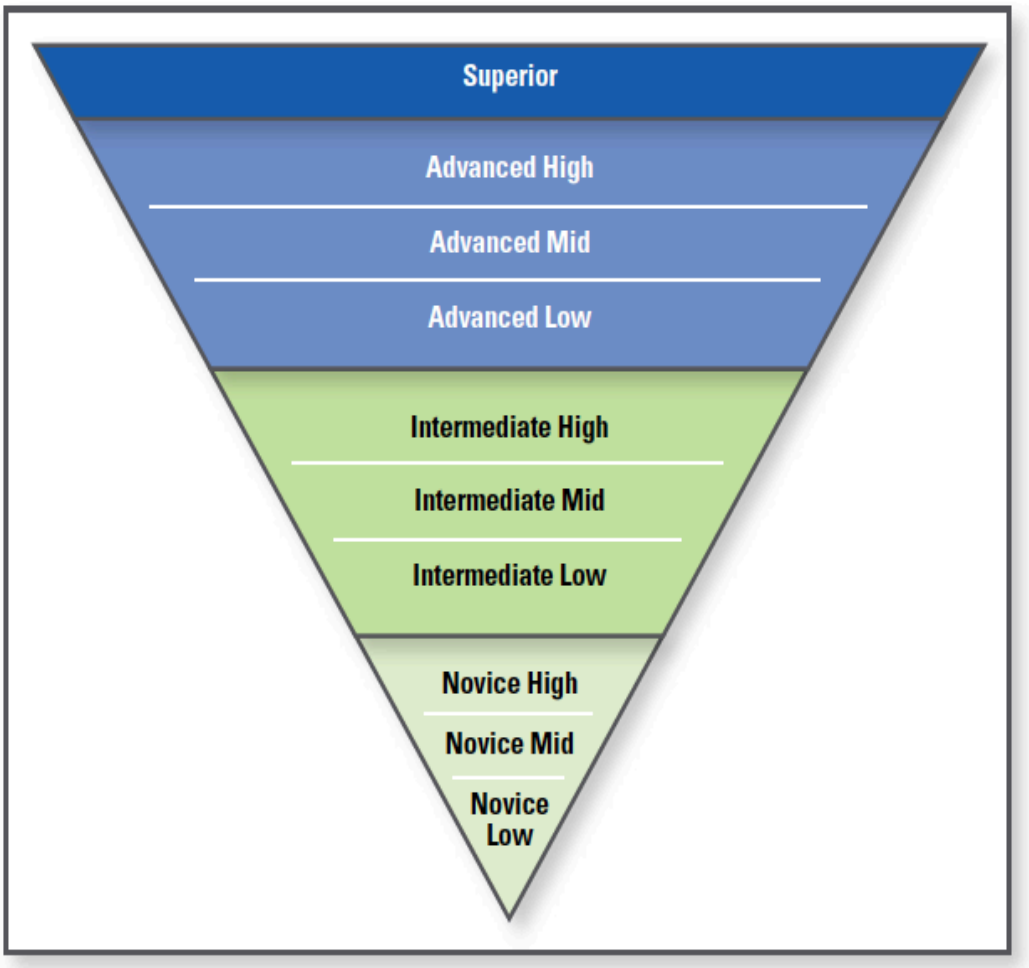
Participants held Bachelor's, Master's and Professional degrees. The majority of foreign language teachers (55 %) held the Bachelor's degree as the highest degree earned followed by teachers with Master's degrees (41%) and Professional degree (4%). Figure 4.2. provides a visual representation of participants by their level of education.

Figure 4.2 Participants by Level of Education



When rating their level of language proficiency, 36 % of participating foreign language teachers indicated that they were at the advanced-mid level, 23 % at the advanced-high level, 18 % at the advanced-low level, 9 % of teachers rated their language proficiency level as superior and 9 % as intermediate high. Finally, 5 % of the teachers indicated that they had an intermediate-mid level of proficiency in the language that they were teaching. Figure 4.3 includes levels of foreign language proficiency as indicated in the American Council on the Teaching of Foreign Languages (ACTFL).

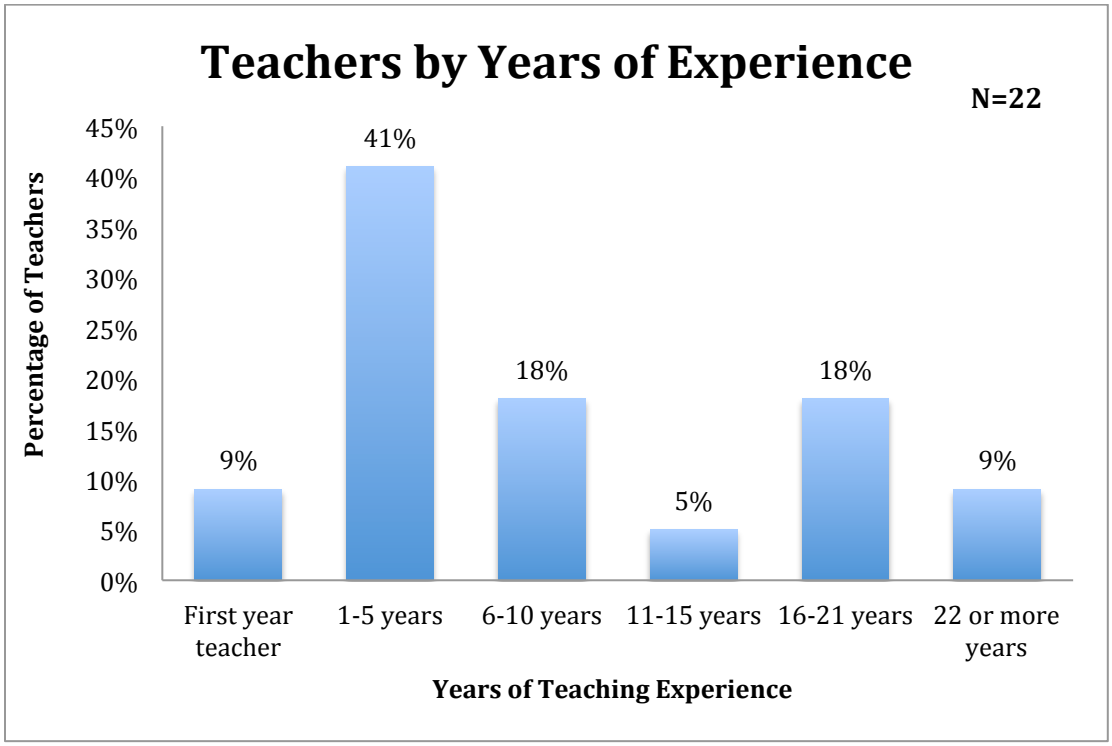
Figure 4.3 ACTFL Levels of Foreign Language Proficiency



Source: American Council on the Teaching of Foreign Languages (ACTFL)

Participants' teaching experience ranged from being a first year teacher to having 22 and more years of teaching experience in the foreign language classroom. Figure 4.4 shows the distribution of teachers by years of foreign language teaching experience that they held.

Figure 4.4 Foreign Language Teachers by Years of Experience



In order to answer research question one, how often technology-enhanced multimedia instruction was implemented in foreign language classrooms and for which specific language learning purposes, percentages, means, standard deviations and frequencies were calculated. A Likert scale was used to measure the frequency of use of technology-enhanced multimedia instruction. The Likert scale included answer choices from Never (1) to Rarely (2), Sometimes (3) and Often (4). Data showed that in order to help students learning a foreign language, teachers not only frequently utilized different technology-enhanced multimedia themselves but also engaged students in using such tools as Internet, presentational applications, video, audio, Web 2.0 and communication tools. Descriptive statistics demonstrated that the use of different technology-enhanced multimedia tools was well represented both among teachers and students in the foreign language classrooms, although teachers themselves used technology-enhanced

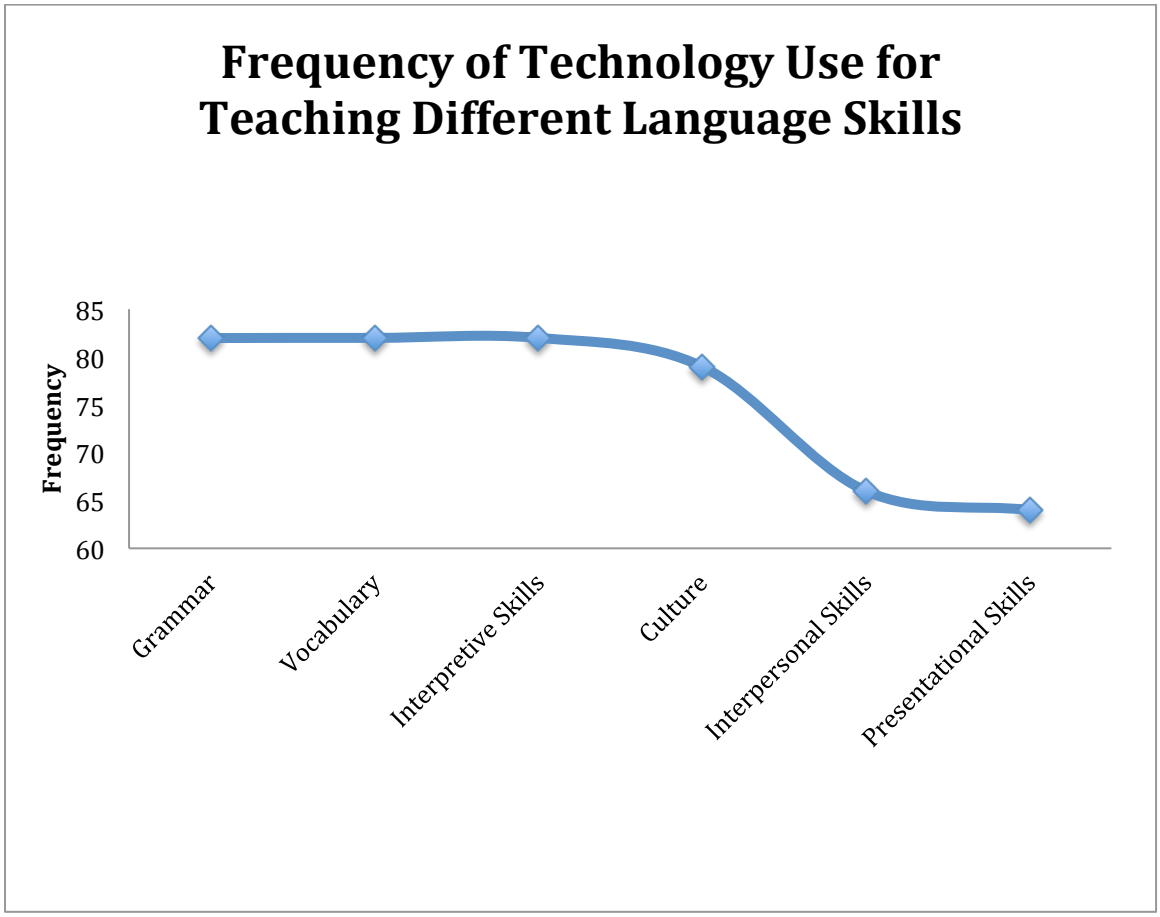
multimedia to deliver instruction slightly more often than they engaged students in working with those tools while learning a foreign language. Internet was the tool that was used most frequently by both teachers and students, whereas communication tools such as Skype and Instant Messenger were the least frequently used. This may be explained by the fact that using communication tools such as Skype and Instant Messenger requires a participant from a foreign country to be willing to partner and engage in the instantaneous conversations. Table 4.1 indicates how often teachers and students used different multimedia technology tools in the foreign language classrooms listing means (M) and standard deviations (SD).

Table 4.1 The Use of Technology-enhanced Multimedia by Teachers and Students

Technology Tools	Teachers	Students
Internet	M=3.82 SD=0.50	M=3.5 SD=0.80
Presentation Tools (e.g. PowerPoint, Prezi)	M=3.82 SD=0.39	M=3.32 SD=0.72
Video (e.g. YouTube, DVD)	M=3.73 SD=0.46	M=3.27 SD=0.70
Audio (e.g. music, podcast, CD)	M=3.59 SD=0.50	M=3.18 SD=0.66
Web 2.0 Application (e.g. Voki, ToonDoo)	M=3.00 SD=0.87	M=2.77 SD=0.87
Communication Tools (e.g. Skype, Instant Messenger)	M=2.18 SD=0.80	M=2.09 SD=0.81

Data analysis revealed that teachers used technology most often for the purpose of teaching foreign language grammar, vocabulary and interpretive skills such as reading and listening in the foreign language and less often to teach culture, interpersonal skills and presentational skills.

Figure 4.5 Technology Use for Teaching Different Language Skills



The largest percentage of foreign language teachers (100 %) used presentational tools to teach a foreign language followed by teachers who used Internet (91%), video (86%), audio (77%), web 2.0 (55%) and communication tools (32%). Figure 4.5 shows the distribution of teachers by the use of technology tools.

