2019

Educator Perspectives on Incorporating Digital Citizenship Skills in Interpreter Education

Vicki Darden
Walden University

Walden University

College of Education

This is to certify that the doctoral dissertation by

Vicki Darden

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Cheri Toledo, Committee Chairperson, Education Faculty
Dr. Paula Dawidowicz, Committee Member, Education Faculty
Dr. Narjis Hyder, University Reviewer, Education Faculty

The Office of the Provost

Walden University
2019

Abstract

Educator Perspectives on Incorporating Digital Citizenship Skills in Interpreter Education

by

Vicki Darden

MA, Western Oregon University, 2013

BS, Western Oregon University, 2002

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

Walden University

November 2019

Abstract

Appropriate digital citizenship skills are considered essential for modern professionals, including signed language interpreters. However, little is known about the experiences and practices of interpreter educators regarding digital citizenship. This exploratory qualitative interview study was conducted to examine the experiences and practices of interpreter educators related to incorporating opportunities for digital citizenship skill-building in their teaching practice. A conceptual framework based on digital citizenship theory guided development of this study. Data were collected from interviews of 6 interpreter educators in bachelor-degree programs in American Sign Language/English interpreting across the United States. Data sets were analyzed through open and axial coding and assessed for themes and patterns. Findings of the study indicated that interpreter educators were aware of elements of digital citizenship but were not knowledgeable about institutional or other policies, that they prioritized the soft skills of digital citizenship, and that they assumed their students acquired the technical skills of digital citizenship elsewhere. Findings may lead to better informed pedagogical decisions about incorporating digital citizenship into instruction, better prepared new professionals, and can contribute to positive social change for practitioners and the consumers they serve.

Educator Perspectives on Incorporating Digital Citizenship Skills in Interpreter Education

by

Vicki Darden

MA, Western Oregon University, 2013

BS, Western Oregon University, 2002

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education

Walden University

November 2019

Table of Contents

i

List of Tables

Chapter 1: Introduction to the Study

Equipping students and preservice professionals with the skills and abilities they will need to succeed in the modern world is a goal of education. This includes preparing students to be digital citizens (Curran & Ribble, 2017; Ribble, 2015, Ribble & Park, 2019). *Digital citizenship* is defined as "the continuously developing norms of appropriate, responsible and empowered technology use" (Ribble & Park, 2019, p. 10). The topics of digital citizenship and integration of technology in education have been researched in K-12 education (e.g., Hsu, 2016; Khlaif, 2017; McCulloch, Hollebrands, Lee, Harrison, & Mutlu, 2018) and to a lesser degree in higher education (e.g., Blundell, Lee, & Nykvist, 2016; Min, 2017; Shelton, 2018). Within higher education professional programs, the topic is also beginning to be addressed (e.g., Yu & Karakaya, 2018; Gomes, Butera, Chretien, & Kind, 2017). However, the field of interpreter education has conducted limited empirical research on digital citizenship and the experiences and practices of interpreter educators incorporating technology in their teaching practice. Little is known about how interpreter educators address the digital citizenship of their students.

Digital citizenship skills and comprehensive knowledge of technology use are important for signed language interpreters and the clients who utilize them for functionally equivalent access to society and everyday activities (Napier et al., 2017; Singleton, Remillard, Mitzner, & Rogers, 2018). Yet the topic of technology in interpreter education and signed language interpreter education is under-researched (Abdel Latif, 2018; Pan, Wang, & Yan, 2017; Yan, Pan & Wang, 2015). Much of what

has been published is dated and nonempirical (Pan et al., 2017). This affects the development of best practices. Interpreter educators are informed by the Commission on Collegiate Interpreter Education and the set of standards it developed for interpreter education, which only note that interpreting programs must teach the appropriate technology to use (Commission on Collegiate Interpreter Education, 2014). The Registry of Interpreters for the Deaf (RID) also provides a Code of Professional Conduct to guide American Sign Language (ASL)/English interpreters; however, it also does not address technology or digital citizenship directly (RID, 2005).

