DID WE FORGET SOMEONE ELSE? FOREIGN LANGUAGE STUDENTS' COMPUTER ACCESS AND LITERACY FOR CALL

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ABSTRACT

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This thesis examines computer access and computer literacy of French, German, and Spanish language students at a large Midwestern university. The participants (N=178) were given a four-page paper-based survey with questions related to access to technology, interest in hybrid and online classes, their computer abilities, and their usage of multimedia tools in various environments (personal, academic and professional). This paper is an approximate replication study of Winke and Goertler (2008). The data were analyzed using descriptive statistics and frequency counts, and then compared with the 2008 study. The results on access and ownership show a slight increase in percentage of access and ownership of technology tools.

Keywords: Computer Assisted Language Learning, Computer Literacy, Computer Access

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Introduction

As the field of Computer Assisted Language Learning (CALL) continues to grow, and institutions of higher education are implementing flipped, hybrid, and fully online classes into their curricula, a rather pressing question needs to be asked: Do foreign language students have access to the necessary technology, and are they literate in using such technologies, to succeed in courses utilizing CALL materials, and courses that use hybrid and online instruction? In order to answer this question, language courses and departments would benefit from a needs analysis regarding computer access and literacy. It is clear that institutions of higher education will continue to offer flipped, hybrid, and online classes for a multitude of reasons; logistical reasons such as space on campus, and due to the need for flexibility with students who are working full or part-time while concurrently getting their education. (Chun, Smith, & Kern, 2016) There are also the technological benefits and affordances, such as autonomous and self-paced learning and computer mediated communication, to name a few. (Robert J Blake, 2005; Chapelle, 2009; Goertler, 2009).

Professors, instructors and administrators need to be aware of students' computer access and computer literacy if they aim to put their students in a position to succeed in language courses with technology. One way to gain a better understanding of students' computer access and computer literacy is through conducting a needs analysis and continuing with regular surveying of students to ensure their needs are being met and also to make necessary adjustments regarding technology tools and the tasks performed in technology enhanced language learning environments. Without the proper access to certain equipment, such as webcams, headsets with microphones, and the most obvious, a computer, then students will not be able to participate, let

alone succeed, in their hybrid or online language courses. The next step is ensuring that not only do students have access to specific technologies, but students also know how to use these technologies. In order to gain a better understanding of students' computer access and literacy, a needs analysis should be conducted. Thus, the purpose of this current project is to empirically investigate foreign language students' computer access and literacy.

Rationale

While working as a graduate assistant for the Center for Language Teaching Advancement at Michigan State University and working in the language labs on the same campus, I observed that students' computer access and literacy is not always that of a *digital native*. Many students work very frequently in the labs because they do not have access to a computer or tablet at home. Some of the frequent users in the lab need assistance with a multitude of tasks such as printing off a document, saving a document to the server, recording videos and audio, and other computer tasks. As Winke and Goertler (2018) have already found, students' computer access and literacy is not what teachers and administrators might expect, which has been echoed in other studies (Chun et al., 2016; Messineo & Deollos, 2005) . Since the study was conducted almost ten years ago, it is time to conduct a replication study to see how students' computer access and literacy has changed.

KEY AREA 1: Computer Literacy

Students enrolled in hybrid, and online language courses need various literacies to excel and succeed in such courses. Current students must develop electronic literacies (computer literacy, information literacy, multimedia literacy and CMC literacy) (Kern, 2006). The various types of literacies are defined by Warschauer (2002): computer literacy (i.e., comfort and fluency in keyboarding and using computers), information literacy (i.e., the ability to find and critically evaluate online information), multimedia literacy (i.e., the ability to produce and interpret complex documents comprising texts, images, and sounds), and computer-mediated communication literacy (i.e., knowledge of the pragmatics of individual and group online interaction) (p.455). Although all of the different subcategories of electronic literacy are important, students need a strong foundation in computer and digital literacy. Digital literacy is defined by the TESOL Technology Standards as "Basic understanding of and ability with computer functions, including Internet use" (p.43). It is important to note, that basic computer literacy is different than computer literacy in the CALL context. Winke and Goertler (2008) describe computer literacy in the context of CALL as "Computer literacy for CALL includes having access to, and being familiar and comfortable with, tools for foreign language CMC and written and oral skills development via the computer" (p.497). Computer literacy is important in shaping positive beliefs towards CALL (Sydorenko, Hsieh, Ahn, & Arnold, 2017) Without knowing how to operate a computer and digital tools, students will not be able to gain access to the necessary information and multimedia to later be used in their language courses. One way to bridge the gap of computer literacy is outlined by the following quote: "Technology Standards for English language learners can, hopefully, minimize such disparities in computer literacy among U.S. children by encouraging adequate access to technology and

development of appropriate skills during school hours“ (Teachers of English to Speakers of Other Languages, 2008, p.9). Students will need to have basic computer and digital literacy to be able to participate in CMC; students need to be able to know how to use the technology tools in order to communicate, i.e., headsets, microphones, webcams and word processors. Without adequate computer and digital literacy, the technology will act as a hindrance for students and the technology cannot become normalized (Chambers & Bax, 2006).

Barrette (2001) conducted one of the first studies of computer literacy. In this study, Barrette found that students were uncomfortable with the use of some computer applications for language learning even if some students had previously used these applications. The findings from Barrette (2001) also suggest that although students may not be comfortable with certain computer applications or software, the students can improve their literacy in the course of a semester. Barrette (2001) highlights that students have basic computer literacy but may need training for more unfamiliar or advanced tasks. Since Barrette's study, there have been related studies published in the subsequent years (Goertler, Bollen, & Gaff Jr., 2012; Messineo & Deollos, 2005; Sydorenko, Hsieh, Ahn, & Arnold, 2017; Winke & Goertler, 2008; Winke, Goertler, & Amuzie, 2010) According to these studies, many students are able to perform tasks on their computers related to personal use, but these studies have shown that students lack the experience and literacy for specific CALL tasks. For example, Winke and Goertler (2008) found that "In terms of readiness for advanced CALL tasks (e.g., creating and editing audio files, uploading audio and video to the Web, and editing websites or video), students tended overall to report that they did not have adequate access to or literacy in the appropriate tools" (p. 496). According to the findings from these multiple studies, students are computer savvy, and when students are exposed to certain technologies and use them in their classes, they can further

develop their computer literacy skills. In the findings for Winke and Goertler (2008), Winke et al (2010), and Goertler et al (2012), the data was based on the same survey and are different disseminations of the same research. Findings from Nielson (2013), suggest that "an assessment of students' computer literacy should be conducted at the outset of a course involving discussion boards, and that necessary training be provided to ensure that all students have the necessary skills and confidence to use them effectively" (p.145). The danger, of being unaware of students' actual computer literacy is that teachers will make assumptions that students have a high-enough computer literacy to be able to succeed in Language courses with technology with little to no help, which is not the case (Barrette, 2001; Winke & Goertler, 2008). Bueno-Alastuey & López Pérez (2014a) stated that there was a high number of students who used ICT "little" or "not at all", which goes against the general belief that students were familiar with ITC for language learning. (Bueno-Alastuey & López Pérez, 2014a). This finding illustrates that teachers and administrators over-estimate their students' computer skills and abilities.

KEY AREA 2: Computer Access

In order for students to be able to succeed in Language courses with technology, they need not only computer literacy but also access to the necessary tools. According to Winke and Goertler (2008), computer access is defined as "access to both hardware and the internet" (p. 483). Students tended to lack ownership of the proper equipment necessary for completing activities and assignments for CALL classes (Winke & Goertler, 2008). Although many students have access and use computers in their personal lives, the equipment and skills needed for personal use of computers is not the same as equipment required for language courses with technology (Barrette, 2001; Goertler et al., 2012; Winke & Goertler, 2008; Winke et al., 2010). Knowing the access that students have will allow teachers and language departments to examine

which activities can be completed by students. The implication for a lack of access needs to be known and addressed by language teachers and language departments.

KEY AREA 3: Hybrid and Online Language Instruction

Hybrid language instruction is a learning environment in which some of the instruction is conducted in a face to face setting and the other parts of instruction are conducted outside of the classroom online (Goertler et al., 2012). Hybrid instruction allows students to do additional work in the target language outside of the classroom. For a description of online courses, I turn to Chenoweth and Murday (2003), and they wrote that online language courses are a: "unique combination of CALL, CMC [computer mediated communication], and distance learning environment, in which Students use the computer to learn course content, as in CALL; communicate with one another and with the instructor both asynchronously and synchronously—[using] a wide range of CMC activities; and participate from in pendent locations, as in distance learning environments." (p. 291). When comparing hybrid courses and face-to-face courses, Chenoweth (2006) indicated that "the students in the hybrid online course made similar progress to the students in the equivalent offline courses" (p. 132). This statement substantiates that if hybrid courses allow students to make similar progress, then they should be considered as an alternative for students who cannot enroll in a completely face-to-face course due to logistical reasons, scheduling conflicts, and physical space. Winke and Goertler (2010) argued that hybrid courses will become increasingly common and with these types of courses becoming increasingly common, is it crucial that teachers and language departments conduct a needs analysis to gain a better understanding of students' computer access and literacy, especially in the ever changing, ever updating field of CALL.