Figure 4.6 Percentage of Foreign Language Teachers Using Different Technology Tools

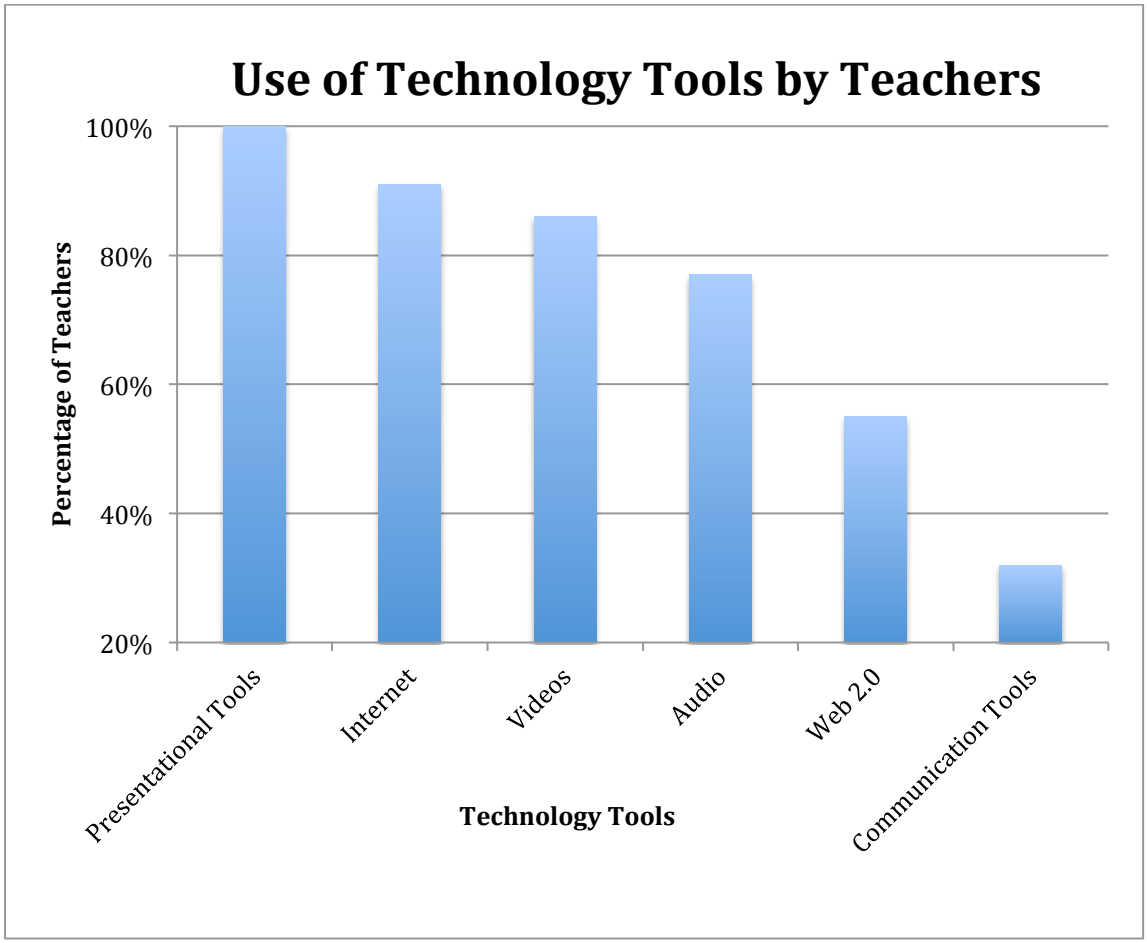


Table 4.2 provides more detailed information on the use of technology tools in the foreign language classroom. It includes percentages of foreign language teachers who use different technology tools to teach certain language skills.

Table 4.2 Percentage of Teachers Using Technology Tools to Teach Language Skills

Technology Tools	Culture	Grammar	Vocabulary	Interpersonal Skills	Interpretive Skills	Presentational Skills	Total
Internet	91 %	86 %	77 %	45 %	86 %	50 %	91 %
Presentation Tools	68 %	91 %	100 %	59 %	73 %	91 %	100 %
Videos	86 %	82 %	77 %	55 %	86 %	64 %	86 %
Audio	68 %	68 %	73 %	41 %	77 %	27 %	77 %
Web 2.0	23 %	36 %	36 %	55 %	32 %	50 %	55 %
Comm. Tools	14 %	9 %	9 %	32 %	18 %	9 %	32 %
No technology	9 %	0 %	0 %	14 %	0 %	0 %	0 %

To answer research question two, how is foreign language instruction influenced by the use of technology-enhanced multimedia, teacher opinions and beliefs about technology-enhanced multimedia instruction were measured. Participants were asked to select one answer on a Likert scale for each item. The scale ranged from 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree, to 5-strongly agree. Data showed that teachers tended to agree that the use of technology-enhanced multimedia instruction helps students to learn a foreign language (M=4.73, SD=0.46). To be more specific, all participants (100%) indicated that technology-enhanced multimedia instruction was beneficial for learning grammar and interpretive skills, which include reading and listening in the foreign language. Ninety-five percent (95 %) of participants expressed that technology-enhanced multimedia instruction is beneficial for learning vocabulary and culture, 86 % mentioned that it helps students' presentational skills, which include speaking and writing to the audience. Finally, 82 % of participants believed that technology-enhanced multimedia instruction is helpful for developing student interpersonal skills such as speaking and writing. The lowest role of technology in the development of student interpersonal skills may be explained due to the fact that

interpersonal skills require conversing orally or in writing with a partner or in a small group. Face-to-face communicative classroom activities are better suited for this exchange because peers serve as communication partners in the classroom and are immediately available. Technology-enhanced multimedia instruction may be helpful if students communicate with native speakers from abroad through a variety of online tools.

Teachers indicated that technology-enhanced multimedia influenced foreign language instruction in several ways. Participants agreed that using technology-enhanced multimedia instruction allowed for the implementation of innovative ideas (M=4.77; SD=0.43), helped foreign language teachers to find better-suited materials for their classrooms (M=4.73, SD=0.55), encouraged students to use their imagination (M=4.64, SD=0.58), helped learners to become active thinkers in the language learning process (M=4.59, SD=0.59), helped individualize foreign language instruction to diverse students' needs (M=4.55, SD=0.60), and provided equal opportunities for students to learn and succeed (M=4.41, SD=0.80). Table 4.3 is a summary of those results.

Table 4.3 Participant Beliefs on Technology-enhanced Multimedia Instruction

Survey Statement	Mean (M)	Standard Deviation (SD)
Teacher comfort level with technology has a positive impact on student learning	4.86	0.35
Technology-enhanced multimedia instruction allows for the implementation of innovative ideas in a foreign language classroom	4.77	0.43
Technology-enhanced multimedia instruction helps to learn a foreign language	4.73	0.46
Teachers can find better-suited materials for the foreign language classroom through technology	4.73	0.55
Technology-enhanced multimedia instruction encourages students to use their imagination in the foreign language classroom	4.64	0.58
Technology-enhanced multimedia instruction helps learners to become active thinkers in the foreign language learning process	4.59	0.59
Using technology-enhanced multimedia instruction helps to individualize foreign language instruction to diverse students' needs	4.55	0.60
Technology-enhanced multimedia instruction provides equal opportunities for foreign language students to learn and succeed	4.41	0.80

In order to answer research question three about the relationship between variables that impact pedagogically sound technology-enhanced multimedia instruction in the foreign language classroom, multiple regression analysis was conducted. Student use of technology-enhanced multimedia while learning foreign languages was predicted using such independent variables as teacher beliefs on the potential of technology for foreign language learning and teacher use of technology in their instruction while teaching foreign languages.

When performing analysis, it was found that there were two data points that were potentially overly influential. The analyses were performed with and without those two

participants and the pattern of results remained the same. Thus, no data points were removed. The following tables contain parameters from this model. All regression assumptions were tested and found satisfactory. Table 4.4 is a summary of the descriptive statistics results.

Table 4.4 Descriptive Statistics Results

Variable	Number of participants (N)	Minimum	Maximum	Mean (M)	Standard Deviation (SD)
Teacher Beliefs	22	22.00	30.00	27.68	2.71
Teacher Use	22	13.00	24.00	20.14	2.59
Student Use	22	10.00	24.00	18.14	3.55
Years of Experience	22	1	6	3.09*	1.57

* Indicates that the average years of teaching experience is in the category 3 which is 6-10 years of experience

Results from multiple regression predicting student use of technology-enhanced multimedia in the classroom from teacher beliefs about the potential of technology and teacher use of technology-enhanced multimedia instruction for teaching a foreign language are presented in Table 4.5. These two predictors were able to explain 69.8% of the variance.

Table 4.5 Summary of ANOVA Results

Model	Sum of Squares	df	Mean Square	F	R	R^2	Sig.
Regression	184.81	2	92.41	22.01	.836	.698	.000
Residual	79.78	19	4.20				
Total	264.59	21					

Data analysis showed that teacher beliefs about the potential of technology-enhanced multimedia instruction and teacher use of technology-enhanced multimedia was positively and significantly correlated with the criterion, indicating that those teachers that have stronger beliefs about benefits of using technology-enhanced multimedia instruction and who use more of it while teaching a foreign language, tend to engage their students in using technology-enhanced multimedia instruction more frequently. Data analysis revealed that there was a significant correlation between teacher beliefs on technology-enhanced multimedia instruction and their actual practices with it in the foreign language classroom $r = .447$, $p < 0.05$. Significant correlation was also found between teacher beliefs about the use of technology-enhanced multimedia instruction and student engagement with technology-enhanced multimedia to learn a foreign language $r = .692$, $p < 0.05$ as well as teacher use of technology-enhanced multimedia and student use of it in the foreign language classrooms $r = .729$, $p < 0.05$. These findings suggest the more teachers believe in the potential of technology-enhanced multimedia instruction to improve student learning in the foreign language classroom, the more they use it themselves and the more they engage students in working with it when learning a foreign language. These findings also revealed that the more teachers use technology-enhanced multimedia instruction themselves in the classroom, the more they engage students in using it for the purpose of language learning. Years of teaching experience were not significant, therefore were not included in the further analysis.

Table 4.6 Correlation Matrix (Includes correlation results obtained from the analysis)

Variables	Beliefs	Teacher Use	Student Use	Experience
Beliefs	1			
Teacher Use	.447*	1		
Student Use	.692**	.729**	1	
Experience	- .049	.231	.228	1

* Indicates that the correlation is significant at the .05 level, two-tailed

**Indicates that the correlation is significant at the .01 level, two-tailed

Table 4.7 presents parameters from multiple regression analysis predicting student use of technology-enhanced multimedia to learn a foreign language based on teacher beliefs about the potential of technology-enhanced multimedia instruction and teacher use of it in foreign language instruction. A multiple regression model with two predictors i.e. teacher beliefs on technology-enhanced multimedia instruction and teacher use of technology-enhanced multimedia instruction produced R^2= .698, F (2, 19) = 22.01, p<.05. As can be seen in Table 4.7 teacher beliefs about technology-enhanced multimedia instruction and teacher use of it for teaching a foreign language had significant positive regression weights, indicating that students of the teachers who had higher ratings on these scales were expected to have higher engagement with technology-enhanced multimedia while learning a foreign language. Specifically, when holding the teacher beliefs constant, a one unit increase in teacher use ratings resulted in a predicted value that is .720 higher. Similarly, when holding teacher use constant, a one unit increase in teacher beliefs resulted in a predicted value that is .598 higher.

Table 4.7 Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	SE	Beta		
Intercept	-12.90	4.86		-2.66	.016
Teacher Use	.720	.19	.525	3.73	.001
Teacher Beliefs	.598	.18	.457	3.25	.004

Path analysis was conducted as an extension of the multiple regression analysis to specify relationships between variables. This model is just identified, therefore the model fits the data perfectly. Thus, no fit indices were presented. Data from the model shows that for one standard deviation increase in teacher beliefs, there is a .692 predicted standard deviation increase in student use of technology-enhanced multimedia and for one standard deviation increase in teacher beliefs there is a .447 predicted standard deviation increase in teacher use of technology-enhanced multimedia. This model was able to explain 47.8 % of the variance in student use of technology-enhanced multimedia. Figure 4.7 shows a path model to explain the relationships between the variables.

Figure 4.7 Path Analysis Model

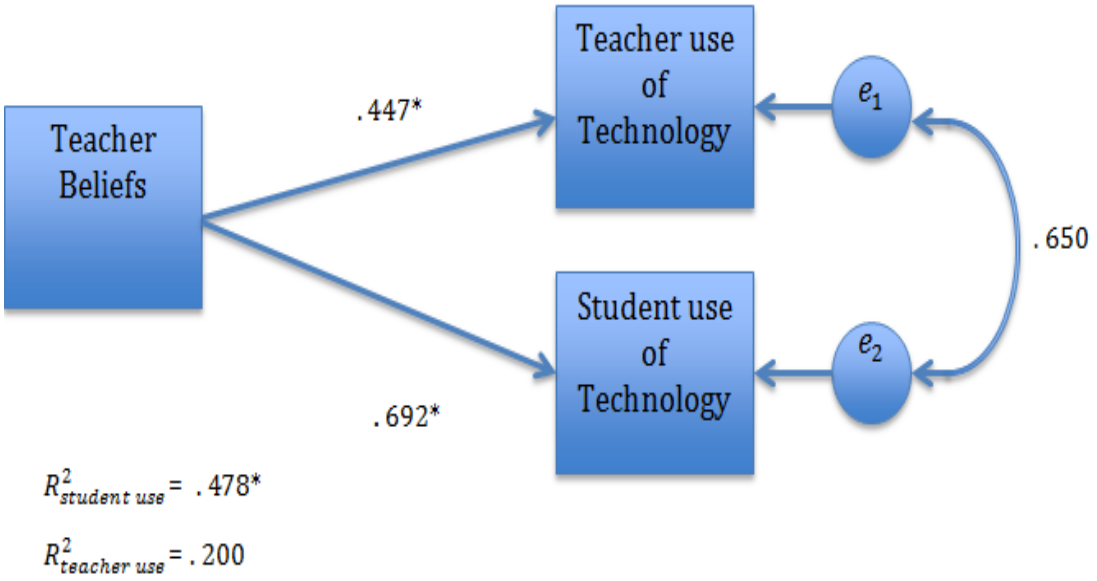


Table 4.8 provides the unstandardized output model results from the path analysis.