Without guidance for digital citizenship and the integration of technology, interpreter educators may struggle to provide adequate opportunities to prepare for professional work for interpreters. This may lead to consequences for D/deaf, DeafBlind, hard of hearing, and hearing consumers who may be underserved and affected by a lack of skill from the professional. More information about the experiences of signed language interpreter educators and their experiences with digital citizenship and incorporating technology into their teaching practice may lead to the development of best educational practices. Informed educators may be more capable of preparing students who will have improved professional outcomes. Better outcomes for interpreters lead to better outcomes for consumers and a greater chance of full consumer participation in society and informed, effective execution of their civic roles and responsibilities.

To learn more about the experiences and practices of signed language interpreter educators as they incorporate technology and opportunities for digital citizenship skill acquisition, I conducted this qualitative interview study. This chapter introduces a

background on digital citizenship and interpreter education and explains why the study was needed. The chapter also includes a statement of the problem, the purpose of the study, and its research questions. The chapter also has an introduction to the conceptual framework that is explored in depth in Chapter 2. The nature of the study, definitions, assumptions, the scope and the design delimitations, the limitations of the study, and its potential significance are also outlined and discussed.

Background

Educators can benefit from a growing body of scholarship related to digital citizenship. Digital citizenship has been studied in the fields of education and educational technology for over a decade and has generated a rich discussion and multiple meanings and structures. One definition and structure for digital citizenship (Ribble, 2015) has been widely used in K-12 education, though other frameworks have been proposed as well such as those by Choi (2016) and Jones and Mitchell (2016). In higher education, digital citizenship is a growing topic of study; however, scholars are calling for more research (Adekola, Dale, & Gardiner, 2017; Alqahtani, Alqahtani, & Alqurashi, 2017; Jääskelä, Häkkinen, & Rasku-Puttonen, 2017; Porter & Graham, 2016). Additionally, interpreter education has limited scholarship that is related to technology (Abdel Latif, 2018; Yan et al., 2015). Resources that may serve as guidance for interpreter educators, such as the Commission on Collegiate Interpreter Education standards (Commission on Collegiate Interpreter Education, 2014) or the RID Code of Professional Conduct (RID, 2005), are not explicit on technology.

Research on technology in interpreting and interpreter education is limited in part because the field of interpreting studies was only established in the 1990s (Pan, et al., 2017; Yan et al., 2015). Interpreting studies is also a smaller subfield of translation studies (Pan et al., 2017). Interpreters and translators use technology in different ways, and the field of interpreting has been reluctant to adopt technology to an equivalent degree as translation has (Corpas Pastor, 2017; Mellinger & Hanson, 2018). Further, spoken and signed language interpreters use technology in similar and different ways, possibly because of the differences inherent between spoken, oral/aural languages, and signed, gestural/visual languages (Singleton et al., 2018). There is significantly more research about the use of technology among spoken language interpreters than signed language interpreters, possibly eight or nine times as much (Pan et al., 2017). Research on technology or digital citizenship in interpreter education is also limited. There is less literature related to interpreter education than interpreting (Yan et al., 2015), which has been labeled an uncommon profession (Ben-Ari, 2017). A lack of research in these areas hinders current and future research on the topic and the population as well as education practices.

Interpreter education is a form of higher education and may be informed by literature from the field, which has a more extensive base from which to draw. However, there is little literature on the experiences of interpreter educators as a population. A comprehensive, iterative literature review conducted over several years has yielded just five empirical, peer-reviewed studies that collected the perspectives of signed language interpreter educators (e.g., Ehrlich & Wessling, 2018; Fitzmaurice, 2010; McDermid,

2009; Witter-Merithew, Johnson, & Taylor, 2004; Webb & Napier, 2015); only one of the five was conducted in the 5 years prior to the current study. Just one study approached the topic of technology in interpreter education through the collection of perspectives of interpreter educators, where the sample comprised three Australian interpreter educators and concerned the use of tablets in a spoken language interpreting program with Chinese students (e.g., Napier, Song, & Ye, 2013). The perspectives of ASL/English interpreter educators in the United States were represented in just three studies found (e.g., Ehrlich & Wessling, 2018; Fitzmaurice, 2010; and Witter-Merithew et al., 2004, which also incorporated the perspectives of other stakeholders in the interpreting community).