CHAPTER 2: LITERATURE REVIEW

Introduction

In this literature review, I will be discussing replication studies, needs analysis and the technology and technology skills used in hybrid, online and technology enhanced language learning environments. First, I will be discussing the relevance replication studies in the field of SLA and CALL due to the fact that this project is a replication study itself. Second, I will be discussing the importance of needs analysis, which is what this project serves to be, and I argue that more institutions of higher education should administer a needs analysis for their hybrid and online language courses. Lastly, I will discuss the technologies and technology skills used in hybrid, online and technology enhanced language learning environments.

Replication Studies

Replication studies are defined by Mackey, (2005) as Conducting a research study again, in a way that is either identical to the original procedure with small changes (e.g. different participants), to test the original findings" (p.364). Conducting replication studies is a central part of the development of any field of inquiry or science (Mackey, 2005). The scientific method is involved with observations that can be repeated and verified by other (American Psychological Association, 2001). Replication studies are an important part of fields of "hard" and "soft" sciences. (Abbuhl, 2012) Replication studies serve to add to the base of scientific inquiry and can bring new insights into the field as well as prove the generalizability of studies. In order to replicate a study, it is important that researchers establish a rationale for replication (Abbuhl, 2012). By explaining the significance for the field of the original study and establishing its worthiness of replication is one way to begin a rationale (Abbuhl, 2012). Replication studies

provide an opportunity to test different populations using the same variables, and replication studies can be conducted later in time to account for changes in population, and changes in the field. Conducting replication studies, and also encouraging replication studies using different groups of participants and different situations which can show that the results (if confirmed) can be generalized. (Mackey & Gass, 2005)

Replication studies in SLA and CALL

It is important to note that true replication is not possible in second language studies unlike in some fields of science and therefore inconsistent or different results must be looked at differently. It could be that the results are not generalizable, or because there could be an issue of verification of the original results. (Mackey & Gass, 2005) Although replication studies are an important and integral aspect of any field of inquiry, there is a scarcity of replication studies in applied linguistics, and SLA (Abbuhl, 2012; Lindstromberg & Eyckmans, 2017; Mackey & Gass, 2005; Porte, 2013). In order to address the scarcity of replication studies in applied linguistics and SLA, there have been a call for papers focused solely on replication studies in the Cambridge press for language teaching. The language teaching review panel explains their reasoning for replication studies in their question and answer article outlined in the quote below:

> "The commitment to publishing replication studies reflects the editors' belief that such research should play a more significant role in the field than it has up to now and that it is both useful and necessary. The potential for replicating studies in order to validate results is a requirement of scientific inquiry and should become more prominent in establishing and confirming the outcomes of research in L2 learning and teaching" (Language Teaching Review Panel, 2008 p. 1).

Goertler, Bollen and Gaff (2012) mention the possibilities of what a replication of their study would have on the field with the following: "A replication of this study at an institution with a well-established pedagogically and technologically innovative hybrid curriculum might shed more light on the issue of computer literacy and access differences between hybrid and non-hybrid students." (p. 314)

This project was completed as an approximate replication in order to compare foreign language students' self-reported computer access and literacy with the initial study, Winke and Goertler (2008). This is an approximate replication because there have been modifications to the survey and also the procedure. The context in which this project was carried out is slightly different; The study by Winke and Goertler (2008) was an initial needs analysis which served to investigate the feasibility of hybrid and technology enhanced language instruction, whereas this project on the other hand, was completed after hybrid and fully online courses have been integrated into the curriculum. The purpose of replicating Winke and Goertler (2008) is to investigate computer access and literacy ten years after the first study, which will shed light on how students' access to computers and technology tools has changed over time and also how students' computer literacy has changed.

Needs analysis

Richards defines a needs analysis as "procedures used to collect information about learners' needs" (Richards, 2001 p.51). Needs analysis have been used for language programs, curriculum development and evaluating and assessing students (Richards, 2001) and technology-based needs analysis have be conducted for hybrid, online and technology enhanced language learning environments (Barrette, 2001; Goertler et al., 2012; Winke & Goertler, 2008; Winke et al., 2010). I argue that a technology-based needs analysis should become commonplace in hybrid

and online language classes in order for teachers and language departments to address any issues students may have regarding access and literacy for technology. A needs analysis would be a proactive step for language teachers and departments to ensure that the students enrolled in hybrid and online courses have the necessary tools and literacy to succeed in these courses. In accordance with my argument, Goertler, Bollen and Gaff (2012) stated regarding hybrid curriculum "the hybridization of the curriculum is an iterative process that constantly conducts needs analyses and evaluations by all stakeholders, including potential stakeholders such as future (non-traditional) students (p.315) Goertler et al attributes a thorough needs analysis as a way to indicate which courses should be hybridized, how and also when. Winke and Goertler (2008) Winke et al 2010 and Goertler et al 2012 each were a needs analysis. I agree with the argument from Goertler et al (2012), that "additional technological advances necessitate that the needs analysis and evaluation is an iterative process." (p.304) This highlights the need for conducting a replication study as a needs analysis over time regarding the technological advances and how students' computer literacy may have changed since the previous studies conducted.

A need analysis is important to gain an understanding of preparedness for online and hybrid language courses. Data from a needs analysis can be used to help guide administrators and educators in the planning and implementation of hybrid and online curricula. In the field of CALL and in the context of hybrid and online instruction, the data can be used to inform instructors and teachers about which technology tools students may need to access at a language lab because they do not own these tools. Through this needs analysis, and other conducted by other researchers (Barrette, Messineo and DeOllos, Winke and Goertler, Goertler, Bollen and Gaff) teachers are able to gain an understanding of students' ability and inability to perform

certain computer tasks. A survey, such the ones used by Barrette (2001) or Winke and Goertler (2008), could to be modified and updated for the currents changes and evolution of technology available for use and implementation in hybrid and online classes.

Technologies used in CALL

In order to assess students' computer literacy and access, it is important to be aware of the technologies and CALL activities used in the context of hybrid and online language courses. To date, there is an abundance of research regarding technology and language learning (R J Blake, 2009; Conole, 2008; Garrett, 1991; Golonka et al., 2014; Kern, 2006; Levy, 2009; Warschauer, 2002). The research in the field sheds light on different technologies available and for use in the language classroom (R J Blake, 2009; Conole, 2008; Garrett, 1991; Golonka et al., 2014; Levy, 2009) , and also students perceptions and attitudes about technologies used in the language classroom (Bueno-Alastuey & López Pérez, 2014a, 2014b; Conole, 2008; Messineo & Deollos, 2005; Stepp-Greany, 2002). The field of CALL seeks to blend the technology, pedagogy and SLA theories to inform and to create a beneficial learning environment for students (Garrett, 2009).

When Garett (1991) originally published her article, the internet and CALL were in the early stages of implementation and development and there was not sufficient research in the field regarding technological implementation, nor for which language skills the technology should be used. Especially during the early 90's, most of the focus was on the new technology and the technology drove the pedagogy; however, in the field today it is accepted that the pedagogy should drive the technology used in language instruction (Blake, 2009; Garrett, 2009; Goertler, 2009). Garrett had foresight into the field of CALL by recognizing that we need to have the

pedagogy drive and influence the tools we use and how we use them (as described by Blake, 2009).

The essence of technology used in hybrid and online language classes is based around computers and internet connection. This is reinforced by Golonka et al (2014): "Well-established technologies, such as the personal computer and internet access, have become nearly ubiquitous for foreign language (FL) learning in many industrialized countries" (p. 71). Once a computer is connected to the internet, the types technologies available and variety of CALL activities are plentiful. A computer and internet access alone are generally not sufficient enough for students to be able to participate fully in CALL activities in a hybrid or online environment; students need access to headphones or computer speakers, a microphone and also a webcam or digital camera (Winke and Goertler, 2008). Some institutions of higher education may choose to purchase CALL software for language learning. (Warschauer & Healey, 1998). Now that I have briefly discussed research related to technology and language learning, I will begin to discuss certain specific technologies which are used in the context of hybrid and online language learning. First, I will discuss CMS/LMS, which is at the heart of hybrid and online language instruction, then I will discuss Web 2.0 and Computer mediated communication (CMC), followed by ePortfolio, pronunciation programs, blogs, wikis, discussion boards, chats and conclude with social media/social networking. It is important to note that there it is impossible to cover all of the technologies used in hybrid and online classes due to the sheer number of various technologies available and this literature review serves as a brief overview of technologies which students may use in the hybrid and online learning context.