Table 4.8 Unstandardized Output Model Results

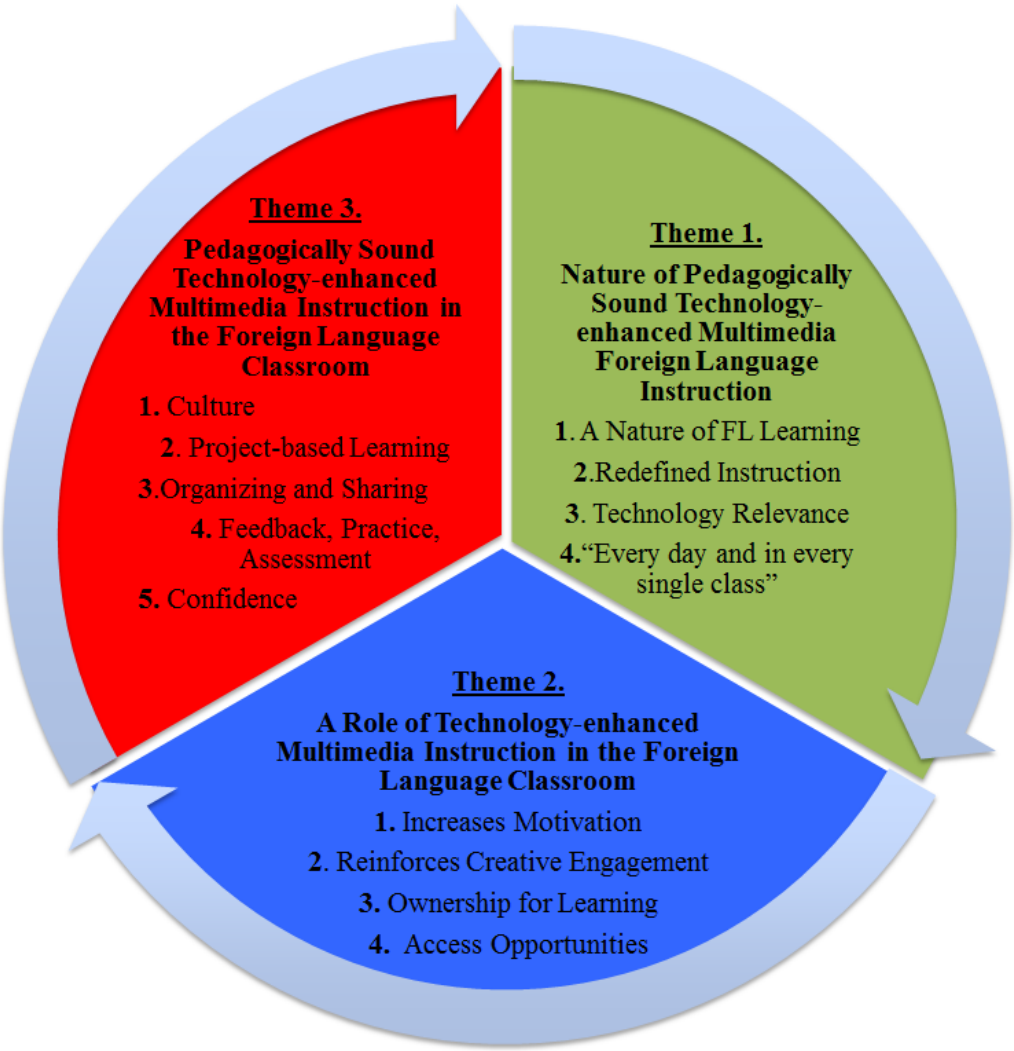
Variables	Estimate	S.E.	Est./S.E.	Two-Tailed p-value
Teacher Use on Beliefs	0.426	0.182	2.345	0.019
Student Use on Beliefs	0.904	0.201	4.491	0.000
Teacher with Student Use	3.680	1.440	2.555	0.011
Intercepts				
Teacher Use	8.340	5.054	1.650	0.099
Student Use	-6.895	5.599	-1.231	0.218
Residual Variances				
Teacher Use	5.113	1.542	3.317	0.001
Student Use	6.274	1.892	3.317	0.001

Qualitative Data Results

After coding and analyzing the qualitative data using MAXQDA, three major themes emerged which included thirteen sub-themes. Theme one, Nature of pedagogically sound technology-enhanced multimedia foreign language instruction, included four sub-themes: *A nature of foreign language learning*, *Redefined instruction: Technology "should be an expectation*," *Technology Relevance:"A generation of digital natives*," and "*Every day and in every single class*." Theme two, A role of technology-enhanced multimedia instruction in the foreign language classroom, included four sub-themes as well: *Technology-enhanced multimedia instruction increases motivation*, *Technology-enhanced multimedia instruction reinforces creative engagement*, *Technology-enhanced multimedia instruction gives a sense of ownership for learning* and *Technology-enhanced multimedia instruction provides access opportunities*. Theme three, Pedagogically sound technology-enhanced multimedia instruction in the foreign language classroom, included five sub-themes: *Bringing culture into the classroom*, *Engaging students in project-based learning*, *Organizing and sharing learning*, *Getting feedback, practicing, and assessing* and *Being and staying confident*.

Figure 4.8 represents themes and sub-themes that emerged from the qualitative data analysis. Colors of the themes from the figure are the same colors that were used to color code the data in the MAXQDA 10. Thus, for example, codes that belonged to theme one were assigned green, codes grouped into theme two were assigned blue, and codes that were in theme three were assigned red.

Figure 4.8 Qualitative Themes and Sub-themes



Nature of pedagogically sound technology-enhanced multimedia instruction. Foreign language teachers discussed the nature of pedagogically sound technology-enhanced multimedia instruction. Within this theme, four sub-themes were identified. The sub-themes were: *Nature of foreign language learning*, *Redefined instruction: Technology "should be an expectation*," *Technology relevance:"A generation of digital natives"* and *"Every day and in every single class*." Participants discussed the nature of foreign language learning and what it meant to learn a foreign language. They emphasized the necessity of technology-enhanced multimedia instruction in foreign language pedagogy,

discussed relevance of technology-enhanced multimedia when it comes to teaching " a generation of digital natives," and described how much they use technology-enhanced multimedia in their foreign language curriculum.

Nature of foreign language learning. Foreign language teachers described language learning as a process that allows for " a full acquisition and immersion" in the language and culture of the "not a native language" or a language "other than the one you have learned in your childhood." While explaining the meaning of foreign language instruction, Stephanie, for example, stated: "It [foreign language learning] means full acquisition and immersion - students immersing themselves in not only the language but also the culture."

Teachers indicated that foreign language learning needs not only focus on effective foreign language acquisition but should encompass the learning of culture and teaching students "openness to the culture." Thus, Laura mentioned: "Foreign language learning for me is the process of understanding the language and culture. The two pieces are inseparable, and so those are two elements that I always try to incorporate into my foreign language classes." Similarly, Jack commented: " I think foreign language learning….encompasses not just learning the language but learning how to think in a foreign language, how to think like the people in the culture that you are studying. It encompasses culture." Michelle elaborated:

> I want students to be able to communicate in the language that I am teaching but I want to go beyond that and make sure that they are opened to the culture of that language and the people who speak it.

Teachers said that in order for students to acquire language and culture they should be provided with plenty of communicative opportunities where they receive

authentic input and produce language output. Acquiring language was associated with "meaningful communication" and "interaction in the target language" in a variety of contexts. Teachers' emphasis on the importance of communication in the target language was evident from Barbara's comment: " I believe communication is extremely important in life….. and if you can communicate effectively in more than one language then you can change the world, you can do anything that you want to do." Participants indicated that successful foreign language learning requires communicative competence.
For example, Peter stated: " I believe that the successful foreign language student is the one who can understand and interact in a language," and Nicholas expressed a similar view, stating: "students should be able to communicate with other people from different cultures, different areas of the world."

Foreign language teachers perceived language instruction as "eclectic" and as instruction that requires differentiation and incorporation of various approaches and activities because "not every student learns the same way." Teachers suggested to use engaging student-centered learning and select "whatever works best for the kids" to provide this kind of learning. Deborah mentioned: "I think teaching a language is very eclectic. You take what works and engage students in their own learning." Similarly, Peter emphasized an "eclectic" approach to teaching foreign language, mentioning: " I am eclectic. I like to apply best teaching practices. I go to conferences as much as I can and I collaborate with teachers as much as I can, and I try to do whatever works best for students." Participants reported that being "eclectic" allows one to target the different learning "domains" of the students. For example, Mia commented: "As far as teaching goes I try to incorporate a variety of practices into what I do from day to day. I try to hit on all of the domains and give students opportunities… ."

Foreign language teachers attributed foreign language learning to acquisition and immersion into the language and culture. They perceived foreign language learning as being inseparable from learning the target culture. Teachers reported that communication was an absolute goal of foreign language instruction and emphasized the use of differentiated approaches to tailor instruction to diverse student needs.

Redefined instruction: Technology " should be an expectation." Foreign language teachers participating in the study had strong beliefs about the potential of technology-enhanced multimedia instruction in assisting students in meaningful and engaging process of learning a foreign language. Teachers saw technology-enhanced multimedia instruction as "a necessity," "an important component," "an integral part," " an expectation," something that should be used by every teacher "to benefit their students," " a way of engaging students in their learning to make it more meaningful." For example, Peter elaborated:

> I think that it should be an expectation. I think that department chairs and curriculum leaders and even teachers need to be aware that it's not a choice. It's not because it will make you a cool teacher teaching foreign languages or it's because kids just like it. I think we should be expected to use it just because we see the potential of it.

Participants were strongly convinced that technology-enhanced multimedia instruction is " a way for the future," because it "opens the doors" and "grants opportunities" for students to succeed and experience meaningful foreign language learning. Rachel, for example, mentioned: "technology enhances so many things in the classroom in regards of foreign language learning because you can just do so much with it across all the areas of the learning scope." Jessica emphasized the importance of

technology-enhanced multimedia instruction by adding: "I think it's what is best for the kids."

Teachers could not imagine teaching a foreign language without using technology-enhanced multimedia in the classroom. They mentioned that it would not allow them "to teach to their full potential," it would "take away an important part of the learning process" and would deprive students from having " a rich experience with the language." Nicholas, for example, stated: "It's kind of hard to even imagine what it is that I would do if I didn't have the ability to use all the multimedia things that I use." Similarly, Mia added: "I can't imagine teaching a classroom devoid of technology…..that would be terrible, it would change drastically."

Foreign language teachers emphasized that technology-enhanced multimedia redefined learning and instruction in general, and therefore saw it as a powerful component of pedagogically sound foreign language instruction.

Technology relevance: "A generation of digital natives." Participants mentioned that technology-enhanced multimedia should be an expectation in foreign language instruction because it is something that twenty first century learners "relate to instantly" and "are so connected to." When describing language learning in the twenty-first century, foreign language teachers used such terms as "technologically minded," technologically raised," "technologically savvy," "digital natives," "technology generation." Teachers often referred to "today's technology world" and mentioned that if teachers want to train students for future careers and global citizen opportunities, they should incorporate technology-enhanced multimedia instruction, a type of instruction that is relevant to the "technology-minded generation." Learning with technology-enhanced multimedia is relevant to students because it is something that students have been exposed to "since

they were kids," it's "the way in which students are being raised" and "if teachers want to be able to connect and relate to students" they need to utilize the means that students see as "relative" and "useful" to their learning. To explain this, Laura stated:

> From birth on they are learning how to read on Kindles and how to utilize iPods and iPhones. This is the generation that does not know anything other than technology and so it's important for teachers to get on board with that. …I don't think that it's an option. I think that you have to be utilizing the things that kids are using otherwise education and what you'll actually be doing in the real world don't match, which then means school is not a necessity for them. If we are not using tools and the resources they will have to use in the future, we are doing them a complete disservice.

Jessica agreed with the idea, mentioning:

> Generations are changing and so do our perceptions of them. If we do not acknowledge the fact that these students have grown up digitally, it's irresponsible of us as educators if our goal is truly to help them learn the best way possible.

Participants emphasized the importance of foreign language teachers staying up-to-date with technology-enhanced multimedia to be able to better serve the generation of "technologically raised" students that they teach. Elizabeth stated: " I stay up-to-date with what is new with technology. I go to conferences every year….I try to keep up-to-date on what's new." Similarly, Olivia elaborated:

> …this is a generation of technological experts….so myself as an educator, I owe them that. So, I feel that it is my job and if I am not with those changing technology standards then I am not doing my job as an educator.

It is clear that teaching "digital natives" requires using tools and approaches that have relevance to them. Technology-enhanced multimedia offers that relevance and that medium through which successful foreign language learning can happen.

"Every day and in every single class." Foreign language teachers believed in the potential of technology-enhanced multimedia instruction and therefore, used it constantly when teaching "a generation of digital natives." They perceived technology-enhanced multimedia as inseparable from pedagogically sound foreign language instruction. For example, Laura stated: "every day I utilize technology without even thinking about it…with music and different native speaker sound bites." Whereas some of the teachers mentioned how much technology-enhanced multimedia they use referring to general terms, like" I do use technology a lot of times," " I use more technology in the classroom then most teachers in my building," "constantly," " every single day," "all the time," others were more specific and mentioned how frequently they used different technology-enhanced multimedia tools in their foreign language curriculum to accomplish multiple learning tasks.