There is little current empirical research on digital citizenship and technology in interpreter education, especially on the experiences and practices of interpreter educators. The current study was designed to contribute to these two under-researched areas through an examination of the experiences and practices of ASL/English interpreter educators in the United States as they incorporate digital citizenship opportunities and integrate technology into their interpreting pedagogy. The findings may inform interpreter education of current practices, new approaches, and supports and barriers. This information can support the development of best practices and improved student outcomes, which can effect positive social change for the D/deaf, DeafBlind, hard of hearing, and hearing consumers who depend on the work of interpreters.

The D/deaf community is acknowledged as adopters of technology, and their use of technology may differ from that of the majority hearing community (Singleton et al.,,

2018). For clarity within this document, the *D/deaf community* is defined as inclusive of those who identify as members of a language-sharing culture connoted by the capital *D* as well as those who identify as having the medical condition of deafness noted by a lowercase *d*. The DeafBlind community is inclusive of those who have a range of both vision and hearing loss and who identify as members of that community (Leigh et al., 2015). The signing community includes those who use a signed language for some or all of their communication but may or may not be D/deaf or DeafBlind, such as hearing children with D/deaf parents or hearing persons who learned to sign by taking classes. Signed language interpreters facilitate communication and access between the D/deaf, DeafBlind, hard of hearing, and hearing communities (Brunson, 2018; Conway & Ryan, 2018; Napier, Skinner, & Turner, 2017). In the United States, this access is also federally mandated for members of the population with hearing loss (Americans With Disabilities Act, 1990).

Problem Statement

The problem this study was designed to address is the lack of knowledge about the experiences and practices of signed language interpreter educators as they incorporate opportunities to build digital citizenship skills in their curricula. Digital citizenship is recognized as an important set of skills and abilities for the 21st century worker. Best pedagogical practices are informed by awareness of the current state of experience and practice. This study was designed to address the problem through an exploratory qualitative interview study on the current experiences and practices of signed language interpreter educators at universities in the United States.

Purpose of the Study

The purpose of this qualitative interview study was to explore and describe the experiences and practices of educators related to incorporating digital citizenship curricula in interpreter education. Best practices are developed from an understanding of current practices. This study was designed to address the gap in knowledge about this under-researched population by documenting current experiences and practices to contribute to an improved understanding from which best practices may develop.

Research Questions

Much is known about digital citizenship in many educational contexts, particularly K-12 education and to a lesser degree in higher education. The current study focused on this topic in interpreter education. The following research questions were designed to address this topic:

Research Question 1: What are the experiences of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices?

Research Question 2: What are the practices of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices?

Research Question 3: What do interpreter educators believe about the development of the digital citizenship skills of their students?

Conceptual Framework

This study was based on a structure for digital citizenship to create a conceptual framework to guide the method. Digital citizenship is used as a definition and organizing structure or taxonomy for the domains of digital citizenship (Ribble, 2015; Ribble &

Park, 2019). Digital citizenship is a frequently used term within a multitude of terms and frameworks that describe the knowledge, skills, and abilities required for navigating technology in everyday personal and professional life (Choi, Glassman, & Cristol, 2017; Curran & Ribble, 2017; Gallardo-Echenique, de Oliveira, Marques-Mollas, & Esteve-Mon, 2015; Jones & Mitchell, 2016; Ribble & Park, 2019; van Laar, van Deursen, van Dijk, & de Haan, 2017). For example, interpreter educators are responsible for preparing students to enter the interpreting profession. The professional context in which those graduates will work has been and will likely continue to be influenced by advancements in educational technology as well as information and communications technology (ICT; Fantinuoli, 2017; Kerremans & Stengers, 2017; Leeson Sheikh, & Vermeerbergen, 2015; Mellinger & Hanson, 2018).