Course Management Systems/Learning Management Systems

With the emergence of Course management systems and learner management systems (CMS and LMS), students can access a variety of different activities via a computer or tablet and internet access. (Golonka et al., 2014). Course management systems or learning management systems is a type of technology that is housed online which is can be a central part of hybrid or online classes. Golonka (2014) describes this technology as:

"server-based application used to present materials and services required for blended or distance learning (such as syllabi, required readings, calendars, etc.). Teachers and students access a CMS over a network through a web browser, using a menu- driven interface." (p. 72). CMS/LMS is the virtual space in which students can access course materials, post on discussion boards. A CMS/LMS can also be used to embed audio and video materials and culturally authentic materials (R J Blake, 2009). Due to the fact that CMS/LMS are arguably explicitly used in an academic context, some students may be unfamiliar with navigating and using these systems. Without the access to certain technology tools, especially a webcam, headsets and microphones, students may not be able to record audio and post videos to the CMS/LMS. A CMS can allow users or students to become more independent and confident as learners and using a CMS can aid in developing learner autonomy (Golonka et al., 2014). CMS can now be accessed using other tools such as a tablet through a graphic user interface (Lornsen, 2010). In a CMS, students can share and comment on each-others work, which allows for collaboration and peer assessment (Lornsen, 2010). In a CMS instructors and students can download documents and embed them within a CMS. Another positive of CMS is that a CMS can be integrated into universities authentication systems, which means that documents, and other virtual objects shared are within a password protected area (Lornsen, 2010).

ePortfolio

Another technology used in a hybrid or online environment is an E-portfolio (Banados, 2006; Garrett, 2009; Golonka et al., 2014; Lai & Morrison, 2013; Miyazoe & Anderson, 2010; Winke & Goertler, 2008). An E-portfolio is described as "A digital archive of student work created by a learner that records evidence of the learner's experiences, progress, achievements, and self-reflection" (Golonka et al., 2014 p.73). Depending on the components of an E-portfolio, a student may need to be able to have access to a computer with a word processor and may also need a camera and a microphone to create and upload recordings. ePortfolios can be housed in a CMS, or also on a website such as wordpress.com or wix.com. When creating an ePortfolio, students may need additional assistance with maintaining and developing a website. ePortfolios can be very time consuming and there are implementation barriers (Golonka et al., 2014). ePortfolios can also be used to record students' short, mid and long term goals and study plans, along with their learning experiences (Lai & Morrison, 2013). An ePortfolio can be used for study abroad students, or an internationally oriented majors to display their findings in an online environment (Garrett, 2009).

Pronunciation Programs

With the use of headsets, webcams and microphones, students can listen and record using pronunciation programs. Pronunciation programs have benefitted greatly from multimedia and pronunciation programs allow students to record and compare their recordings with a model (Warschauer & Healey, 1998). For ESL learners, Warschauer and Healey (1998) list the following pronunciation programs: *Ellis Master pronunciation* from CALI, *American Accent Program* from the Ford Language Institute, and *American Speechsounds* from Speech Communication. In order for students to be able to utilize the pronunciation programs listed

above and others, the students must have access to headsets, microphones and occasionally also a webcam to make the recordings. Not only do students need access to these tools, but they also need to be able to know how to make recordings and how to use and navigate different programs and software. Automatic speech recognition (ASR) is another pronunciation program in which students are able to compare their pronunciation with a target pronunciation, receive feedback and provide learners with an opportunity to work on speaking on an individual level, at their own pace (Golonka et al., 2014). A software called *CandleTalk* is a type of ASR program (Golonka et al., 2014). *Computer Speech Lab* is another ASR program that can be used in college-level courses, which can help improve learners' prosody, pitch and duration of speech (Golonka et al., 2014).

Web 2.0 and CMC

Web 2.0 tools and CMC are two influential technologies used in language learning. Goertler (2009) and Lornsen (2010) focused on Web 2.0 tools in the context of teaching German and discussed some of the tools they have implemented in their teachings. Web 2.0 refers to platforms in which communication can be between two or more parties, whereas Web 1.0 refers to coded websites that are designed for customers or users and there usually is not two-way communication happening. Web 2.0 tools are associated with computer mediated communication (Goertler, 2009). The current face of CALL instruction has become much more than just grammar-oriented tutorial exercises, most likely due to the availability of multimedia tools and CMC (Blake, 2005). These new technologies and opportunities for communication, production and collaboration will be wasted or underutilized if students do not have access, nor have the proper computer literacy to complete these tools.

In the early days of CALL, Garrett indicated that the emphasis on feedback was on grammar and there was more attention to grammar drilling; however, over the last two decades this has changed greatly (Blake, 2009; Garrett, 2009; Levy, 2009). In terms of interaction, computer mediated communication (CMC) is a key catalyst for online learners to be able to communicate with fellow students, native speakers and instructors. Blake (2005) mentions that CMC acts as the glue for creating human to human interactions in an online learning environment. According to Goertler (2009) one of the advantages of CMC interactions is the authentic opportunities for input. In terms of research in the field, Goertler (2009) stated that "In the field of call, the benefits of CMC have looked at three categories broadly: 1. Language use and development; 2. Classroom dynamics; 3. Student attitudes" (p. 75). Although there are many benefits regarding CMC including: democratization of class dynamics; using the TL 90 percent of the time; and students enjoyment of CMC; there are also several challenges that need to be taken into consideration such as: computer literacy, access and logistics, and lastly, privacy and security (Goertler, 2009). CMC tools have made educators consider the utilizing CMC in their courses due to the benefits (Blake, 2006).

Even when technology is available, Goertler (2009) mentioned that the implementation of CMC can be hindered due to slow internet and or an unstable connect, and the lack of appropriate hardware and software. When CMC can be implemented, however, Goertler (2009) has noticed in her teaching that different students who are active talkers in face-to-face classes are not always the active talkers in online discussions, and she implements "text-based CMC tools in all levels of my teaching, so that all students have a chance to shine" (p. 83). In order for CMC to flourish in Language courses with technology, students must have access to the necessary tools to participate, which are often headsets with microphones, webcams, and word

processors (Winke & Goertler, 2008). Blake indicated that CMC is a bimodal mode of communication: Students are able to chat with instructors in written and or spoken language. Blake (2005) maintained that, "successful online language courses make use of an array of technological tools necessary to make the learning experience engaging—computer mediated communication (CMC) being at the forefront of these new techniques for promoting collaborative exchanges" (p. 498). CMC is especially important for fully online classes because CMC is the only way in which students will get to know their peers and teachers. Without CMC, it would be very difficult, if not impossible, to make fully online classes communicative, while providing enough input and interaction that is beneficial for language learners.

Blogs

Researchers have documented the use of blogs in the foreign language classroom (R J Blake, 2009; Chun et al., 2016; Conole, 2008; Garrett, 2009; Hafner, 2014; Hirschel, 2012; Hong & Samimy, 2010; Kern, 2006; Levy, 2009; Miyazoe & Anderson, 2010; Nielsen, 2013; Wang, Shenggao, Vasquez, 2012). Golonka et al (2014) describes blogs as "a web application that displays entries authored by the blog owner with time and date stamps and is visible to other web users" (p. 72). Writing in a blog can support personal journaling and enable feedback via comments on blog posts, while also encouraging collaborative learning (Golonka et al., 2014). Blogs are generally used as a tool for reading, writing and reflection in the foreign language classroom; however, the emergence of vlogging (video blogging) could also give students an opportunity to work on their speaking and listening skills in a similar way to more traditional blogging. Blogs allow for asynchronous writing and communication between students and teachers (Golonka et al., 2014). Blogs can be used to record experiences, keeping up to-date with new developments and as a reflective diary (Conole, 2008). To be able to blog, students

will most likely need a computer with internet access and will possibly have to know how to write using special characters, or a different alphabet altogether depending on the target language.

Wikis

Wikis are another technology that can be used in foreign language classes (R J Blake, 2009; Chun et al., 2016; Goertler et al., 2012; Kern, 2006; Lai & Gu, 2011; Levy, 2009; Lornsen, 2010; Miyazoe & Anderson, 2010; Wang, Shenggao, Vasquez, 2012). Similar to blogs, wikis are used in collaborate L2 writing and are a part of asynchronous writing and CMC (Golonka et al., 2014). Wikis and blogs enable new forms of discourse, authorship and identity construction, while also allowing for new ways to form, choose and maintain learning communities (Kern, 2006). Wikis allow students to interact, collaborate, network and self-publish (Wang, Shenggao, Vasquez, 2012). Blogs and wikis are the most commonly investigated web 2.0 technologies (Wang, Shenggao, Vasquez, 2012).