Foreign language teachers indicated that using technology-enhanced multimedia "every day and in every single class" does not mean using the same tools and approaches every time. Teachers need to vary the use of technology-enhanced multimedia in their foreign language instruction and "keep it different," "exciting," "novel" and "effective." For example, Michelle stated: " I like to have a variety of different things and I use it a lot." Peter agreed: " we try to keep it varied because if you do not vary it, then it gets old even if it's great…so we add some variety." Emma emphasized: "I think novelty is important in technology….and if you are constantly changing the type of technology that you are using, that's important."

Teachers mentioned different technology-enhanced multimedia tools that they used to achieve the novelty and variety in their foreign language curriculum. Olivia stated: "we use everything….on a normal basis. We use Prezi, we use Voki, we use Popplet…..my Gosh I can't even list them all here in my head, anything that is free and accessible….Glogster, Edmodo quite a few of them." Peter agreed: "You name it. It's just an endless list of things. We try to keep it varied….and we adopt some new ones just to keep it varied for kids."

Foreign language teachers demonstrated that even though they frequently utilized technology-enhanced multimedia instruction, they saw the need to use different tools to provide students with a variety of novel experiences.

A role of technology-enhanced multimedia instruction in the foreign language classroom. Foreign language teachers discussed the role of technology-enhanced multimedia in their foreign language pedagogy. This theme includes four sub-themes which focus on the role of technology-enhanced multimedia in increasing motivation of both students and teachers, enhancing creativity and engagement, as well as a role of technology-enhanced multimedia in giving students ownership for their own learning and providing timely access to authentic culture, native speakers and other foreign language instructional materials.

Technology-enhanced multimedia instruction increases motivation. Teachers were convinced that technology-enhanced multimedia instruction increases student motivation and boosts their desire and interest to learn a foreign language. Teachers observed an increase in student motivation to learn a language and culture and an increased student engagement in foreign language learning when they implemented technology-enhanced multimedia instruction. Matthew stated: "it creates more of an

engagement for the students, more of a desire to learn. More because they enjoy the technology, they enjoy the multimedia component of learning." Helen had a similar belief mentioning: "they are interested in learning what you have to teach them….using technology has definitely boosted the interest level of what I am teaching and then just student desire… ." Some teachers were even more specific and explained how technology-enhanced multimedia increases student motivation. For example, Jessica mentioned that incorporating technology-enhanced multimedia motivates students to try harder and to put more effort into learning. She commented: "I think it motivates them. I think they're willing to put forth more effort." Matthew suggested that technology can motivate students to continue learning the language outside of the classroom: "I think that technology can motivate students to continue learning and using the language in the real world outside of the classroom." George stated that technology motivates them because it allows for discovery learning: "Definitely, I see the increase in motivation" and later elaborated: "it helps motivate students because it makes learning a lot more fun and lets them go and discover things on their own… ." Peter emphasized that using technology-enhanced multimedia adds to students motivation to engage in different foreign language learning practices and assignments. He commented:

> I think using technology motivates students more. You can see more willingness from students to do assignments, to practice their speech, to listen to authentic pieces of audio that we find on the Internet, creating projects that use technology as a means to get them done.

Qualitative data analysis revealed that seeing students' motivation with the technology-enhanced multimedia also motivated teachers because teachers wanted to do "what's best for students." Participants indicated that seeing student "excitement,"

"engagement" and "motivation" with technology drove teacher motivation "to keep using it and keep finding new ways." Jessica commented: "The first thing that motivates me is my students. Seeing what they can come up with is motivating enough……so, the students are my number one motivation." Emma added: " Seeing how the students light up when I try something new and to watch the students get excited is what motivates me." Elizabeth elaborated:

> ….so many things that students do inspire me, and technology is one of those things. They inspire me when within two days they come up with their own songs on Garage Band and they make a rap or a country song or something……So, I think if it excites them so much, it should excite me as a teacher because it makes them like the work, it makes them motivated. So, I think it's definitely the kids that inspire me.

Teachers emphasized how excited and motivated their students were when using technology-enhanced multimedia and mentioned that if it excites students it definitely should excite teachers. Therefore, teachers felt " responsibility and "professional commitment" to use technology-enhanced multimedia in their foreign language curriculum. Olivia stated: "if it excites them then why not use it. I will do anything to help those students learn the language and master it… ." Richard commented: "Every time I did something new whether the clickers or whatever, they were all over it, they loved it" and later added:

> The biggest motivation for me is how excited the kids are…I can't get them off the computer, so if they are going to be at the computer they need to be doing Spanish stuff and using it for speaking the foreign language, recording

themselves, making videos….just doing something with Spanish…and if they are motivated I need to use it and that will only help.

Data analysis showed that technology-enhanced multimedia instruction increased student motivation, interest and desire to learn a foreign language. Foreign language teachers were motivated to use technology-enhanced multimedia because it motivated students in their classrooms. Foreign language teachers also felt responsible and committed to use technology-enhanced multimedia instruction because they observed student motivation once it was used and they used approaches that were best for student learning.

Technology-enhanced multimedia instruction reinforces creative engagement. Foreign language teachers indicated that using pedagogically sound technology-enhanced multimedia instruction reinforces student creativity. They mentioned that it allows students " to create," "to express their creativity," " to exercise their creativity" and " to become creators of their own learning." For example, Jessica stated: "if for anything else, the potential to be creative and express themselves is so great…..it exists and teachers just need to see it." Olivia added that technology-enhanced multimedia allows her to "give students that creativity and let them run with it," and Helen further elaborated: " I think it allows them that opportunity to create and just experience authenticity on the consumption end …. and then also on the creating end, just to really express themselves through creation."

Laura explained "active" aspect of creativity, mentioning: "I believe that it takes them from being a passive learner…….to be given tools and then they themselves become the creative masterminds of their own project in which they demonstrate what they learned in the foreign language." Similarly, Jack emphasized that when students

express their creativity with technology-enhanced multimedia they "are actively engaged" and their "higher order thinking skills" are activated: " when you incorporate this multimedia and they are creating things and they're moving things around and they're doing things….it gives them a sense of creation."

Participants also mentioned that technology-enhanced multimedia not only enhances student creativity but also assists teachers with utilizing creative instruction. For example, Mia mentioned: " I think that I won't be able to present things in such a creative way. I won't be able to use as many visuals, audio. I wouldn't be able to use as many actual artifacts of the language."

Student engagement was directly linked to creativity. When students were creative they were engaged and oftentimes when students were engaged they were also creative. Participants emphasized that technology-enhanced multimedia assured student engagement and made students active participants in their own learning. Nicholas, for example, stated: " I think the multimedia keeps them more engaged," and later explained: "I've noticed that the less technology that's used in certain classrooms the less engaged some of the students are because they are so used to having the visual input, so used to having the multimedia input…. ." Katie mentioned that technology-enhanced multimedia improved engagement in her classroom, explaining: " One of my goals was to engage, to improve student engagement in class, and so this [technology] works good when the goal is to improve student engagement…..and so I think these tools really improve student engagement… ." Similarly, Jack commented on his experience with engaging students in the classroom using technology: " …..[technology] gets them engaged which is a really difficult thing sometimes to get students engaged in the learning process and actively participating in what they are doing. Technology kind of almost forces you to be actively

engaged." Barbara, Deborah, Emma and Helen all agreed that when technology-enhanced multimedia is incorporated in their foreign language classrooms "students are really engaged."

Foreign language teachers also emphasized that technology-enhanced multimedia engages all types of learners and helps to "tailor instruction individually." It accommodates diverse student needs in the classroom because it allows for "different ways of attacking the mind." Jessica stated: "The differentiation that happens in my classroom is completely leveled and more individualized because of what technology has brought to the platform." Barbara added: "Multimedia allows me to……teach in a way that impacts different learning styles that I couldn't do without the technology." Nicholas mentioned that technology-enhanced multimedia provides his instruction with "different angles" because it gives a choice to select what works best for student learning needs.

Data shows that technology-enhanced multimedia enhances creativity of both students and their foreign language teachers and actively engages students in their foreign language learning process. Data also revealed that technology-enhanced multimedia allows teachers to meet diverse student needs and tailor instruction to individual students.

Technology-enhanced multimedia instruction gives ownership for learning. Foreign language teachers expressed that using technology-enhanced multimedia gives students "ownership" for their learning, allows them to monitor their own learning, "empowers" them and puts students "in charge" of their progress. In this learning, a teacher plays the role of "a facilitator" and guides students. For example, Rachel discussed the ownership for learning that students feel when using technology-enhanced multimedia, stating: "you can put the learning in their hands and let them go with that…really kind of gives them ownership over things… ." Mia agreed, adding: "I think it

makes them have a greater role, take more ownership for their learning." Elizabeth explained her perspective elaborating: "if you allow them to use technology that works for them…then that changes it for them. It becomes something they want to do, they feel ownership for and that they remember…because they've done it their way."

Teachers stated that technology-enhanced multimedia instruction gives students ownership for their own learning because it helps students to become "more accountable for their learning" and "more autonomous in their learning." For example, Jessica commented: "I think using technology in my classroom gives students all the opportunities in the world to make autonomous decisions and to make them more accountable," and later elaborated: "I believe that students become more regulated in their learning. I think students are going to be more responsible about quality and the content of the product that they're using... ." Teachers explained that technology-enhanced multimedia instruction helps students to feel ownership for their learning also because it helps them to "witness their own progress" and "see their growth." For example, Helen stated: "it just really helps students to witness their own progress, to keep a record of their growth" and later elaborated: "… with using multimedia….it's a lot easier for them to keep a perspective on their growth as a language learner, and I think that can be encouraging when they go through the spells of discouragement… ." Barbara agreed: "[technology] helps students really become owners of their learning, monitor themselves and monitor their progress."

Student ownership for learning is also achieved because students have a choice when it comes to learning foreign language with technology-enhanced multimedia. They can choose what technology-enhanced multimedia works for them in order to learn best.

For example, Stephanie mentioned: " it empowers them…. because it lets them do what they are comfortable with." Later Jack elaborated:

> And so they have this choice, and when they have a choice they kind of have more of a buy-in into what they are doing. When they have that choice they kind of feel like they have control of something and when they have control of something then they have a reason to do it. And so I think that's a part of why it really works well for them.

Technology-enhanced multimedia gives students a sense of ownership because it makes them more autonomous and accountable, helps them to monitor their own growth and gives them a choice to select what approach works best for them when learning a foreign language.

Technology-enhanced multimedia instruction provides access opportunities. Foreign language teachers discussed the role of technology-enhanced multimedia instruction to grant a variety of "access" opportunities for students in the language classroom. Teachers associated "access" with being able "to connect with native speakers, "being able "to bring the culture into the classroom," and being able to find a variety of authentic foreign language instructional materials and information about the world in general. Peter stated:

> I think that we are at a time when foreign language teaching can really take a nice turn by connecting our students with native speakers of the language they are trying to learn regardless of the geographical location. So, I am a big advocate for using technology and incorporating that into the foreign language curriculum.

Matthew also agreed with the role of technology-enhanced multimedia instruction granting students access to native speakers and cultural materials. He stated: "via Skype

you are able to talk to native speakers or watch the news or listen to the radio. You know it just brings language to life." Similarly, Helen added that she is able to see " a greater level of access to the world using technology."

Some teachers discussed specific technology-enhanced multimedia applications that they used in their foreign language classrooms to get "access" to authentic culture. For example, Emily explained:

> It [technology] makes it more live. We can bring stuff from France into our classroom without having weeks for shipping. We can use googlemaps to see exactly where places are in the world and even zoom in and see how it looks on a day the google satellite was there. It really helps to bring the subject alive to them.

Both teachers who were non-native speakers of the language that they taught and also teachers who were native speakers of the language emphasized the importance of students having access to authentic cultural materials and hearing a variety of native speakers in order to be able to understand accents, intonation patterns and pronunciation. For example, Barbara mentioned:

> It definitely brings something extra to my lessons that I couldn't do on my own. I don't have personal experiences of the trips to Spain and I am not a native speaker, so I can't bring that authentic text. So, multimedia allows me to do that.

Jack elaborated on a similar point, mentioning that technology-enhanced multimedia instruction provides him with access to native speakers and authentic materials:

> I think a really big thing with technology is that students get some authentic access, access to authentic text, authentic materials using technology that they wouldn't have if it was just me upfront talking because as good as I speak in French, it's never going to be as good as a native. My goal is to have them be able

> to understand a native, so that when they go to France or when they go to Germany or when they go to Spain they can communicate, they are going to understand and be understood.

Teachers who were native speakers of the language that they taught also emphasized the importance of the access to native speakers and culture that technology-enhanced multimedia can provide. For example, Peter mentioned:

> I teach Spanish at a high school and I speak Spanish as my first language but talking to my students all the time does not give them rich experiences as if I have multimedia applications where my students can display virtually or listen to other Spanish speakers who may have different accents, may have different intonation patterns, may live in different geographical locations; and I think that can be accomplished via technology, and I think that every teacher should try to do that in the foreign language classroom.