Several frameworks for organizing requisite competencies were analyzed, as described in detail in Chapter 2. The construct developed by Ribble (2015; 2017) and Ribble and Park (2019), who define *digital citizenship* as "the continually evolving norms of appropriate, responsible, and empowered technology use" (p. 10), was determined to be an appropriate framework. Their concept of digital citizenship was broad and comprehensive enough to provide a definition as well as a taxonomy of the elements of digital citizenship that guided the study and its methodology. In addition to defining digital citizenship, Ribble and Park (2019) identified nine elements of digital citizenship: digital access, digital commerce, digital communication and collaboration, digital etiquette, digital fluency, digital health and welfare digital law, digital rights and responsibilities, and digital security and privacy. The definition and nine elements helped

to inform identification of acts of digital citizenship pedagogy and technology integration. Starting with the foundation provided by the conceptual framework, data collection and analysis instruments were developed consistent with a qualitative interview study approach and were used for such activities as conducting interviews, coding, creating matrices, and other data analysis.

Nature of the Study

This qualitative in-depth interview study was designed to examine the experiences and practices of interpreter educators incorporating opportunities for digital citizenship skill-building in interpreter education because much is unknown about this population (Hale & Napier, 2013; Pan, et al., 2017; Yan et al., 2015). The sample comprised full-time faculty who were purposively recruited from institutions offering bachelor-level degrees in ASL/English interpreting. A qualitative interview study was an appropriate design because the goal was understanding the experiences and practices of a group of people regarding a specific situation or experience within its context (Patton, 2015). Qualitative methodology is also appropriate for topics about which little is known and allows for multiple perspectives of reality (Patton, 2015), which aligns with the relativist approach to learning and research with which the study was designed. However, the investigator serving as the primary instrument is both a strength and weakness of qualitative study (Patton, 2015). Care was taken to build in methodological features that helped mitigate researcher bias such as member checking with participants.

Data were collected through interviews with educators. Collecting data for research requires following a specific protocol, and all data collection adhered to

overarching guidelines related to collecting and handling qualitative interview data (e.g., Patton, 2015, pp. 264-294, 298-301, 381-393, 421-474, 484-502, 518-741). Coding of data was done to identify themes, patterns, obstacles, and opportunities experienced by interpreter educators (Maxwell, 2013; Miles, Huberman, & Saldaña, 2014; Patton, 2015). Qualitative data analysis software, specifically NVivo, was used to organize findings.

Definitions

Hard of hearing: An individual with hearing loss and/or who identifies as hard of hearing (Leigh et al., 2018).

Hearing: An individual without hearing loss and/or who identifies as hearing (Leigh et al., 2018).

Interpreter: An individual who transfers meaning between two languages (Pöchhacker, 2016).

Sign language: Used as part of a proper pronoun naming a visual/gestural signed language (i.e., American Sign Language, Ghanaian Sign Language, Japanese Sign Language, etc.).

Signed language: A language that is signed rather than spoken. Researchers and literature previously referenced *sign language*, but this usage is decreasing in favor of the term *signed language,* which is congruent with its corollary, *spoken language.* As an example, compare Dean and Pollard (2001) with Dean and Pollard (2011) or Napier (2004) to Napier (2011).

Signed language interpreter: An interpreter who transfers meaning between signed and spoken language(s) and/or between two or more signed languages (Pöchhacker, 2016).

Spoken language interpreter: An interpreter who transfers meaning between two or more spoken languages (Pöchhacker, 2016).