Research on Computer literacy

The findings for each of these studies are fairly similar and resonate the message that although students have basic computer knowledge and expertise, students do not possess the expertise in more advanced CALL tasks and students (and also instructors) need to be trained (Barrette, 2001; Goertler et al., 2012; Messineo & DeOllos, 2005; Winke & Goertler, 2008; Winke et al., 2010). Each survey showed that students do have some basic computer knowledge; however, not all students had previous experience with Macintosh computers. Students are more experienced with technological applications that they use in their daily and personal lives. These technological applications are word processing, emails, and surfing the web. Students have much less expertise in more advanced CALL tasks such as developing and maintaining a website,

recording and uploading audio, and editing video. Students who made negative comments about computer aided instruction stated that technological difficulties and a lack of support led to their dissatisfaction (Barrette, 2001). To overcome these technological difficulties, Garrett (2009) emphasized that there needs to be infrastructure implemented by language departments in the form of computer labs and training centers to ensure that students and instructors have a space in which they can better develop their skills and receive necessary training to succeed with the technological components in their Language courses with technology. Students enrolled in online or hybrid language courses have another layer of difficulty within their courses regarding technology; language learning by itself is no easy undertaking, and when students not only have to learn a language but must also navigate various technologies in their courses they are at a disadvantage in comparison to their face to face counterparts who do not need to worry about overcoming technological difficulties. Although there are technological difficulties that students must overcome, CALL technological innovations have "engaged learners in ways never before available" (Garrett, 2009). This quote highlights one of the reasons why it is worth overcoming the technological learning curve for students; the technological affordances and benefits for communication and input far outweigh the technological difficulties which students must overcome. According to Messineo and DeOllos (2005), web use and E-mail are the two IT applications that the students are the most experienced with and in contrast online courses and online homework submission are two IT applications that students have the least experienced with. Clearly these data show a red flag for instructors and administrators if students are not experienced or comfortable with online courses and online homework submissions.

Regarding ownership and accessibility of technology tools, the research shows that although many students either own or have access to major technology tools, there is still a

number of students who either cannot get access or ownership to these tools, or have difficulty finding them (Goertler et al., 2012; Winke & Goertler, 2008; Winke et al., 2010). Until the number of students who cannot get major technology tools have readily available access to them, these students will not be in a position to succeed such as students who do own these tools or can access them easily (Messineo & DeOllos, 2005). Findings also bring to light the specific tools which students do not own, nor can find these tools easily. Some of these tools include: webcams, digital cameras, video cameras, and microphones (Winke & Goertler, 2008; Winke et al., 2010). Findings from Winke, Goertler, and Amuzie (2010) showed that LCTL learners self-reported significantly lower levels of computer literacy than learners of commonly taught languages. An interesting finding from Goertler, Bollen and Gaff (2012) suggested that students enrolled in a hybrid course may not be more interested in taking or continuing with hybrid language instruction. Nineteen percent of students enrolled in this hybrid course would not want to take another hybrid language course. This could be due to the students not being satisfied with their learning outcomes in the hybrid course. Goertler, Bollen and Gaff (2012) reiterated the fact that students do not all have access to microphones, even when enrolled in a hybrid course where microphones are needed. This study suggested that students who had a low ownership of microphones could access a microphone, thus students were utilizing a language lab which had microphones. Students in this hybrid course were also made aware of the language lab; however, the overall student population was not.

Research Questions

The research questions of this thesis serve to give the field an update on students' computer access and literacy in order to gain an understanding of which technology tools students own, can find with ease and with difficulty and cannot find and also the literacy of foreign language

students in certain computer tasks. The second research question will inform the field on the personal vs. academic/professional literacy divide and which environment (personal lives, non-language classes, languages classes, and future or imagined language learning classes) foreign language students use specific multimedia. The third research question investigates students competency regarding computer-based tasks such as using a word processor, sending emails, developing and maintaining a website etc. The fourth research question investigates students interest in hybrid and fully online language instruction. The research questions are as follows:

1. Which technology tools do foreign language learners' have access to?
2. How do students use technology in their personal lives in comparison to an academic/professional setting?
3. What are students' competence in computer-based tasks?
4. What are students interests regarding hybrid and online instruction?

CHAPTER 3: METHOD

Introduction

In this section I first discuss the participants in this study (target language and level of study, target language and academic level and target language and gender). Then I discuss the materials used in this study (a four-page paper-based survey) and lastly, I discuss the procedure of this study so that this study could also be replicated for future research.

Participants

The survey sample included 178 students from classes who were taking French (N=83) German (N=33) and Spanish (N=62) in the first two years of an undergraduate language program. At this Midwestern University the basic level language courses consist of the first two years of study in a four-year language program. These language courses focus on all four skills (reading, writing, listening and speaking) and tend to be language focus and not content based.

Below is a table (Table 1) which shows the breakdown of target language studied and the level of the study. Table 1 lists the three language programs from which I collected data (French, German, and Spanish), and also the year of study, which in this project was years one and two in the four-year language programs. As seen below, there is a higher number of first year students in each language (43 in French, 21 in German and 39 in Spanish).

Table 1
Target Language and Level of Study

		Language						Total
		French		German		Spanish		
Level	Year							
	1	43	41.7%	21	20.4%	39	37.9%	103
	2	38	53.5%	12	16.9%	21	29.6%	71
	Missing Data	2	50.0%	0	0.0%	2	50.0%	4
Total		83	46.6%	33	18.5%	62	34.8%	178

Notes. Year 1=101 and 102 courses, year 2= 201 and 202 courses

Table 2 displays the sample size by target language and gender. As can be seen in table

two, most students were female and fewer were male. A few students did not indicate their gender or indicated a gender other than male or female. In this project I put them together in other for transgender and gender fluid students.

Table 2
Participants by Target Language and Gender

		Language					Total	
		French		German		Spanish		
Gender	Unidentified	0	0.0%	0	0.0%	1	100.0%	1
	Female	59	54.1%	16	14.7%	34	31.2%	109
	Male	21	32.8%	17	26.6%	26	40.6%	64
	Other	3	75.0%	0	0.0%	1	25.0%	4
Total		83	46.6%	33	18.5%	62	34.8%	178

The table 3 displays the sample size and the participants academic level. Normally in the first two years of language courses consist of mostly undergraduate students; however, there were 3 graduate students in the sample size and I did not remove them from the sample.

Table 3
Participants by Target Language and Academic Level

		Language					Total	
		French		German		Spanish		
Grade	Unidentified	1	100.0%	0	0.0%	0	0	1
	Freshman	24	40.7%	18	30.5%	17	28.8%	59
	Sophmore	29	50.0%	6	10.3%	23	39.7%	58
	Junior	17	43.6%	8	20.5%	14	35.9%	39
	Senior	9	50.0%	1	5.6%	8	44.4%	18
	MA/MS	2	100.0%	0	0.0%	0	0.0%	2
	PhD	1	100.0%	0	0.0%	0	0.0%	1
Total		83	46.6%	33	18.5%	62	34.8%	178

Materials

The data for this study were collected via a four-page paper-based survey during the last two weeks of the Fall semester 2017. The survey was paper based to avoid any bias that an online survey could potentially generate. The questions on the survey were based on a survey constructed by Winke and Goertler (2008) with some additional questions on social media use and online language instruction. The full survey as used in this study is in the Appendix. The questions in the survey concerning computer literacy and preparedness for using technology in

the language classroom were derived from a survey constructed by Davies (2007). This too is in the Appendix.

Survey

The survey consisted of items related to demographics of students in the German, French and Spanish classes (age, gender, grade level and native language) which are questions 1-7. The survey asked students about their ownership of technology tools (question 8). The survey also asked students about their ability to perform certain computer tasks (question 15), their interest in hybrid and online instruction (question 17 and 18) and lastly their use of multimedia tools in different environments (question 20). There were a few modifications to this survey from the original survey administered in the 2008 study. Questions about social media were added in the multimedia use section, and the question about interest in fully online instruction was also added.

Procedure

I gave the surveys and consent forms directly to teaching assistants and instructors to give to their language classes. The participants were given a four-page paper-based survey at the beginning of their language class during the last two weeks of the Fall semester 2017. I instructed the teaching assistants and instructors to have the students read the consent form, tear off the consent form and begin the survey. The instructors allowed the students 10-15 minutes to complete the survey. After the surveys were administered, the data was then collected directly from the instructors and teaching assistants and given to me: 335 surveys were handed out and 178 surveys were completed, making the return rate 53%. I digitized the surveys by scanning them in as PDFs in batches. After scanning in all of the surveys, I later converted the PDF files to TIFF files in order for the surveys to be compatible for Office Remark OMR software to analyze the data. Once all of the surveys were input into Office Remark OMR and read through

the template that I created, I manually checked the results for any errors or discrepancies. The surveys were read in the software by first uploading a blank survey TIFF file and creating a template to read and analyze the differences in each survey. With Office Remark OMR, the template must align directly with the TIFF files, otherwise answers will be in the wrong place and thus coded incorrectly in the data cells. Once the data were analyzed, and errors were corrected within Office Remark OMR, I exported the files as a CSV file and imported it into SPSS version 25 for a descriptive statistical analysis.