Besides emphasizing the role of technology-enhanced multimedia to grant access, foreign language teachers mentioned the nature of the "access" that technology provides. They expressed that with technology they receive "quick," "instantaneous," "immediate" and "efficient" access. For example, Matthew mentioned: " the use of technology-enhanced multimedia provides authentic resources in a very timely and quick manner…..it provides students with instantaneous access to the resources in that language…..it makes authentic materials easier, much quicker to get a hold of." Helen added that technology-enhanced multimedia instruction grants time efficiency in her classroom: "with multimedia you can just really be ahead of your classroom a lot by allowing your class the opportunity to use the time more efficiently because of some of the conveniences that technology affords us."

It is clear that technology-enhanced multimedia provides quick and timely access to authentic cultural materials and native speakers. Both teachers who are native and non-native speakers of the language that they teach emphasized the importance of having access to cultural materials and native speakers that technology provides.

Pedagogically sound technology-enhanced multimedia instruction in foreign language classrooms. Foreign language teachers discussed how different technology applications and tools were utilized in their language curriculum. Teachers discussed how they implemented technology to teach culture, to provide hands-on project based learning, to organize and share information, to assess students and to give them opportunities to practice and receive instant feedback. This section also provides a report on teacher confidence with technology-enhanced multimedia instruction when implementing it in the foreign language curriculum.

Bringing culture into the classroom. Foreign language teachers indicated that they widely use technology-enhanced multimedia instruction to "bring culture into the classroom." To do this they use video, audio and music, a variety of Internet resources like online newspapers in the target language, googlemaps, as well as communication tools such as Skype, instant messenger, email, and different Web 2.0 applications. Emma mentioned how she brings authentic artifacts to her classroom via technology: " A food specialty in Quebec is poutine and I showed them a restaurant that I went to in Quebec and the menu, and we did the activities with the menu." Stephanie discussed her experience with technology-enhanced multimedia instruction to bring authentic materials to her classroom:

> ….we used googlemaps and we took a field trip to Spain and we went around and we saw the aqueducts and lots of other things, and we went to the Plaza, and then

> later on this year we talked about something…. when we were playing a culture game and I asked them a question about Spain and they were able to answer it because we did a googlemaps activity.

Some teachers used video and audio resources to teach culture. For example, Michelle stated: "I have shown movies that increase their cultural knowledge…" and later added: "I like to have music to enhance the lesson that we are doing. We do a lot of songs and we do a lot of cultural things that way through music." Elizabeth also utilized video and audio to teach culture. She explained how she uses newscasts from YouTube to expose students to authentic culture:

> ….I do a lot of newscasts, like high interest stories that you can find on YouTube, like specials on French Christmas…it's a certain time of the year and the French sales or something that's very cultural. I'll show them that on the YouTube….YouTube has been the most wonderful thing.

Teachers also discussed cultural "projects" that students did in their classrooms to receive a better knowledge and understanding of the culture. For example, Peter commented that he engages students in reading authentic texts that students find on the Internet: "Every day we use reading tools ….students go and read authentic pieces of literature or newspapers, magazines on the Internet… ." Mia mentioned that she asked her students to use the Internet to complete culture related assignments and projects:

> ….[technology-enhanced multimedia] allows students to look for things on their own like cultural aspects of the language. When we do a food project and they have to look at the types of food in that language, like what they would call those types of food, words to describe them…and they have to find information and five

> pictures of it and it kind of makes them see that there is a culture that goes with this…

Foreign language teachers utilized technology-enhanced multimedia instruction to connect with native speakers from other counties that way exposing students to the language and culture. For example, Mia stated: "it allows me to have students communicate with actual native speakers." Some teachers mentioned specific technology-enhanced multimedia tools that they use to connect with native speakers. Peter mentioned that his students use Edmodo to connect with students in other Spanish-speaking countries: "We use something called Edmodo which is like Facebook to connect to kids from other countries." Emma used epals with students in her classroom: "We do epals. We have penpals that we found on the site called epals…..we have done some things with our penpals voicerecording, videomaking to send videos to our penpals." Mia and Matthew emphasized Skype that is used in their classrooms to communicate with native speakers. Mia mentioned: "….we had students chat with students in other countries via Skype," and Matthew added: "we use Skype so that we can have simultaneous speech and listening as well as cultural acquisition just from talking with students in Uruguay." He later described the project that his students did and how they shared it with Spanish speakers from other countries:

> In my classroom, we use Skype with language institutes or schools in Latin America or Spain. We have created a video project that we put on Wiki, and on this Wiki, the students from Spain had gone to the Wiki and then commented on the actual video projects.

Using technology in the foreign language classroom also helped teachers to create long-term communication with native speakers that later turned into friendships and

further communication exchanges and even further visits to the target language countries. Matthew stated:

> I had a trip last year to Spain and…..several months before we left, we actually met each other via Skype. So we introduced each other, met each other, learned about each other, and what happened was that my students in the U.S. were Facebook friends with students in Spain before they even met, and they have been talking and it made connections which were awesome. We went over there, stayed with them, those students came to the U.S. and stayed, but after that we had students from Spain who came back….and then we had a couple of students who went back to Spain to visit them again….and so they made real connections, and they still talk to each other even a year and a half after the trip.

As can be seen, foreign language teachers implemented different tools in their classrooms to be able to provide students with authentic cultural experiences and interactions.

Engaging students in project-based learning. Foreign language teachers indicated that they implemented technology-enhanced multimedia instruction to engage students in a variety of innovative hands-on learning projects where students had to meaningfully use the language. Teachers described and explained projects and activities that their students created with technology and how it helped to enhance different foreign language skills. Their students used video and audio resources as well as Internet and a variety of Web 2.0 tools to create meaningful language projects, to practice speaking, listening, reading, writing, and enhance creativity. Peter mentioned: "with the use of technology we can create more innovative projects…like you know, creating movies,

creating animations, creating graphic organizers, comic strips and all sorts of products that we can access for free and that can get student attention."

Teachers engaged students in using a variety of Web 2.0 applications mentioning such web-based tools as Voki, ToonDoo, Photostory, Animoto, TimeToast, RhinoSpike, StoryBird, LittleBirdTales and many more. Richard mentioned Web 2.0 tools such as LittleBirdTales and StoryBird which can be used to create stories in the foreign language and which allow students to practice foreign language writing and reading skills. Deborah mentioned that her students used Web 2.0 tools such as ToonDoo and Pixton for creating cartoons and practicing writing and reading skills. Rachel commented on the TimeToast tool which students use in the classroom after they read novels in Spanish and then create a TimeToast project putting events in chronological order, adding pictures and videos for events that happened: "putting it together in their own words, in their own events and putting it in their own time order… ."

Students used Web 2.0 tools to create projects that required using listening and speaking skills. Rachel explained one of the projects that her students did using Voki to create avatars:

> Kids can also create things that the teacher and other students would listen to. One thing that we did this term was Vokis. Kids created an avatar about a profession and used circumlocution to explain the profession without actually saying what it was, and then we listened to all of them in class and they got to listen and test how well they understood each other by guessing what the profession was.

Similarly, Stephanie discussed how her students utilized Web 2.0 tools such as PhotoStory to create projects that enhance foreign language speaking skills:

> ….like Photostory where students are able to implement their own pictures, their own voice and put it all together to make their own project, and it gives them a sense of entitlement…they like the hands on, it is like putting their own fingerprint on what they are doing...

Audio and video tools were also widely used by students in the foreign language classrooms to create language projects. Students were creating videos, movies, songs, newscasts and other voice recordings. Emma mentioned: "Kids create their own songs with for example, the days of the week or the months of the year." Similarly, Laura added: " they've written songs about different topics we've studied and then they recorded themselves… ." Helen provided example from her classroom mentioning that students used audio to create newscasts in the foreign language: "I had them create a newscast. Each student had a different role. Some of them were to create commercials, some of them to be actors, some of them to do the weather and so on and so forth."

Students used video tools frequently as well to create language projects. For example, Richard explained how his students used iMovie, a video-editing tool to create a Fashion Show project: "We use iMovie quite a bit to make projects. We made a Fashion Show project. They got to dress up and they got to introduce themselves in the foreign language…they described colors and each part of the outfit." Jack also commented on how students in his classroom used iMovie video software to create a cooking show when they were doing "a food unit" in his French class, mentioning that one of the students "was making a tart, a fruit tart in French, and he's got this whole cooking show made and it was just wonderful… ."

Foreign language teachers mentioned that students used Internet resources to make research for a certain foreign language project, using googlemaps to see the

geographical position of a town or area in the target country or access certain foreign language websites for different purposes. Elizabeth mentioned: "I have project-based things, so I'll say to them "we are going to shop the catalogs in France and so ….they visit sites, figure out what kind of clothes they will buy and how much it would be… ." Emily commented on the research project that her students did:

> We did research about Senegal because I don't know much about Senegal and my students didn't either. We, as a class, did some research….so we looked where it is and why we are learning about it in French class and why it's important to our subject and they kind of get into it, it was kind of shocking, and they know more about Senegal than France right now!

Students used different kinds of technology-enhanced multimedia in the foreign language classrooms to create projects and this way practice language skills, higher-order thinking skills and express their creativity. Students used a variety of Web 2.0 tools, audio, video and Internet resources to create projects, to do research in the foreign language and to access different foreign language web sites.

Organizing and sharing learning. Foreign language teachers mentioned that they and their students use technology-enhanced multimedia in the classroom as means of organizing and sharing information. Teachers used a variety of learning systems to "keep everything in one place" for students to be able to access it any time as well as for communication purposes.

Some teachers mentioned that since their schools have access to "learning management systems" like Blackboard or Angel they used them to share information, communicate and store all the necessary learning materials. Richard mentioned that he uses the Angel system to organize and share learning materials: "we have the Angel…

system for kids and whatever they can find there they can take home and study. I have all my links, all my notes, my PowerPoints are on there." Mia mentioned that she makes all the instructional materials available for students to download from Blackboard. Peter mentioned that he uses Blackboard to store materials for the class "all in one place," it helps him "to organize the content accordingly" and allows students to "have access to the content any time." He explained:

> …definitely I use Blackboard as the main platform…and with Blackboard I upload materials there that we use on a daily basis, and just with that my students have access to the content any time of the day any time of the week. So, for students that are gone, they can easily access whatever we did in class. They can download content. My Blackboard site is enriched with vocabulary games, with grammar review, with songs, music, videos, different assignments with deadlines. So, all of those things that I am able to deliver via the computer is just invaluable because if I did not have that my students would just fall behind.

Teachers who did not have access to the "learning management systems" created their own using free websites and Wikis to organize materials and share them with students. For example, Jack stated:

> I have a Wikispace that they can go to…I have links to all sorts of stuff. I have links to ACTFL websites, proficiency guidelines just all sorts of stuff….games that they can go and play to help them with colors or numbers, or anything like that…

Deborah also mentioned that she maintained her website where she shared information with parents and students:

> I have had a website which I updated every day and posted assignments for students….and that was also the way to communicate with parents. I posted grammar rules, I posted events that were coming up in the community that pertained to Spanish and that was a cool tool.

Foreign language teachers not only used different tools and systems to share and communicate information to students, but also utilized them as a place for students to interact, share and collaborate. For example, Rachel described the class blog that she set up for students to "put all of their work in there" and "comment" on the work of their peers. Stephanie also indicated that she created a blog for her students where she posted prompts for students to write and discuss in Spanish. Helen utilized Google tools such as Gmail, GoogleDocs and GooglePresentations for students to collaborate and share information with each other and with her. She elaborated:

> My school has, this past year, become a Google school just in terms of communication modes that we use, and so we are using Gmail and GoogleDocs and so those are great ways that students can collaborate, that I can communicate with them on a pretty consistent basis….my students used the GooglePresentation tool quite frequently…and that's easy to share…we use GoogleDocs for writing a lot. I'll set up GoogleDocs and ask students to write examples and they have to have discussions about their examples.

Some teachers discussed technology-enhanced multimedia tools that their students used to store their work and their foreign language learning projects and assignments which "stay in one place" and which students could share with their parents or peers to document and demonstrate their foreign language learning growth. Jessica mentioned that her students keep digital portfolios where they store all the digital

learning products that they did throughout the course, summative projects, tables with their grades for listening, speaking, reading, writing and culture. She explained that students share their digital portfolios with their parents during student-led conferences in the school and demonstrate what they are able to do in the foreign language. Jessica elaborated:

> I have a portfolio system that I used to call DeutschFolio which is just a clever pun of Portfolio. In the system I have students keep tables…..to help manage or record their progress in German class. They also store all of their digital products throughout the course…they keep all of their summative projects….and the portfolio system is very cool because …we do student-led conferences and students come and they bring their lap-tops …and say "look what I can do"…. they have multiple examples of themselves speaking in the target language….

Foreign language teachers utilized technology-enhanced multimedia learning management systems that were available to them at school or created their own websites, Wikis and blogs to store information in one place, share it with students and communicate with students and parents. They not only used technology-enhanced multimedia instruction themselves to store, share and communicate, but also engaged students in doing that. Different tools were used for students to collaborate on projects, have discussions in the target language and keep a record of their language learning progress by storing information that they were able to update and share.

Getting feedback, practicing, and assessing. Foreign language teachers indicated that they extensively used technology-enhanced multimedia instruction in their classrooms to provide students with practice opportunities, review activities as well as to conduct formative and summative assessment. Participants indicated that technology-

enhanced multimedia provided students with “instant feedback” which is very helpful because students are able to immediately see what they need more practice with and what they need to spend more time studying.