Assumptions

This study was designed based on a few assumptions. One assumption was that participants engaged in interviews of their free will and without bias. Their honesty and openness in responding to interview questions was also assumed. Finally, I assumed their ability to provide a reliable account of their experiences and practices.

Scope and Delimitations

This study was designed to examine the experiences and practices of interpreter educators related to technology and to incorporating digital citizenship skill-building opportunities for students into their teaching. The study was limited to full-time interpreter educators in 4-year, bachelor-degree awarding programs for ASL/English interpreting at tertiary institutions in the United States. The selection criterion "full-time educators" was chosen because full-time faculty are more likely to be aware of institutional and program contexts or practices than adjunct or part-time faculty. There are approximately 80 2-year, associate degree-awarding programs for ASL/English interpreting in the United States and 40 4-year, bachelor-degree awarding programs (RID, 2019). In the 1960s, 70s, and 80s, many 2-year programs were set up to quickly train interpreters to respond to high needs (Ball, 2013). Over time, it was recognized that

these programs were inadequate and longer programs were necessary. In the 2000s, certification rules changed to require a bachelor's degree to sit for national certification (Ball, 2013). Although there are more 2-year than 4-year programs, the new interpreter education programs that are being established are bachelor's or master's level programs to qualify students for certification on graduation. Therefore, interpreter educators in 4-year programs were sought for the sample.

Because much is unknown about the topic under study, the study was designed as exploratory and descriptive, rather than explanatory and prescriptive. Approaches to the topic of technology in interpreter education could have included theories such as connectivism theory or paradigm (Siemens, 2005), which approaches knowledge in a digital society as networked rather than solely residing in the individual. The current study was focused on interpreter educators as a population as well as their unique experiences as individuals. The TPACK framework, which stands for technology, pedagogy, and content knowledge (Mishra & Koehler, 2006), is another potential approach to this topic and has been used with populations about which more is known. The digital citizenship construct (Ribble, 2015) was seen as more general and therefore less prescriptive than TPACK, which can be an approach once more is known about the topic or if used in a different study design.

The current study was focused on digital citizenship and technology use among signed language interpreter educators. The results will be of interest to the field of educational technology and add to what is known about how the D/deaf, signing, and interpreting communities use technology. It is possible that the findings have relevance to

other fields, such as postsecondary education and university-level professional studies as well as D/deaf education.

Limitations

The current study was exploratory in nature; it was designed to gather information about the current experiences and practices of interpreter educators. It was not designed to determine best practices but rather to identify what is occurring in the population and to raise questions for future research that may lead to best practice outcomes. The population excluded 2-year interpreter education programs, so the findings may not transfer to that population. Signed language interpreting is something of a niche profession, and it is possible that findings from this study will have no relevance for translation and interpreting studies or for other professional studies programs.

Another limitation is that I am a member of the population for the study. This can be both a strength and a limitation (Patton, 2015). Care was taken with all steps of the methodology to assure that researcher bias did not skew results (Merriam & Tisdell, 2016; Patton, 2015). Therefore, triangulation was sought from the literature, from different data sets, from member checking, and other qualitative research techniques that were determined to be appropriate.

Significance

Signed language interpreters facilitate communication, access, and interaction between members of the D/deaf, DeafBlind, hard of hearing and hearing communities. Interpreters who do not possess the necessary skills to respond to the requirements of the work limit the access, equality, and experiences of their clients and may put them at risk

(Napier et al., 2017; 2018). There is not much known about interpreting and interpreter education (Abdel Latif, 2018; Pan et al., 2017). There is also little research about technology in interpreting (Yan et al., 2015) and interpreter education (Corpas Pastor, 2017; Fantinuoli, 2017). Even less is known about the experiences of interpreter educators in preparing their students to enter an increasingly technologically mediated profession. This study may advance knowledge in the disciplines of educational technology and interpreter education by adding to what is known about the intersection of technology and interpreter education as well as how technology is used in the D/deaf, signing, interpreting, and interpreter education communities. It can inform the fields of educational technology and interpreter education about the experiences and practices of educators related to digital citizenship and provides information for new lines of research in this area.