CHAPTER 4: RESULTS

Introduction

In the results section I present the data from the survey. I begin with the results for ownership and accessibility of technology tools (see table four). Then I present the results regarding students' abilities to complete computer-based tasks. Next, I present the results regarding multimedia tools for personal and academic use. In the last two sections of the results I will present the data regarding interest in hybrid instruction and fully online instruction. These results and their relation to other results in the field will be further discussed in the following discussion section.

Ownership and Accessibility of Technology Tools

Question 8 on the survey asked the participants about ownership and access to technology tools such as: computers, laptops, computer speakers, headphones, microphones, printers, the internet, webcams, digital cameras and video cameras. All of these tools could potentially be used for hybrid and online courses especially regarding the access to online CALL materials. As an instructor or administrator, knowing which technology tools students cannot find access to is crucial in order to be aware of which tools students will need to participate in hybrid and fully online courses. The two technologies students cannot find in this study were Mac desktops and Mac laptops, although students did report high percentages regarding owning, or being able to find all four computers listed. This signifies that although students may not be able to find a Mac desktop or laptop, they do own or have access to computers. This could depend largely on the contract or agreement that a college or university has with Macintosh or PC companies. On a campus with an agreement with a PC company, it is likely that finding access to Macintosh computers may be more difficult if not impossible. 4.1 % of students

reported they cannot find computer speakers, and 3% of students reported they cannot find access to a video camera.

Students self-reported a very high percentage that owned internet access at 91 % and 9 % had access to internet. Although one could argue that this means the participants could participate and have access to online CALL materials, that is not the case because the data do not show the participants bandwidth. The data revealed that a high number of participants own and can find headphones (98%). Many headphones sold currently have microphones built in and it would have been helpful to differentiate headphones with and without a microphone to gain a better understanding of the number of students who do or do not have access to a microphone at all. 3.6 % of participants did report they cannot find a microphone, which could be problematic for distance learning students who may not have access to a computer lab with headsets and microphones. The fact that each technology tool has a percentage in the sample which cannot find certain tools needs to be considered, because these participants represent students who will need assistance finding or gaining access to certain technology tools.

The data generated by the survey regarding question 8 is summarized in Table 4 below.

Table 4
Summary of the Participants' Ownership of and Accessibility to Technology Tools

Tool	Own Count	%	Can find it Count	%	Can find w/ diff. Count	%	Can't find Count	%	Total	Missing Data Count
1.PC Desktop	32	18.8%	131	77.1%	5	2.9%	2	1.2%	170	9
2.PC Laptop	82	49.1%	59	35.3%	20	12.0%	6	3.6%	167	11
3.Mac Desktop	23	13.9%	86	51.8%	32	19.3%	25	15.1%	166	12
4.Mac Laptop	103	60.2%	25	14.6%	21	12.3%	22	12.9%	171	7
5.Computer Speakers	70	40.9%	59	34.5%	35	20.5%	7	4.1%	171	7
6.Headpones	163	91.6%	13	7.3%	1	0.6%	1	0.6%	178	3
7.Microphone	73	43.5%	45	26.8%	44	26.2%	6	3.6%	168	10
8.Printer	83	49.1%	83	49.1%	2	1.2%	1	0.6%	169	10
9.Internet Access	152	91.0%	15	9.0%	0	0.0%	0	0.0%	167	12
10.Webcam	145	86.8%	14	8.4%	5	3.0%	3	1.8%	167	11
11.Digital Camera	95	57.9%	44	26.8%	21	12.8%	4	2.4%	164	14
12.Video Camera	81	48.5%	57	34.1%	24	14.4%	5	3.0%	167	11

Note. w/=with; diff.=difficulty

Level of Ability to Perform Computer-based Tasks

Question 15 in the survey asked participants to report their level of ability to complete certain computer-based tasks, such as typing in non-English language characters, inserting pictures and graphs in documents, making recordings and saving them to a hard drive, and maintaining a website. For 17 tasks more than 50% of the participants reported they could easily complete them. Although the majority of participants reported they could complete the first 17 tasks easily, there still is a percentage of participants that reported they could not complete certain tasks at all (see Table 4). These participants represent the students who may not have literacy in specific tasks which instructors or teachers would assume they do have literacy in. There are 8 tasks which fall below 50% in the “easily” category and these tasks are significant to be aware of when designing curriculum utilizing CALL materials in order to proactively provide guidance and training in completing these more difficult tasks. According to the table below,

developing and maintaining a website is the most difficult task (20 % of participants reported they could not develop or maintain a website at all). Another difficult task based on the findings of this table show that 9.5% of participants are not able to create an audio CD from mp3 files. Developing and maintaining a website might be necessary for online or hybrid courses in which students create an ePortfolio. Creating an audio CD from mp3 may not be as important of a task currently, because it seems that audio recordings could be posted on a CMS, uploaded to a cloud or housed virtually.

Table 5

Participants' Abilities to Perform Certain Computer-based Tasks (Organized for the Easiest to the Most Difficult)

Computer Task	easily		very well		pretty well		not very well		w/ very little diff.		w/ diff.		not at all		Missing
Access email from computer other than my own	177	99.4%	0	0.0%	0	0.0%	0	0	0	0.0%	0	0.0%	1	0.6%	0
Cut, copy, paste	174	97.8%	0	0.0%	0	0.0%	0	0	2	1.1%	0	0.0%	2	1.1%	0
Change font size and color	172	96.6%	0	0.0%	0	0.0%	0	0	0	0.0%	3	1.7%	1	0.6%	2
Send attatchments and open attatchments	172	96.6%	0	0.0%	0	0.0%	0	0	3	1.7%	0	0.0%	2	1.1%	1
Navigate the internet	169	94.9%	0	0.0%	0	0.0%	0	0	6	3.4%	1	0.6%	1	0.6%	1
Create new free email	169	94.4%	0	0.0%	0	0.0%	0	0	5	2.8%	1	0.6%	3	1.7%	1
Save and download files from internet	167	93.8%	0	0.0%	0	0.0%	0	0	6	3.4%	2	1.1%	2	1.1%	1
Email to ind individuals and groups	167	93.8%	0	0.0%	0	0.0%	0	0	5	2.8%	1	0.6%	2	1.1%	3
Post messages on an online board	161	90.4%	0	0.0%	0	0.0%	0	0	7	3.9%	3	1.7%	2	1.1%	5
Play a video on website, computer and dvd	160	88.9%	0	0.0%	0	0.0%	0	0	11	6.1%	2	1.1%	4	2.2%	3
Play audio files from web and computer	154	86.5%	0	0.0%	0	0.0%	0	0	19	10.7%	2	1.1%	1	0.6%	2
Insert pictures and graphs	151	84.4%	0	0.0%	0	0.0%	0	0	25	14.0%	1	0.6%	1	0.6%	1
Create tables in my documents	144	80.9%	0	0.0%	0	0.0%	0	0	23	12.9%	9	5.1%	1	0.6%	1
Install a program from dvd or cd	110	61.5%	0	0.0%	0	0.0%	0	0	42	23.5%	18	10.1%	9	5.0%	0
Copy files from computers hard drive	103	57.9%	0	0.0%	0	0.0%	0	0	40	22.5%	24	13.5%	10	5.6%	1
Insert audio and vieo files	95	53.1%	0	0.0%	0	0.0%	0	0	52	29.1%	25	14.0%	4	2.2%	3
Copy a track from audio cd on hard drive and store as mp3	91	51.1%	0	0.0%	0	0.0%	0	0	37	20.8%	34	19.1%	14	7.9%	2
Create an audio cd from mp3	84	46.9%	0	0.0%	0	0.0%	0	0	37	20.7%	40	22.3%	17	9.5%	1
Upload a video recording	83	46.6%	0	0.0%	0	0.0%	0	0	42	23.6%	40	22.5%	12	6.7%	1
Download unzip a file	79	44.4%	0	0.0%	0	0.0%	0	0	51	28.7%	30	16.9%	15	8.4%	3
Edit video	70	39.3%	0	0.0%	0	0.0%	0	0	54	30.3%	42	23.6%	11	6.2%	1
Make a sound recording and save to hard drive	68	38.2%	0	0.0%	0	0.0%	0	0	46	25.8%	49	27.5%	14	7.9%	1
Type non English characters	63	35.4%	0	0.0%	0	0.0%	0	0	72	40.4%	34	19.1%	6	3.4%	3
Develop and Maintain a Website	34	19.1%	0	0.0%	0	0.0%	0	0	41	23.0%	64	36.0%	36	20.2%	3
Forward Emails	0	0	14	7.9%	95	53.4%	63	35.4%	0	0.0%	0	0.0%	6	3.4%	0