Foreign language teachers mentioned a variety of technology-enhanced multimedia tools that students in their classrooms used to practice and review different aspects of foreign language. For example, Mia mentioned that she uses online software like Quizlet, Quia, Socrative, WordChamp “to practice vocabulary,”“ to make flashcards,” “ to remember endings of the verbs,” “to practice pronunciation” and which at the same time give students “instant feedback.” She also mentioned “online video series” that her students use “on their own “ to practice audio comprehension: “there is an online video series called Mi Vida Loca and my students used that to get audio comprehension. It’s something that a student goes through on their own rather than me taking them through it as a class.” Similarly, Peter mentioned different applications that his students use to practice and review foreign language skills and which also provide students with immediate feedback. He elaborated on how his students make use of Quizzlet and Quia in the classroom:

> I have a variety of applications where students receive immediate feedback. Some of those are Quizlet where students can practice vocabulary, listen to the pronunciation of words, generate different activities with the same set of vocabulary just with a click of a button…we have Quia to add some variety. We create quizzes with that and we can embed audio, video, articles intended for native speakers where students can read and take short quizzes.

Emily, Amanda, Laura, Jessica, Olivia, Rachel, Richard and Stephanie all described similar ways of using technology-enhanced multimedia applications for students to practice and get "instant feedback."

Teachers also used technology-enhanced multimedia instruction to create review quizzes for students to be taken in class and to prepare them for the test or other major assessment. Students took those review quizzes and discussed the results in class and were also able to get clarifications. For example, Rachel explained that she used the application called Socrative, to create a review quiz for her students that they did in class. She explained:

> We did a teacher led quiz, so instead of kind of marker board practice they each had their computer or they can use a smartphone or an iPad to answer the questions and then it would poll…..and show this many students answered this question with b or a or c….they really enjoyed that because a lot of times with the marker boards kids are tempted to look at each others' boards and then they do not feel like they are learning…..this allowed them to kind of have time and a chance to individually answer for their own learning purposes…

Participants mentioned that they and their students used technology-enhanced multimedia applications to both create and search for online flashcards to practice foreign language vocabulary. Jessica mentioned: "we make digital flashcards…there are many online flashcards tools that could be used… ." She later added that her students also use premade flashcards that they find online to practice vocabulary. Similarly, Richard mentioned: "I found online flashcards that are already made…so that's a great tool to study at home."

Technology-enhanced multimedia instruction was also used to administer assessments in class. Participants mentioned that, besides providing students with immediate results, technology-enhanced multimedia instruction also eliminates the issue of teachers grading student work, which saves a lot of time for teachers. Richard mentioned that he used clickers with his students to assess: "we do clickers just every day. I can do quick assessment to see whether they understand the knowledge." He further explained: "clickers are great to assess kids….and I don't have to grade…I can pull up the results right away and say "ok this is what they know… ;" it's quicker, it's a lot less grading and I can get instant feedback… ." Katie also mentioned that her students take tests online: "we take our tests online …they know immediately what they've got," and explained that sometimes when students have to miss a class, she can "open the test" and they can take their test at home or elsewhere and parents will just monitor them. Jessica mentioned that she "completely abandoned traditional assessments and everything is project or technology based" in her classroom now.

Teachers use a variety of technology-enhanced multimedia tools in their foreign language instruction to provide opportunities for students to practice, get immediate feedback, and also to conduct in class reviews, testing and assessment.

Being and staying confident. When explaining and describing how technology-enhanced multimedia instruction is implemented in their classrooms, foreign language teachers discussed their confidence and comfort level with technology as important components of pedagogically sound technology-enhanced multimedia instruction. Teachers also emphasized the flexibility that is needed when implementing technology-enhanced multimedia instruction as well as willingness to experiment and try new tools and applications that can enhance learning in the foreign language classroom.

Teachers emphasized their high comfort level with using technology-enhanced multimedia applications in their foreign language classrooms. They described themselves as "technology savvy," " really proficient," "confident," "very comfortable" when it comes to technology. For example, Olivia stated:

> I feel very confident when I am using technology….I always like to practice those things before students get to them, but I feel very comfortable using technology, and if I can not figure it out one way, I definitely do my best to figure it out another way. There is always a way to troubleshoot and there is always a way to make it work.

Similarly, Michelle said: " I feel very confident doing it because I feel like I know what I am doing." Jessica concurred:

> I would say that I am extremely comfortable and I am even comfortable in saying that I probably am the most comfortable out of five foreign language teachers in my building and I would say that if you take all fifty or sixty teachers from my building and had to put us on a spectrum, I would say I would be on the top two percent of teachers with the comfort level when using technology.

Foreign language teachers felt that it is important to be willing to learn new things every time and not to be afraid to experiment and "mess around" with technology-enhanced multimedia because "there is always a way to make it work." They stated that they are always willing to figure out new tools, to try them out in the classroom and "to be opened" to new ideas. Rachel mentioned: "I feel like I am always willing to try new things," and Matthew agreed: "I feel very confident about it but I am always willing to learn new stuff". Peter emphasized his confidence with technology as well, but mentioned that he is learning every day together with his students: "I am really

confident….I think I am really, really comfortable but I keep learning every time, every day with students…..” Stephanie, for example, emphasized that she is not afraid to experiment and play with technology to figure it out: “I like using technology. I like sitting around and messing with different things…..I learn just don’t hit “save” if you do not like what you did” and Katie described similar behavior: “ I will stay up until three in the morning messing with my computer, learning a program, looking for programs, figuring something out…so it’s something that I like to do.”

Teachers mentioned that in order to maintain their confidence and high comfort level with technology-enhanced multimedia instruction, they go to the technology conferences, participate in technology-related workshops, take technology-related classes and trainings and try technology ideas that their colleagues successfully used before and shared with them. For example, Katie mentioned: “I went to a lot of technology conferences.” Elizabeth shared her experience: “I go to conferences every year. The Nebraska Educational Teachers Association Technology Conference and I am a member of that, and so I try to keep up-to-date on what’s new…” and later added more about the Technology Educational Association: “it’s really a neat fraternity of people. It’s not that we are geniuses on technology but it’s just that we are willing to try new things and know that technology is our friend and not our enemy… .” Jack, for example, mentioned that he attends technology professional development workshops that the district organizes: “our district does a lot of professional development and they bring people in that know technology and show us technology… .” He explained that teachers in his district receive updates on technology tools and resources from the heads of the technology departments and they can decide what to use in their foreign language classrooms. Jessica stated that

she also is willing to try successful technology-enhanced multimedia practices that other teachers shared:

> Seeing other teachers do something that I can be doing; "wait a second, she is doing that. I can be doing that in my classroom"… I want to be a teacher in my school that is doing everything on the cutting edge when it comes to technology.

Foreign language teachers were also willing to share their knowledge on the effective use of technology-enhanced multimedia in the foreign language classroom with others. They presented at the conferences on how to effectively use technology-enhanced multimedia, taught workshops and technology trainings for their school districts. Katie, for example, mentioned that she taught technology classes and workshops for her district, whereas Matthew stated that he shares his knowledge of technology-enhanced multimedia instruction in the classroom by presenting at conferences: "I presented at a few conferences about using an online realia… ." Peter mentioned that he gets invitations to present on the effective use of technology-enhanced multimedia in the foreign language curriculum:

> I've presented on technology implementation in the foreign language classroom whenever I am invited or whenever I get a chance…because although it may seem basic for me, what I noticed is that many teachers get these ideas and they think…. "Oh my Gosh, how didn't I think of that."

The data analysis showed that foreign language teachers in this study possessed high confidence levels when it came to the use of technology-enhanced multimedia instruction in their foreign language classrooms. They were also flexible and willing to try and experiment with different technology tools. Teachers maintained their confidence level through their constant engagement in professional conferences, associations,

technology classes, trainings and workshops. Teachers were very willing to share their knowledge with others by teaching technology workshops, trainings and giving technology presentations at conferences.

CHAPTER 5: DISCUSSION

Findings from this research showed that foreign language teachers perceived foreign language learning as a meaningful process of language and culture acquisition in which students should be provided with a variety of opportunities for authentic communicative exchanges and interactions. This finding is consistent with Vygotsky's sociocultural theory which stated that learning happens through meaningful interactions with the variety of communication partners as well as other prominent Second Language Acquisition approaches to learning such as Long's Interaction Hypothesis, Krashen's Input Hypothesis, Swain's Output Hypothesis. In order to assure successful language and culture acquisition, teachers needed to design "eclectic" instruction where they used different foreign language methods and approaches in order to reach different learners and to tailor instruction to individual student needs. Technology-enhanced multimedia instruction provided opportunities for successful and effective language learning instruction and allowed foreign language teachers to meet the needs of twenty-first century learners. The "generation of digital natives" is accustomed to receive input via technology-enhanced multimedia instruction since it has been exposed to technology from birth. These findings are consistent with previous studies reporting on the learning opportunities and benefits granted by technology-enhanced multimedia (Asselin & Moayeri, 2011; Knapp & Glen, 1996; Wu & Zhang, 2010).

Quantitative and qualitative data presented in this study revealed that teachers and students extensively used technology-enhanced multimedia in the foreign language curriculum. The survey data revealed high mean scores indicating that a variety of technology tools such as Internet, presentational software, video, audio, Web 2.0 applications and communication tools were frequently used by both teachers and students

in the foreign language classroom. All 100 % of the foreign language teachers who participated in the study used technology-enhanced multimedia instruction. Means for use of Internet in the foreign language curriculum were M=3.82 for teacher use and M= 3.50 for student use on the Likert scale from 1 to 4 with 4 representing the most frequent use of technology-enhanced multimedia instruction. Teachers confirmed their frequent use of technology during qualitative interviews from which a sub-theme "*Every day and in every single class"* emerged which indicated the frequency and amount of technology-enhanced multimedia that teachers and students used in the foreign language classrooms. Participants stated that they used technology-enhanced multimedia instruction in the foreign language curriculum using descriptors such as "a lot of times," "constantly," " consistently every day" and elaborated on their use.

The quantitative data showed that foreign language teachers used different technology-enhanced multimedia for teaching different foreign language skills such as grammar, vocabulary, interpretive skills (listening and reading), culture, interpersonal skills (speaking and writing) and presentational skills (speaking and writing to the audience). During qualitative interviews teachers described how they implemented all the different technology-enhanced tools to teach different foreign language skills. Several sub-themes within the third theme "Pedagogically sound technology-enhanced multimedia instruction in foreign language classrooms" confirmed these quantitative survey results and provided more description on the way different technologies were used to teach certain foreign language skills. In the sub-theme "*Bringing culture into the classroom,*" for example, teachers described how they used technology-enhanced multimedia applications to teach culture, mentioning such tools as Internet, audio, video, communication tools like Skype, Edmodo, epals, instant messenger, and email. A sub-

theme *"Engaging students into project-based learning"* confirmed quantitative survey results by providing a more detailed picture of how students learned and practiced different foreign language skills via engagement in a variety of technology-enhanced projects. Interview data showed that students used a variety of technology-enhanced applications to do projects that enhance listening, speaking, reading and writing skills. Such Web 2.0 applications as Voki, ToonDoo, Photostory, Animoto, TimeToast, StoryBird, LittleBirdTales as well as video tools like flipcameras, iMovie, audio tools like voicerecorders, GarageBand, Audacity, together with Internet resources, were used to learn and practice foreign language skills. For example, in order to enhance student speaking skills, Richard mentioned that his students make speaking Portfolios where they record themselves speaking in the foreign language and put it on the website: "they can practice speaking and record themselves and listen to themselves… ." The sub-theme "*Getting feedback, practicing and assessing"* confirmed quantitative survey results by providing a variety of examples about the use of different technology-enhanced tools to practice vocabulary, grammar skills, listening, speaking and writing skills in the foreign language. Technology tools that students used in the classroom to practice language skills and tools that teachers used to prepare review quizzes and activities for students to practice included Quizlet, Quia, Socrative, and WordChamp.

The findings suggest that foreign language teachers were convinced that technology-enhanced multimedia instruction positively influenced foreign language learning. These findings are consistent with previous literature on the topic (Arslan & Sahir-Kizil, 2010; Chun & Plass, 1996; Chun & Payne, 2004; Liu, 1994; Nikolova, 2002). High mean scores on the quantitative survey were confirmed by sub-themes and extensive quotes from the qualitative interview data. For example, foreign language

teachers agreed that the use of technology-enhanced multimedia instruction is beneficial for learning a foreign language (M=4.73, SD=0.46). The sub-theme "*Redefined instruction: Technology "should be an expectation"* provided similar evidence. This sub-theme incorporated more elaborative participants' quotes and ideas that are in agreement with quantitative results. Using technology-enhanced multimedia instruction helped to individualize foreign language instruction to diverse students' needs (M=4.55, SD=0.60). Participants supported this argument by mentioning that "multimedia delivers instruction to all types of learners," "impacts different learning styles," "delivers to all modes." The literature included reports of similar results (Liu & Wang, 2010; Wu & Zhang, 2010). Foreign language teachers stated that technology-enhanced multimedia instruction encouraged students to use imagination in the foreign language classroom (M=4.64, SD= 0.58). Qualitative sub-theme *"Technology reinforces creative engagement"* confirmed quantitative findings and explained this role of technology-enhanced multimedia using details and quotes. This finding supported previous research on the topic (Dale, 2008, Kangas, 2010; Tacchi, 2004). Similarly, the idea that teachers were able to find better-suited materials for their foreign language classroom through technology (M=4.73, SD=0.55) was extended in the qualitative sub-theme *"Technology provides access opportunities."* Participants explained that "it [technology] gives you a wealth of information beyond what is just inside the classroom." Previous research by Tacchi (2004) also suggested that technology offered "unprecedented freedoms and levels of access" (p.91). Quantitative survey results showed that participants reported that the teacher comfort level with technology-enhanced multimedia had a positive impact on student learning (M=4.86, SD=0.35). The sub-theme "*Being and staying confident*" that emerged from qualitative interview data revealed that teachers were very confident and

comfortable when using technology in the classroom. Teachers tried new things with technology, attended technology conferences and workshops.