Educational technologists, interpreter educators, and administrators may benefit in their daily practice from the results of this study. Educators may gain new insight and ideas in support of their digital citizenship pedagogy and lesson planning. Educational technologists may gain understanding of the ways people using a visual/gestural language utilize modern technology and devise new approaches for accommodating them. Administrators may also gain understanding of the technological context of interpreter education which may guide them in crafting policy.

Finally, from a social justice perspective, the lives of the D/deaf, DeafBlind, hard of hearing, and hearing communities that interpreters touch may be significantly improved. Interpreters who have been trained to understand the technological context of

their professional environments will be better prepared to mediate and facilitate those

environments in a way that provides equivalent access to the environment and each other

for all participants. Equivalent access for all participants, whether D/deaf, DeafBlind,

hard of hearing, or hearing, supports a more socially just environment.

Summary

Technology has an increasing influence on modern society, including the

practices of individuals who work with the D/deaf, DeafBlind, hard of hearing, and

hearing communities. Interpreter educators are charged with preparing future interpreters,

but a lack of knowledge about the digital citizenship experiences and practices of

interpreter educators affects the development of best practices for preservice interpreting

students, which affects the future clients they serve. This chapter introduced this study,

describing the lack of research on the topic and how this affects student outcomes and the

access and rights of consumers. It also previewed research on educational technology,

education, and interpreter education that is analyzed in greater depth in Chapter 2. The

problem statement, purpose of the study, and research questions for the study were also

shared along with the conceptual framework of digital citizenship, which is also

discussed in more depth in Chapter 2. The chapter also provided the nature of the study,

definitions, assumptions, scope and delimiters of the study, the limitations, and

significance of the study.

The literature search is described in detail in Chapter 2, including the search

strategy that was followed and how it evolved. A more comprehensive assessment of the

literature reviewed and rejected or incorporated into the conceptual framework is also

detailed in the second chapter. Relevant literature from several areas is reviewed,

assessed, and compared to uncover themes and patterns that may help inform the

methodology. The themes and patterns uncovered and illustrated in Chapter 2 contributed

to the study design and instrument development as described further in Chapter 3.

Chapter 2: Literature Review

Introduction

Digital citizenship and the skills required to navigate the digitally mediated world are becoming increasingly important. The fields of education and educational technology have recognized this with increased research and calls for awareness (Brenner & Brill, 2016; Curran & Ribble, 2017; Ribble, 2015; Ribble & Park, 2019). Aspects of digital citizenship have begun to be addressed by higher education as well (e.g., Curran & Ribble, 2017; Porter & Graham, 2016; Santos & Serpa, 2017). The topic is particularly important for signed language interpreters, who facilitate access for a marginalized cultural and linguistic minority group (Napier et al., 2017; Singleton et al., 2018; Turner, Napier, Skinner, & Wheatley, 2016). There is a need for increased attention on digital citizenship and use of technology in interpreting and interpreter education (Deysel & Lesch, 2018; Kerremans & Stengers, 2017; Napier et al., 2017). However, little is known about interpreter educators' experiences incorporating technology and opportunities for digital citizenship skill-building into their teaching practices (Stengers, Kerremans, & Segers, 2018).

A review of the literature related to digital citizenship in education and interpreter education was conducted to achieve a deep understanding of the topics. When little information was found about the experiences of signed or spoken language interpreter educators regarding digital citizenship or incorporating technology, the search was expanded to include literature on the experiences and perspectives of other educators regarding technology, including K-12, higher education, and professional studies. This

literature was reviewed to understand the overall context of digital citizenship in interpreter education. From a review of literature across these disciplines, topics were identified and coded. Then, commonalities and differences among scholars and fields were synthesized, leading to the organization of factors relevant to the topic of study—digital citizenship and incorporation of technology. Common factors were training and professional development, teacher attributes, access/supported access to technology, institutional emphasis on technology incorporation, and time for such activities. Educators' experience related to incorporating technology or opportunities for digital citizenship skill-building can have a supportive or hindering effect. An extensive literature search method was used until an understanding of the topic reached saturation.