Notes. w/=with; diff=difficulty

Multimedia Tools for Personal and Class Use

Question 20 on the survey asked participants to report on their usage in various environment, i.e., in the personal lives, non-language classes, language classes, and their beliefs on the usefulness of tools for language learning. This data displays the divide between multimedia in personal vs. academic/professional life. The most heavily used multimedia were social media platforms (Instagram, Snapchat, Twitter, and Facebook). Instant messaging was also highly reported as used in personal life. The most heavily used multimedia tool in languages classes is D2L, which is the learner management system in place at this Midwestern university. Course websites, exercises and quizzes and video/audio were the highest following multimedia tools behind D2L. The self-reported data indicates that Twitter was not used at all in language classes, but 9.5 % of the population in the sample size reported it would be useful for language learning. Other social media platforms were also reported as "would be useful" in language learning. The data indicates that the participants thought each multimedia tool would be useful for in language learning to a certain degree. The tasks which were perceived by participants as most useful in language learning are discussion boards (32 %), blogs (30%) and listservs (29.7 %). Although each multimedia was shown to be considered useful by some students, no multimedia tool was reported to be significantly useful (over 50 %). It is concerning that usefulness of each multimedia tool is a minority, which could signify that students are unsure about how multimedia can be implemented in their courses as opportunities for language learning, especially regarding input outside of the classroom and interacting with authentic cultural materials.

Table 6

Participants' Media Use in Various Environments and Their Beliefs on the Usefulness of the Tools

	personal life		non lang class		lang class		would be useful			Missing
Multimedia		*Percent*		*Percent*		*Percent*		*Percent*	Total	
24.instagram	140	91.5%	1	0.7%	2	1.3%	10	6.5%	153	29
25.snapchat	152	91.0%	2	1.2%	2	1.2%	11	6.6%	167	16
26.twitter	129	87.8%	4	2.7%	0	0.0%	14	9.5%	147	37
21.Text messaging	142	83.5%	5	2.9%	5	2.9%	18	10.6%	170	25
18.Facebook	131	81.9%	12	7.5%	1	0.6%	16	10.0%	160	33
8.IM	131	78.0%	8	4.8%	4	2.4%	25	14.9%	168	30
20.Ipod/MP3 player	112	77.8%	9	6.3%	6	4.2%	17	11.8%	144	46
23.wechat	57	70.4%	3	3.7%	3	3.7%	18	22.2%	81	99
7.chat	129	69.0%	18	9.6%	8	4.3%	32	17.1%	187	24
22.whatsapp	61	67.0%	6	6.6%	3	3.3%	21	23.1%	91	93
15.computer games	96	62.3%	12	7.8%	9	5.8%	37	24.0%	154	44
19.Second life	43	58.9%	7	9.6%	4	5.5%	19	26.0%	73	111
5.wikis	104	57.1%	32	17.6%	10	5.5%	36	19.8%	182	31
9.videochat	110	56.1%	23	11.7%	21	10.7%	42	21.4%	196	25
4.blogs	91	50.6%	29	16.1%	6	3.3%	54	30.0%	180	37
16.cd/dvd	88	49.2%	34	19.0%	26	14.5%	31	17.3%	179	47
14.pod/video casts	88	46.3%	36	18.9%	14	7.4%	52	27.4%	190	32
1.public websites	163	45.4%	93	25.9%	32	8.9%	71	19.8%	359	4
6.email	148	40.1%	93	25.2%	72	19.5%	56	15.2%	369	7
13.online digital video/audio	86	31.9%	61	22.6%	80	29.6%	43	15.9%	270	27
11.listservs	39	30.5%	27	21.1%	24	18.8%	38	29.7%	128	92
12.video/audio	91	27.5%	77	23.3%	100	30.2%	63	19.0%	331	15
3.D2L	44	17.7%	43	17.3%	108	43.4%	54	21.7%	249	1
10.disc boards	33	17.6%	69	36.9%	24	12.8%	61	32.6%	187	45
17.online ex./quizzes	51	17.5%	91	31.3%	98	33.7%	51	17.5%	291	14
2.course websites	35	10.9%	96	30.0%	128	40.0%	61	19.1%	320	4

Notes. Lang= Language; 3. D2L= Desire to Learn (a learning management system); 8. IM= Instant Messaging; Ex = exercises;

Interest in Hybrid Language Instruction

Question 16 in the survey asked students about their interest in hybrid language instruction. The results show that the majority of students might be interested in a hybrid language course.

Table 7
Number of Participants Interested in Taking a Hybrid Language Class

	Frequency	Percent
Yes	54	30.3
No	38	21.3
Maybe	86	48.3
Total	178	100

Interest in Online Language Instruction

Question 17 in the survey asked participants about their interest in online language instruction.

Table 8
Number of Participants Interested in Taking an Online Language Class

Response	Frequency	Percent
Yes	35	19.7
No	101	56.7
Maybe	42	23
Total	178	100

These results indicate that the majority of students are not interested in taking language courses entirely online. This could be due to a multitude of reasons; however, it is difficult to surmise and generalize the reasoning for the lack of interest in online courses due to the fact that the students could not be interviewed with follow up questions regarding interests in online classes. When comparing hybrid and online interest, it is clear that students are more interested in hybrid courses than online courses, and the online interest is strongly skewed towards no interest in online courses.

CHAPTER 5: DISCUSSION

In this discussion section, I discuss the results according to themes that I believed are most interesting and that need discussion the most. First, I discuss students' access to technology tools that are commonly used in language classrooms, both as the students indicated on this survey, and how their access changed since prior studies were conducted. Second, I review the personal, academic, and personal computer literacies that the students indicated they had. Third, I review the new trends in multimedia potential for CALL that this survey research seems to indicate. And fourth and finally, I review the students' interests, as they indicated on the survey, in online and hybrid language learning.

Access to Technology Tools for CALL

The self-reported results from the participants shows that they do have access to the necessary technology tools for CALL activities and hybrid and online courses. In table 4 above, the participants reported their access for technology tools. Overall, the data indicate that if the participants did not own certain technology tools, the majority of the participants could either access these tools easily or with difficulty. There was a high number of participants that reported they either owned or could easily gain access to headphones and webcams, which means that tele-collaboration and CMC would be possible for these participants. This would allow participants to participate in CALL tasks in hybrid and online courses. The technology tools with the highest reported accessibility/ownership are: Internet access, headphones and webcams. Internet access and headphones were also noted in Winke and Goertler (2008) with the highest percentage of ownership, however in 2008 the ownership of a webcam was 37 % in comparison to 86% currently. The percentage of ownership for microphones has increased by 8.5% (35% in 2008 vs 43.5% in 2018).

The results indicate that for the most part, access to technology tools has become less of an issue for students because the percentages of tools students cannot get access to have decreased since Winke and Goertler's (2008) study. In this study, there is only one technology tool that 15% of the participants could not get access to (Mac Desktop), however in Winke and Goertler (2008), there are two tools which 16% of students could not gain access to (Mac Desktop and laptop). In this study, there are 2 technology tools where the participants cannot gain access is above 10% (Mac Desktop and Mac Laptop); however, in the Winke and Goertler (2008) study there are five technology tools above 10% (Mac Desktop, Mac Laptop, Microphone, Webcam, and Video Camera). It is not surprising, however, that in the 2008 study and the one today students at this particular university had difficulties in accessing Macintosh products, as the university itself has a computer purchasing agreement with Dell, a PC company, and because of that Macintosh computers at the university are scarce if not rare. It is important to note that depending on the type of computer (PC or Mac), there could be compatibility issues (Chenoweth, Ushida, Murday, & Ushtoa, 2006).

More interesting is the general access to microphones, webcams, and video cameras today, which is most likely because computers today have these products built in. They no longer have to be purchased separately, as they needed to be in the mid 2000s. This suggests that tools which may have been less accessible ten years ago are more commonly possessed, or attainable for students interested in enrolling in hybrid, and online courses as well as course utilizing CALL materials, which is a benefit to online learning. The fact that Mac laptops and desktops have the lowest accessibility is consistent in both studies, and most likely the results on access to those would change if the study were conducted at a university that had an agreement with Macintosh, not a PC company. As mentioned before, at this university, PC desktop and laptop computers

have a much higher rate of accessibility; 1.2% of participants reported they cannot find a PC desktop and 3.6% of participants reported they cannot find a PC laptop. PC desktop access has increased in comparison with Winke and Goertler (2008), and PC laptop access has decreased slightly at .6%. A plausible explanation for the decrease in PC laptop access is a potential increase at this university with personal Macintosh laptop purchases, or perhaps even because of an increase in smart phone purchases over laptop purchases. But such speculations would need empirical data to back them up.