Table 5.1 Merged Quantitative and Qualitative Data

Quantitative Survey Items	Quantitative Results (Likert Scale*)	Qualitative Sub-themes	Qualitative Interview Quotes
The use of technology-enhanced multimedia instruction helps to learn a foreign language (FL)	M=4.73 SD =0.46	Redefined instruction: Technology " should be an expectation"	• "it can be a very helpful tool to help students learn" • "technology enhances so many things in the classroom in regards of foreign language" • "I see benefits of the idea of using technology in the classroom and what it can do to benefit students" • "it adds depth to the language" • "it helps enhance the class instruction"
Using technology-enhanced multimedia instruction helps to individualize FL instruction to diverse students' needs	M=4.55 SD=0.60	Technology-enhanced multimedia instruction reinforces creative engagement	• "multimedia delivers instruction to all types of learners" • "delivers to all modes" • "with technology you are allowing them to tailor individually" • "more individualized" • "impacts different learning styles"
Technology-enhanced multimedia instruction encourages students to use imagination in the FL classroom	M=4.64 SD=0.58	Technology-enhanced multimedia instruction reinforces creative engagement	• "the potential to be creative and express themselves…exists" • "it allows them that opportunity to create" • "allows them to express their creativity"
Teachers can find better-suited materials for the FL classroom through technology	M=4.73 SD =0.55	Technology-enhanced multimedia instruction provides access opportunities	• "it gives you a wealth of information beyond what is just inside the classroom" • "access to authentic text, authentic materials using technology" • "seeing a greater level of access to the world"
Teacher comfort level with technology-enhanced multimedia instruction has a positive impact on student learning	M=4.86 SD=0.35	Being and staying confident	• I am very confident" • "I would consider myself technology-savvy" • "I feel very very comfortable" • "I am extremely comfortable" "I have a pretty high comfort level"
***Likert Scale: 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4-agree, 5-strongly agree**			

Table 5.1 represents both quantitative and qualitative data showing teacher beliefs on technology-enhanced multimedia instruction in the foreign language classrooms.

Quantitative and qualitative data complemented each other. Foreign language teachers reported that technology-enhanced multimedia instruction allowed teachers to implement innovative ideas (M=4.77, SD= 0.43) and helped learners to become active thinkers in the language learning process (M=4.59, SD=0.59). It provided learners with equal opportunities to learn and succeed in the foreign language classroom (M=4.41, SD=0.80). Other benefits and roles of technology-enhanced multimedia instruction were discussed in the qualitative interviews. Sub-themes that discussed the role of technology-enhanced multimedia instruction in increasing student motivation to learn a foreign language *("Technology-enhanced multimedia instruction increases motivation")* and giving students ownership for their learning *("Technology-enhanced multimedia instruction gives ownership for learning")* emerged. Some of the technology benefits were discussed and studied in previous studies and were consistent with the benefits and roles of technology-enhanced multimedia instruction discussed in this study.

Quantitative data suggested that foreign language teacher beliefs on the potential of technology-enhanced multimedia instruction for student learning correlated with teacher use of technology in their foreign language curriculum. This means that the stronger teacher beliefs on the potential of technology-enhanced multimedia instruction for the foreign language learning, the more they used it in their classrooms. Similarly, teacher beliefs correlated with student use of technology-enhanced multimedia in their classroom, which suggested that the stronger teacher beliefs on the potential of technology-enhanced multimedia, the more they engaged students in using it to learn and practice foreign languages. Finally, teacher use of technology-enhanced multimedia

instruction correlated with student use of technology-enhanced multimedia, suggesting that the more teachers used technology-enhanced multimedia instruction the more they engaged their students in using it to learn a foreign language. These findings were also extended and explained by qualitative data, which confirmed that teachers had strong positive beliefs regarding the potential of technology-enhanced multimedia instruction for learning a foreign language and discussed examples of how teachers and students were using it to learn a foreign language. These findings are consistent with Bandura's self-efficacy theory according to which one's beliefs influence behavior choices, persistency and engagement in different activities and practices (Bandura, 1977, 1986, 1997).

CHAPTER 6: CONCLUSIONS

This study provided a picture of pedagogically sound technology-enhanced multimedia foreign language instruction as reported by teachers in grades 6-12 in Midwest public schools. Findings of the study provided answers to the research questions and filled a gap in the literature by showing how technology-enhanced multimedia instruction was implemented in foreign language classrooms.

Foreign language teachers perceived language learning as a meaningful acquisition of language and culture. Teachers expressed that the focus of meaningful language acquisition is on the communicative competence and that it can be achieved through a variety of student-centered approaches. Foreign language teachers did what was best for their students to experience successful and positive language learning. They expressed that they used technology-enhanced multimedia instruction to ensure successful language learning process of the twenty-first century technologically raised generation of learners. Teachers believed that technology-enhanced multimedia instruction was a necessity and should be used by every teacher in every foreign language classroom. Foreign language teachers grounded their beliefs on technology-enhanced multimedia instruction in their personal experiences with it in the classroom and their observations on its potential to enhance foreign language learning for students. Teachers expressed that technology-enhanced multimedia instruction increased motivation in the classroom, reinforced creative engagement, gave students ownership for their learning and provided students and teachers with various access opportunities that assisted with language and culture acquisition. Technology-enhanced multimedia instruction allowed teachers to tailor instruction to diverse student needs and styles and provided opportunities to exercise student thinking skills. Seeing the benefits of technology-

enhanced multimedia instruction motivated teachers to stay up-to-date and reinforced their confidence in the classrooms. Teachers' strong positive beliefs in the benefits and potential of technology-enhanced multimedia instruction positively correlated with how often teachers and students used it in foreign language classrooms. Teacher use of technology-enhanced multimedia positively correlated with student use of technology, which is consistent with previous research on the topic.

Technology-enhanced multimedia was consistently used by teachers and students in foreign language classrooms to learn and practice a variety of language skills and to create and access language materials. Foreign language teachers used a variety of technology-enhanced multimedia tools and applications such as Internet, Web 2.0, presentation tools, video, audio and communication tools to teach listening, reading, writing, reading skills as well as culture. Students used technology-enhanced multimedia to complete various foreign language projects that enhanced their language skills and allowed them to exercise their creative ability and higher order thinking skills. Technology-enhanced multimedia instruction was implemented to share, organize and collaborate in the language learning process. It allowed students to practice, review and receive immediate feedback on their learning and helped teachers in their assessment of student language abilities and skills.

The findings of the study revealed the benefits for foreign language learning that emerge from implementing pedagogically sound technology-enhanced multimedia instruction. The findings described successful pedagogically sound practices with technology-enhanced multimedia that are focused on enhancing different language learning skills and competencies.

The significance of this study and its contribution to the scholarly literature is that it provided insights into pedagogically sound technology-enhanced multimedia instruction in the foreign language classrooms. The study concluded that technology-enhanced multimedia instruction should be incorporated in foreign language classrooms due to its potential to positively influence foreign language learning. Although the findings of the study should be reviewed considering study limitations, the findings suggest that technology-enhanced multimedia instruction is vital for the foreign language instruction if its integration is consistent with pedagogically sound approaches to language acquisition.

Implications

Creswell (2008) defined implications as "suggestions for the importance of the study for different audiences" (p. 207). The findings of the study have implications for foreign language educators, administrators and faculty of teacher preparation programs as well as state teacher education policy makers. After reading the report of this study, grades 6-12 foreign language educators will gain a better understanding of the nature of pedagogically sound technology-enhanced multimedia instruction and will understand its role and benefits for student learning. They will receive strong examples of effective technology-enhanced multimedia practices in the foreign language classroom. This will help teachers to construct a comprehensive picture of technology-enhanced multimedia instruction that will assist them in adjusting and designing their foreign language classroom curriculum. Consequently, foreign language educators will be able to adopt some of the best practices with technology-enhanced multimedia instruction described in the study and will start utilizing more technology-enhanced multimedia in their classrooms.

The study has implications for faculty of teacher preparation programs and administrators by offering them a comprehensive picture of the importance and necessity of incorporating technology-enhanced multimedia in daily foreign language instruction. The findings of the study will help them to make informed decisions when preparing and hiring foreign language teachers. The reports of the teachers in the study show the importance of providing professional development opportunities on the use of technology for teachers.

The study has implications for teacher education policy makers. It will help them to make informed decisions regarding integration of technology-enhanced multimedia in the foreign language curriculum and to create policies regarding technology competencies required for teachers.

Limitations

This study is by no means comprehensive. The limitations of the study are those potential weaknesses in the study design and methodology that impact the application and interpretation of the study results (Creswell, 2008). Limitations are often related to "inadequate measures of variables, loss or lack of participants, small sample size, errors in measurement, and other factors typically related to data collection and analysis" (Creswell, 2008, p. 207).

Limitations involving generalizability may be characteristic of this study due to the relatively small quantitative sample size and purposeful sampling procedures for the quantitative survey data. The literature recommends that the size of the quantitative sample be larger than the size of the qualitative sample to be considered representative of groups of people to whom the results will be generalizable (Creswell & Plano Clark, 2007). In this study quantitative and qualitative samples were equal. The literature also

recommended the use of random sampling to select the quantitative sample. In this study, purposeful sampling was used to select the same individuals for quantitative and qualitative procedures. This type of sampling has limitations due to the fact that those participating in the study may not be representative of all individuals in the population.

The study may also have limitations due to the nature of multiple regression analysis that was performed. The literature reports that limitations of this type of analysis lie in the fact that causal conclusions from findings can not be made because variables may be correlated without causal relationships existing between them. Multiple regression analysis may have limitations in relation to generalizability of findings since it involved a specific group of teachers and it is not guaranteed that the findings can be generalizable to other groups and situations (Hill & Lewicki, 2007; Pedhauzer, 1997).

Another limitation of the study has to do with self-reported data. The literature indicates that self-reported data is limited because it can seldom be "independently verified" (Chan, 2009). In this study, self-reported data might have limitations due to participants' exaggeration, meaning that teachers might have overemphasized the role of technology-enhanced multimedia instruction in their foreign language classrooms, or due to social desirability bias, which implies that individuals might respond in a manner that is viewed favorable and desired by others.

Finally, when dealing with qualitative data the risk of personal biases always exists (Creswell, 2008). All humans have personal biases regardless of whether we are conscious of them or not. Thus, researcher's personal biases about pedagogically sound technology-enhanced multimedia instruction might have influenced interpretation of the data.

These factors should be considered when remembering the results of the study.

Future Research

Based on the findings and limitations of this study, future research efforts could include studies exploring the following areas. First, future research may replicate the findings of this study by selecting a larger quantitative sample using random sampling and by collecting more extensive data on the topic. Thus, in addition to teacher surveys and interviews, classroom observations that may help minimize limitations of self-reported data may be conducted.

Second, future research might explore foreign language student perceptions and experiences with technology enhanced-multimedia instruction and seek their beliefs and experiences on the use of technology-enhanced multimedia in the foreign language learning process. This research would help gain perspective on student experiences with technology-enhanced multimedia in the classroom. Further, student experiences and beliefs on technology-enhanced multimedia use may be compared with those of their teachers in order to examine whether the two understand the use of technology-enhanced multimedia instruction differently. The results emerging from this type of study may lead to different conclusions and recommendations than those found in the current study.

Third, experimental research may be conducted to study foreign language practices and to examine the achievement of students in the classrooms of foreign language teachers who use pedagogically sound technology-enhanced multimedia instruction as well as teachers who do not use it. Findings from this type of research will allow causal interpretations and conclusions about student learning and will eliminate limitations of correlational analysis. This research has a potential to offer empirical data about student actual achievement and acquired foreign language skills and may provide

more convincing support for using pedagogically sound technology-enhanced multimedia instruction to teach foreign languages.

In addition, further research may look at the longitudinal components. For example, further research may examine whether and how foreign language teachers who are using technology-enhanced multimedia instruction can "convince" or positively influence professional colleagues in their buildings or outside regarding the use of technology-enhanced multimedia instruction. In other words, further research may examine how foreign language teachers who are using technology-enhanced multimedia instruction can act as "change agents" in the community. The findings of this research may provide valuable insights on the topic since previous research found that teachers often resist using technology despite having access to technology in their buildings.

Finally, since students in 2012 have encountered technology since they are born, it would be interesting to investigate how technology-enhanced multimedia instruction enhances learning experiences of young students in the elementary full immersion programs. It would be interesting to explore what does foreign language learning via technology-enhanced multimedia instruction look like in those environments. However, it may be challenging to find the research site for this type of research and to gain access to it.

Research should continue on the pedagogically sound practices with technology-enhanced multimedia instruction in the foreign language classrooms. It is clear that technology-enhanced multimedia instruction is a way for the future and will be constantly improving and developing. Researchers should continue investigating and exploring factors that can contribute to the successful student learning experiences with technology-enhanced multimedia instruction.

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APPENDIX A. IRB APPROVAL LETTER

NUgrant research administration system

From: <bfreeman2@unl.edu>
Date: May 11, 2012 9:14:15 AM CDT
To: <oketsman@unlserve.unl.edu>
Subject: **NUgrant Message - IRB - Project Approved - Certification of Exemption**

Your project has been approved by the IRB.