Although the participants were able to access the majority of the technology tools, it does not necessarily mean that they feel comfortable using them and have literacy in specific computer tasks when using said technology tools.

Personal, Academic and Professional Computer Literacy

Similar to Winke and Goertler (2008), the survey results indicate that there is still a literacy divide between personal versus academic/professional usage. In table 5, participants reported their abilities to complete certain computer-tasks from high to low. Participants reported that they can easily work with email, navigate the internet (etc.) Overall, there are 17 tasks above 50% which participants reported they could complete easily. In Winke and Goertler (2008), only 14 tasks were reported which above 50% of the participants could complete easily.

The task in which the most participants reported they could "not at all" do was developing and maintaining a website (20%). This could be the case because developing a website is not something students are required to do for their classes and may not be interested in developing their own individual website in their personal time. Other tasks participants were not able to do are: Copy a track from audio CD on hard drive and store as MP3 (7.9 %), Create an audio CD from MP3 (9.5 %), Download and unzip a file (8.4 %), make a sound recording and

save to hard drive (6.2%), upload a video recording (6.7 %) and edit a video (6.2 %). Forwarding an email is the only task that participants reported as doing very well (7.9%), pretty well (53.4%) and not very well (35.4%) and no participants indicated they could forward an email easily.

These results are also consistent with Winke and Goertler's (2008) results. Students have a harder time creating audio and video files and working with advanced features in word-processing programs. This could cause difficulties for students because many of these tasks could take place or even be necessary in a Language courses with technology. Creating videos, uploading sound, and video recordings may be used for projects, portfolios, and can be used in assessments. It is also possible that students will be required to make digital voice recordings to be assessed and critiqued by the instructor. Based on the results, many students would be at a disadvantage regarding literacy if an instructor required the students to create a website for a final or group project. Ushida (2005) and Winke and Goertler (2008) noted that one of the issues is a lack of computer skills transfer from personal to academic use, which is why this is not an access or literacy problem, but rather a problem with training and assessing the needs of students regarding completing computer-based tasks in an academic or professional environment.

Multimedia Potential for CALL

Social media was used almost exclusively in personal life, although it was reported that social media platforms could be useful in language learning by a minority of students. In the realm of communicative language teaching, social media platforms could offer the potential for students to use media in their language classes that they enjoy in their personal lives, while also gaining access to an online community of native speakers. The results also indicate that there are underutilized tools in foreign language classrooms which could be used in order to foster more

communication between students and a larger online community inside or outside of the classroom. The highest number of multimedia used in language courses is course websites and D2L, the learning management system at this university. This brings to light the fact that other tools such as chats, IM, video chats, and social media platforms could be used in language courses more frequently and students could possibly benefit from these social media platforms in classes.

Discussion boards and blogs are reported to be the highest multimedia which would be useful in language classes at 32 and 30%. This could be due to the fact that the participants view these multimedia tools as a way to communicate with their peers and others. In comparison to Winke and Goertler (2008), participants reported that online exercises and quizzes would be useful, along with Angel (the LMS at that time). Email and public websites were also reported as "would be useful" (Winke & Goertler, 2008). Perhaps a reason why these results are not very consistent with the Winke and Goertler (2008) is due to a change in common use of media use. In many ways text messaging could be used more frequently than email, which would explain why the percentage of participants reported that email could be useful has dropped by 15% from 2008-2018. In this sample size, however, email is still reported as "would be useful" at 15 %.

Students interests in Hybrid and Online Language Instruction

The results indicate that the participants may be interested in hybrid language instruction (48%), followed by yes (30%) and 20% reported that they are not interested in hybrid language instruction. The percentage of participants not interested in hybrid language instruction is lower than Winke and Goertler (2008); 39% of participants were not interested in hybrid language instruction in 2008, whereas the participants in this study dropped to 20%. Students may be interested in hybrid language instruction because they find technology useful, have opportunities

to interact with and in the target language outside of the classroom. (Winke & Goertler, 2008).

Students may also not be interested in hybrid language instruction for a multitude of reasons such as: a lack of face- to face real person interactions, feeling lost, a belief that language learning would be more difficult and less interesting. (Winke & Goertler, 2008).

Fully online instruction is a somewhat new mode of instruction for many students, which could explain why many students might be interested or were not interested. It is very possible that students believe that fully online instruction could be more cumbersome and difficult than hybrid or face to face instruction.

CHAPTER 6: LIMITATIONS, IMPLICATIONS AND CONCLUSION

Introduction

Throughout the thesis, I reflected on the procedures I undertook to conduct the study, and I also reflected on the outcomes. As a researcher, one always finds ways to improve. This, in the final section of this thesis, I discuss the limitations, implications, and directions for future studies that are important for subsequent researchers, and for myself.

Limitations

One limitation of this study is the instrument itself; an anonymous survey can be less informative than direct observation of skills. It is very possible students misread, misunderstood or answered questions based on what they thought the researcher was looking for. Regarding the survey itself, one limitation was found after collecting the data, namely that there was no space for students to indicate that there was technology they did not know about and adding this category to future surveys may provide very different results. Two students mentioned this issue with the survey in the comments box (see the Appendix). Another possible limitation with this survey is that some students may have not taken the survey seriously.

Another limitation to this study is the fact that the questionnaire was completely anonymous, and it was not possible to follow up with the students and ask them any other questions about technology and language learning or to gain clarification on any of their responses. There are numerous examples of responses that could have shed light in the data if it was possible to follow up with the participants.

Due to the fact that the last two sections of the survey can be quite tedious, it is also possible that students rushed through to simply finish the survey. This section would be less tedious perhaps if it was performed online, but that could lead to data bias towards students who

are more comfortable using computers.

Due to the fact that this survey was voluntary and there were no incentives for instructors and students could explain the relatively small sample size in comparison with Winke and Goertler (2008). This sample size is not as generalizable like the sample size collected in 2008 for the initial study in terms of demographics of intact foreign language programs; however, the data do represent a snapshot of foreign language students' access to technology tools, literacy in completing certain computer-based tasks and the environments in which students use multimedia.

Pedagogical Implications

One pedagogical implication of this study is the students' opinions and attitudes about hybrid and online language classes which is illustrated by a student comment that "languages should be taught in person, not behind a screen." This is a mentality that is possibly shared by many students, especially those who have never taken a hybrid or fully online language course. This negative reaction to a major shift or change in how languages are taught will face some resistance from students, especially those with little to no experience with Language courses with technology, and students who have this mentality may not be able to take advantage of some of the affordances of Language courses with technology if they do not believe in them working. Learning a language online is changing the dynamics and environment for learners however, the results from Ushida (2005) illustrate that students find online learning challenging.

Another implication from this study that does support implementing CALL activities in courses and offering hybrid and online classes is the fact that there was a significant number of students who either owned a type of computer or could easily find access. Although the results regarding interest in hybrid and online instruction was not extremely favorable towards "yes",

there were still participants who indicated they were interested in hybrid and online instruction, and there was an even higher number of participants who indicated they might be interested in hybrid or online instruction. This signifies that there is a market for students who would take advantage of hybrid and or online instruction. By integrating multimedia tools students enjoy using in their personal lives, perhaps students would find hybrid and online language instruction more interesting or beneficial. There may be initial challenges with students' beliefs regarding learning in a hybrid or online environment, which teachers and language departments could address by offering workshops for students to promote different hybrid or fully online instructional methods.

Directions for Future Studies

For future studies, it could be insightful to give this survey at the beginning of a hybrid, online or technology enhanced language course and administer the survey again at the end of the course. This is similar to Barrette's (2001) methods. Due to the fact that this survey contains many items, a researcher or teacher could easily implement such a study by using the final three pages of this survey in paper form, or on an online survey platform such as Qualtrics or Survey Monkey if the class is fully online. It could also be beneficial to add more questions regarding smartphones to this survey for instructors and administrators interested in tapping into the potential affordances of Mobile assisted language learning (MALL).

Language courses could benefit from using surveys like the one used in this paper as a type of needs-based analysis to inform teachers and administrators of the equipment and skillsets that students need in hybrid and online language courses. In the last 20 years, the field of CALL has begun to fill a gap by conducting research regarding teacher and student preparedness and training for technology and CALL (Arnold, 2013; Barrette, 2001; Hubbard, 2013a; Lai &

Morrison, 2013; Lai et al., 2014; O 'brien, 2008) and by gaining a thorough understanding of students' access to technology tools and the students computer abilities, then language departments can implement the necessary training for students.