Project Title: Use of Technology-enhanced Multimedia Instruction in the Foreign Language Classrooms: A Mixed Methods Study

Approvers Comments:
Ms. Ketsman and Dr. Grady,

Your project has been certified as exempt. You are authorized to begin data collection.

1. The approved informed consent form has been uploaded to NUgrant (file with -Approved.doc in the file name). Please use this document to distribute to participants. If you need to make changes to the informed consent form, please submit the revised document to the IRB for review and approval prior to using it.

2. Please include your IRB approval number (IRB#20120512708 EX) on the survey consent form to be posted on-line.

Your official approval letter will be uploaded to NUgrant shortly.

Good luck with your research!

Becky Freeman
472-8127
bfreeman2@unl.edu

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This message has been sent to you through NUgrant. To view project/form you can click the link below.

NUgrant | University of Nebraska-Lincoln Office of Research nugrant.unl.edu | NUgrant
nugrant-osp@unl.edu | nugrant-irb@unl.edu | nugrant-iacuc@unl.edu | nugrant-circ@unl.edu | nugrant-ibc@unl.edu

APPENDIX B. RESEARCH INVITATION

UNIVERSITY OF Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Educational Administration

Dear Foreign Language Teachers,

I am writing to ask for your help in describing foreign language best practices with multimedia technology-enhanced instruction to enhance student learning. You are selected to participate in the study because you were identified as a foreign language teacher who implements technology-enhanced instruction while teaching.

Participation in the research study includes both completion of a survey and participation in an interview. The survey will take 10 minutes to complete. To access the survey, please, click the link below:

https://unleducation.qualtrics.com/SE/?SID=SV_55CWBHIdk0uZAZC

The interview will take 30 minutes of your time. Please, let me know when would be the best time for you to participate in the interview.

Please, be assured that your responses will remain strictly confidential. Your participation is voluntary. If you have any questions about this survey, please, email Olha Ketsman, the study investigator at oketsman@gmail.com. This study has been reviewed and approved by the University of Nebraska-Lincoln Institutional Review Board and if you have any questions about your rights as a participant in this study, you may contact them by telephone at 402. 472.6965.

Your assistance with the study will greatly strengthen our efforts in determining foreign language best practices with multimedia technology-enhanced instruction to enhance student learning in the classroom. This in turn will help in future decisions regarding best practices in a foreign language classroom. Thank you in advance for your willingness to share your experiences and beliefs with us.

I hope you enjoy participating in the study and I look forward to receiving your response.

Sincerely,

Olha Ketsman, MA
Doctoral Student and Graduate Assistant
Department of Educational Administration
oketsman@gmail.com
402-472-3729

Marilyn Grady, PhD
Professor
Department of Educational Administration
402-472-0974 (Office)
mgrady1@unl.edu

APPENDIX C. SURVEY

You are voluntarily making a decision whether or not to participate in this study. Your agreement certifies that you have decided to participate having read and understood the information presented. Please, indicate whether you agree to participate in this study.

I agree to participate in this study (1)

I do not agree to participate in this study (2)

Q1 Select one answer for each statement to describe your beliefs about technology-enhanced multimedia foreign language instruction

	Strongly disagree (1)	Disagree (2)	Neither Agree nor Disagree (3)	Agree (4)	Strongly Agree (5)
The use of technology-enhanced multimedia instruction helps students to learn a foreign language (1)					
Teacher comfort level with technology has a positive impact on student learning (2)					
Using technology-enhanced multimedia instruction helps to individualize foreign language instruction to diverse students' needs (3)					
Technology-enhanced multimedia instruction helps learners to become active thinkers in the foreign language learning					

process (4) Technology-enhanced multimedia instruction provides equal opportunities for foreign language students to learn and succeed (5) Teachers can find better-suited materials for the foreign language classroom through technology (e.g. Internet, DVDs, publisher-supplied CDs) than through printed materials from the school library (6) Technology-enhanced multimedia instruction allows for the implementation of innovative ideas in a foreign language classroom (7) Technology-enhanced multimedia instruction					

encourages students to use their imagination in the foreign language classroom (8)					

Q2 Technology-enhanced multimedia is beneficial for learning which skills of the foreign language. Please, check ALL that apply.

Grammar (1)

Vocabulary (2)

Culture (3)

Interpretive skills (i.e. reading & listening) (4)

Interpersonal skills (i.e. writing & speaking) (5)

Presentational skills (i.e. speaking and writing to an audience) (6)

Q3 Indicate how often you use each type of technology-enhanced multimedia in your typical foreign language class:

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)
Internet (1)				
Presentation software (e.g. Powerpoint, Keynote, Prezi) (2)				
Videos (e.g. YouTube, DVD) (3)				
Audio (e.g. music, podcast, CD) (4)				
Free online Web 2.0 applications (e.g. Voki, ToonDoo, Extranormal) (5)				
Communication tools (e.g. Skype, MSN messenger etc) (6)				

Q4 Indicate how often in your typical foreign language class do you engage students in working with different types of technology-enhanced multimedia tools:

	Never (1)	Rarely (2)	Sometimes (3)	Often (4)
Internet (1)				
Presentation software (e.g. Powerpoint, Keynote, Prezi) (2)				
Authentic Videos (e.g. YouTube, DVD) (3)				
Authentic Audio (e.g. music, podcast, CD) (4)				
Free online Web 2.0 applications (e.g. Voki, ToonDoo, Extranormal) (5)				
Communication tools (e.g. Skype, MSN messenger etc) (6)				

Q5 Please, indicate what kinds of technology-enhanced multimedia you use in your typical foreign language class to teach or practice the following types of skills:

	Internet (1)	Presentation software (e.g PowerPoint, Prezi) (2)	Videos (e.g. YouTube, DVD) (3)	Audio (4)	Online Web 2.0 applications (e.g. Voki, Toondoo, Glogster) (5)	Communication tools (e.g. Skype, MSN Messenger etc) (6)	I do not use technology to teach this skill (7)
Cultural knowledge of the target language (1)							
Grammar of the target language (2)							
Vocabulary of the target language (3)							
Interpersonal skills (speaking and writing between peers) (4)							
Interpretive skills (reading and listening) (5)							
Presentational skills (writing and speaking to the audience) (6)							

Q6 What is your age?
Under 25 (1)
25-35 (2)
36-45 (3)
46-55 (4)
56-65 (5)
over 65 (6)

Q7 What is your gender?
Male (1)
Female (2)

Q8 Which language and which level(s) are you currently teaching? Please, specify below: (e.g. Spanish 1 at a high school)

Q9 What is the highest degree in the foreign language and/or education that you hold?
Bachelor's Degree (3)
Master's Degree (4)
Doctoral Degree (5)
Professional Degree (6)

Q10 How many years of experience do you have teaching a foreign language in the school settings?
I am a first year teacher (1)
1-5 years (2)
6-10 years (3)
11-15 years (4)
16-21 years (5)
22 or more years (6)

Q11 How would you rate your level of proficiency of the language that you are teaching?

Novice low (1)
Novice mid (2)
Novice high (3)
Intermediate low (4)
Intermediate mid (5)
Intermediate high (6)
Advanced low (7)
Advanced mid (8)
Advanced high (9)
Superior (10)

APPENDIX D. RESEARCH CONSENT FORM

UNIVERSITY OF Nebraska Lincoln

IRB# 20120512708 EX
Date Approved: 05/11/2012
Valid Until: 05/10/2017

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Educational Administration

INFORMED CONSENT FORM

Identification of the Project:

Use of Technology-enhanced Multimedia Instruction in the Foreign Language Classrooms: A Mixed Methods Study

Purpose of the Research:
The purpose of this mixed-methods study is to describe examples of best practices with instructional technology in grades 6 through 12 foreign language classrooms in the Midwest that may lead to enhanced student learning. You are selected to participate in the study because you were identified as a foreign language teacher who implements technology-enhanced instruction while teaching.

Procedures:
Participation in this study will require 10 minutes to complete the survey and 30 minutes to answer interview questions. A link with a survey will be sent to you by email. The survey will ask about your beliefs and practices with multimedia technology-enhanced instruction during your foreign language instruction. You will also be asked to provide demographic information. I will conduct an interview about the use of multimedia technology-enhanced instruction in your foreign language classroom. The interview will be audiotaped. The interview will take place in a quiet private location at a time that is convenient for participants. The location of the interview will be in a quiet meeting room such as at UNL, a public library, or another area specified by the participant.

Risks and/or Discomforts:
There are no known risks or discomforts associated with this study.

Benefits:
Participants may find sharing their beliefs and foreign language practices with technology enjoyable. The information from the findings may be helpful for the participants in making informed decisions when integrating technology in the foreign language instruction. The information gleaned from the study will help us to understand and describe foreign language best practices using multimedia technology-enhanced instruction to improve student learning.

141 Teachers College Hall / University of Nebraska-Lincoln / Lincoln, NE 68588-0360 /(402) 472-3729 /FAX (402) 472-4300

Confidentiality:
Any information obtained during this study, which could identify you will be kept strictly confidential. The data will be stored in a locked cabinet in the PI's office and will only be seen by the investigator during the study and for three years after the study is complete. It will be destroyed after that. Data will not be associated with names. Participation will be voluntary. Participants will be assigned pseudonyms for the qualitative interviews. The information in this study will be published in a dissertation, professional journals or presented at professional meetings.

Compensation:
There will be no compensation for participating in this research.

Opportunities to Ask Questions:
You may ask any questions concerning this research. Your questions will be answered before you agree to participate in the study. Please, feel free to email the investigator any time at oketsman@gmail.com to have your questions answered. If you have any concerns about your rights as a participant in the research study or any questions regarding your participation in this research, which were not answered by the investigator, please contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965.

Freedom to Withdraw:
You are free to decide not to participate in this study or to withdraw at any time without adversely affecting our relationship or your relationship with the University of Nebraska-Lincoln and the school where you teach. Your decision will not result in any loss of benefits to which you are otherwise entitled.

Consent, Right to Receive a Copy:
You are voluntarily making a decision whether or not to participate in this study. Your signature certifies that you have decided to participate having read and understood the information presented. You will be given a copy of this consent form to keep.

_____ Yes, I would be willing to participate in the study.

_____ Yes, I agree to be audiotaped.

_____ _____
Signature of Research Participant Date

Olha Ketsman, MA
Doctoral Student and Graduate Assistant
Department of Educational Administration
402-472-3729
oketsman@gmail.com

Marilyn Grady, PhD
Professor
Department of Educational Administration

IRB Approval
IRB# 20120512708 EX
Date Approved: 05/11/2012
Valid Until: 05/10/2017

APPENDIX E. EMAIL REMINDER

University of Nebraska Lincoln

COLLEGE OF EDUCATION AND HUMAN SCIENCES
Department of Educational Administration

Dear Foreign Language Teachers,

Last week a survey link was emailed to you to seek your opinions and experiences with multimedia technology-enhanced instruction in foreign language classrooms.

I would like to thank those of you who have already responded to the survey. If you have not done so, please, complete the survey following the link below:

https://unleducation.qualtrics.com/SE/?SID=SV_55CWBHIdk0uZAZC

Thank you for your help with this study.

Sincerely,

Olha Ketsman, MA
Doctoral Student and Graduate Assistant
Department of Educational Administration
402-472-3729
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Marilyn Grady, PhD
Professor
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141 Teachers College Hall / University of Nebraska-Lincoln / Lincoln, NE 68588-0360 /(402) 472-3729 / FAX (402) 472-4300

APPENDIX F. INTERVIEW PROTOCOL

INTERVIEW PROTOCOL

Technology-enhanced Multimedia Instruction in Foreign Language Classrooms: A Mixed Methods Study

Participant (Pseudonym)		Date & Place of the interview	
Interviewer's Name		Interview Duration	

Introduction

Thank you for your willingness to share your beliefs and experiences with technology-enhanced multimedia instruction. With your permission, I would record our conversation today. The information you share with me will help us to better understand foreign language best practices with technology-enhanced multimedia instruction to improve student learning. Before we begin, do you have any questions? Let's get started!

Q1. What does foreign language learning mean to you?

Response	Observer comments

Q2. Describe your beliefs on teaching foreign languages (i.e. your teaching philosophy)

Response	Observer comments

Q3. What does technology-enhanced multimedia instruction mean to you as a foreign language teacher?

Probe: In your opinion what is technology-enhanced multimedia instruction?

Response	Observer comments

Q4. In your opinion how does technology-enhanced multimedia instruction change students learning experiences in the foreign language classroom?

Probe 1: How different would your foreign language instruction be if you did not use technology?

Response	Observer comments

Q5. Describe the use of technology-enhanced multimedia instruction in your foreign language classroom.

Probe 1: What technology tools do you and your students use in the classroom and for which purposes?

Response	Observer comments

Q6. Describe your comfort level with using technology-enhanced multimedia instruction in your foreign language classroom?

Probe: How confident you are teaching with technology in your foreign language classroom?

Response	Observer comments

Q7. Describe what motivates and encourages you to adopt new technology-enhanced multimedia tools in your foreign language classroom (for example, other teachers, professional development workshops etc.)?

Response	Observer comments

Q8. What are some challenges that you face while using technology-enhanced multimedia instruction in your foreign language classroom?

Probe: How do you feel about managing challenges that arise when incorporating technology-enhanced multimedia instruction?

Response	Observer comments

Q9. Do you have some other thoughts on the topic of technology-enhanced multimedia instruction in the foreign language classroom?

Probe: Would you like to add something else?

Response	Observer comments

Thank you so much for talking with me today. I am grateful for your contribution to my study.