Conclusion

This paper examined the computer access and computer literacy of 178 students enrolled in French, German and Spanish courses at a large Midwestern university. Although the sample size is nearly as generalizable (N=178) compared to Winke & Goertler (2008) (N=911), the results still provide the field with insights in ownership, access and use of technology in different multimedia environments. The results show that students own or have access to a PC desktop/laptop or a Mac desktop/laptop and access to tools which are utilized in CMC are accessible. The small percentage of students who did not own or cannot find access would be manageable for instructors and administrators to provide students with information on where to access computers on campus or access other tools such as microphones. Winke and Goertler (2008) were correct with their assertion that some of the technology tools will become more readily available for students because they will become more ingrained as a standard piece of computers, i.e., webcams built in the screens of laptops and some desktops. It has also become fairly commonplace for headphones sold with smartphones to include a built-in microphone, and most computers produced currently also have a built-in microphone.

To answer the question "Did we forget someone else," I think yes, we have to some extent, because there are still students who are lacking certain technology tools, cannot perform certain computer tasks, have dial-up connections still at home, and use certain multimedia exclusively in personal and nonacademic/professional environments. Thankfully, more attention has been paid to the computer access and literacy of students (Barrette, 2001; Goertler et al.,

2012; Messineo & DeOllos, 2005; Winke & Goertler, 2008; Winke et al., 2010). The field of CALL has now moved forward in recognizing the need for providing necessary training for students and teachers, and applied linguists research how to provide the necessary training for students and instructors alike (Arnold, 2013; Barrette, 2001; Comas-Quinn, 2011; Hubbard, 2005, 2013b; Jeong, 2017; Lai et al., 2014; O 'brien, 2008; Stockwell, 2009).

It is crucial that instructors and administrators do not overlook the importance of computer access and computer literacy of their students. In the future it will be necessary to continue to survey students about their computer access and literacy, especially to account for the changes and updates in technology and pedagogical practices. The fact that CALL materials and instruction is specialized and so heavily intertwined with technology, instructors and administrators must know what equipment their students possess and have access to in relation with students' computer literacies. Then instructors can properly assess their students and provide them with the necessary assistance and training that they need. Instructors should practice regular surveying of their students in order to be able to design appropriate tasks, integrate technologies students already use in their personal lives and increase the motivation for learning online.

APPENDIX

APPENDIX

TECHNOLOGY SURVEY – Page 1

1. Age: ____

0 0
1 1
2 2
3 3
4 4
5 5
6 6
7 7
8 8
9 9

2. Gender:

O Male
O Female
O Other

3. First (native) language:

O English	O Malaysian
O Arabic	O Polish
O Chinese	O Portuguese
O French	O Russian
O German	O Spanish
O Hebrew	O Tagalog
O Hindi	O Thai
O Italian	O Urdu
O Japanese	O Vietnamese
O Korean	O Other: _____

ID:(For office use only)

0 0 0 0
1 1 1 1
2 2 2 2
3 3 3 3
4 4 4 4
5 5 5 5
6 6 6 6
7 7 7 7
8 8 8 8
9 9 9 9

4. At MSU I am a… O Freshman O Sophomore O Junior O Senior
O MA/MS student O PhD student O Other: _____

5. The language class in which I am filling out this survey is (*select language, level, and section*):

Language	**Level**	**Section**
O Arabic	O 090	O 001
O Chinese	O Other 0_____	O 002
O French	O 101	O 003
O German	O 102	O 004
O Italian	O 150	O 005
O Japanese	O Other 1_____	O 006
O Korean	O 201	O 007
O Russian	O 202	O 008
O Spanish	O 250	O 009
O Other_____	O 290	O 010

6. The language I am studying is… (fill in/mark <u>all</u> that apply)

O my primary major O my additional major O part of my dual major
O my minor O my elective subject O required for my major
O required-Teacher's Ed O required-Residential College O Other: _____ .

7. Why are you learning this language? (fill in/mark <u>all</u> that apply)

O Interested in language and culture/travel O Future job marketing/future employment
O To be a teacher of this language O To communicate with native speakers
O My family/relatives speak this language O Foreign language requirement

TECHNOLOGY SURVEY – Page 2

NOTE: In the following questions, the word **'technology'** refers to a computer, computer software, Internet, and any device that can produce multimedia (for example, video camera) or play multimedia (for example, DVD player).

8. Mark if you personally own or have the items below. If you don't have one, mark if you can get it (by borrowing it or by using it in a lab) easily, with difficulty, or not at all.

	Own/ have it.	Can find it easily.	Can find with difficulty.	Can't get it.		Own/ have it.	Can find it easily.	Can find with difficulty.	Can't get it.
PC desktop computer	O	O	O	O	Microphone	O	O	O	O
PC laptop	O	O	O	O	Printer	O	O	O	O
Mac desktop computer	O	O	O	O	Internet access	O	O	O	O
Mac laptop	O	O	O	O	Webcam	O	O	O	O
Computer speakers	O	O	O	O	Digital camera	O	O	O	O
Headphones	O	O	O	O	Video camera	O	O	O	O

11. Do you use the computer labs on campus for computer work?

O Often O Sometimes O Almost never O Never

12. Do you use the computer labs on campus for printing?

O Often O Sometimes O Almost never O Never

13. Can you type in the language you are learning?

O Yes, very well O Pretty well. O Not very well O Not at all

14. How often do you use the computer on an average day?

O 0 to 2 hours O 2 to 4 hours O 4 to 6 hours O More than 6 hours

15. Mark your level of ability to do the following tasks on your computer.	**Not at all**	**With difficulty**	**With very little difficulty**	**Easily**
1) cut, copy and paste in my documents	O	O	O	O
2) change font size and color save	O	O	O	O
3) type non-English-language characters (like ë, æ) in my documents	O	O	O	O
4) insert pictures and graphs in my documents	O	O	O	O
5) insert audio and video files in my documents	O	O	O	O
6) develop and maintain a web site	O	O	O	O
7) navigate the Internet	O	O	O	O
8) save and download files from the Internet	O	O	O	O
9) create tables in my documents	O	O	O	O
10) play audio files from the web and from my computer	O	O	O	O
11) play a video on a web site, on my computer, or stored on DVD	O	O	O	O
12) download and unzip a ZIP file	O	O	O	O
13) post messages on an online bulletin board (Facebook, Craigslist)	O	O	O	O
14) email to individuals and groups, including using reply-to-all	O	O	O	O
15) access email from a computer other than my own	O	O	O	O

16) forward email messages	O	O	O	O
17) send emails with attachments and open emails with attachments	O	O	O	O
18) create a new, free email account online	O	O	O	O
19) start/install a program directly from a DVD or CD	O	O	O	O
20) copy files from my computer's hard drive to CD or DVD or vice versa	O	O	O	O
21) copy a track from an audio CD onto my computer's hard drive and store it in MP3 format	O	O	O	O
22) create an audio CD from a set of MP3 files stored on my computer's hard drive	O	O	O	O
23) make a sound recording using audio editing software and save it to a disc or hard drive	O	O	O	O
24) upload a video recording to my computer from a camcorder and to a video editing software package	O	O	O	O
25) edit video	O	O	O	O

16. Would you be interested in taking a language class at MSU where half the instruction is in class, that is face-to-face with the teacher and other students, and half is independent study online?

O Yes O Maybe O No

17. Would you be interested in taking a language class at MSU where the instruction is entirely online, and the remaining assignments are also online?

O Yes O Maybe O No

18. On average, how many hours per week is technology used during your language class?

O less than 1 O 1-2 O 2-3 O 3-4 O 4-5 O more than 5

19. How many hours per week do you use technology for your language class homework?

O less than 1 O 1-2 O 2-3 O 3-4 O 4-5 O more than 5

20. Mark if you use the following items in your personal life, in your non-language classes, in your language class, and if you believe they are or could be useful for language learning.

	I use this for my personal life.	We use this in my non-language classes.	We use this in my language class.	I think this is/ would be useful for language learning.
1) public websites	O	O	O	O
2) course websites	O	O	O	O
3) D2L	O	O	O	O
4) blogs	O	O	O	O
5) wikis	O	O	O	O
6) email	O	O	O	O
7) chat	O	O	O	O

8) instant messenger	O	O	O	O
9) videochat	O	O	O	O
10) discussion boards	O	O	O	O
11) listservs	O	O	O	O
12) video/audio materials	O	O	O	O
13) online digital video/audio	O	O	O	O
14) Podcasts/videocasts	O	O	O	O
15) computer games	O	O	O	O
16) CD-Roms/DVDs	O	O	O	O
17) online exercises/quizzes	O	O	O	O
18) Facebook	O	O	O	O
19) Second Life	O	O	O	O
20) Ipods/MP3 Player	O	O	O	O
21) Text Messaging	O	O	O	O
22) Whatsapp	O	O	O	O
23) Wechat	O	O	O	O
24) Instagram	O	O	O	O
25) Snapchat	O	O	O	O
26) Twitter	O	O	O	O

20. Do you have any comments about anything on this survey? If so, please write them in the box below.

Please return this survey to your language teacher. **THANK YOU!**

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