This chapter describes the literature search strategy to create a foundation for the study and the conceptual framework and how it was developed. An overview of the use of technology in spoken and signed language interpreting is given to provide context and an understanding of how technology is currently utilized. Further information was taken from the literature on digital citizenship and technology in education. Finally, the themes that were identified across all research fields regarding incorporating technology into the curriculum are synthesized and presented.

Literature Search Strategy

The literature review for this study was conducted over several years, both as elements of doctoral coursework and as independent scholarship overseen by committee. The literature review benefits from access to two university libraries. Because the initial research topic was inspired by questions about incorporating learning opportunities

relevant to the needs of preservice interpreters for technological competence, early searches on terms related to technology competence or digital skills and literacies were conducted, as described. Although a construct of digital citizenship (Ribble, 2015; Ribble & Park, 2019) was adopted as the basis of the conceptual framework, other relevant search terms continued to be followed.

Searches were conducted on several databases and websites. Literature was located using two university library catalogs and the databases EBSCO, ERIC, Sage, and Google Scholar. In addition, manual searches were conducted within publications specific to interpreting and interpreter education. There are a multitude of terms used to describe digital citizenship and the elements it comprises. The complete list of terms searched is: *digital citizenship, digital literacy, digital competence, eliteracy, 21st century literacy, 21st century skills, information and media literacy, new media literacy, computer literacy, information and communications technology (ICT) literacy, technology, + american sign language, + sign/signed language, + interpret*, + education, +higher education, + interpreter education, + professional education, + training, + educator, + trainer, +teacher,* and *+professor*. These terms were used in various combinations to search major databases. In addition, the website for the *International Journal of Interpreter Education* and all published volumes were manually searched using a site-wide search on the most generic term, *technology*, and I reviewed each table of contents beginning with the initial publication. A search for the terms *technology, digital citizenship,* and *digital literacy* was also conducted on the John Benjamins Publishing Company website, which is a major publisher of translation and interpreting studies. A

similar search was performed on the website for the Taylor & Francis Online publication of *The Interpreter and Translator Trainer.* These interpreting and interpreter education specific sites yielded few relevant recent articles. Additionally, numerous searches were performed based on items found in references of identified and analyzed literature.

Situating its place in education and research, signed language interpreter education is a small subcategory of interpreter education (Pan et al., 2017). Interpreter education is a subfield of interpreting studies that is included within the larger field of translation studies (Pan et al., 2017), sometimes referred to as translation and interpreting or T&I studies. One of the few review studies of research in translator and interpreter training noted that of the 2,274 entries published in 10 major journals on translation and interpreting during 2000–2012, just 323 were related to training (Yan et al., 2015). Of those, 86 studies were related to interpreter training, and 38 applied to both translator and interpreter training, though most were related to translator training (Yan et al., 2015). Additionally, of the 350 articles on translation and interpreter training reviewed by Pan et al. (2017), only eight were related to signed languages. This review is dated and not comprehensive. For example, it does not include any articles from the *International Journal of Interpreter Education*, which began publication in 2009 or the *Journal of Interpretation,* published annually by the RID since 1981. Further, within articles labeled *teaching* (compared to *learning* and *assessment*), empirical studies only comprised 42% with descriptive and theoretical articles making up 58% of studies (Yan et al., 2015). Only 13% of the studies in the *teaching* category were categorized as "technology and teaching" (Yan et al., 2015, p. 271). Despite the dated information from these review

studies, they provided evidence for a lack of empirical research in this area, which is what I encountered in my literature search as well.

A more recent review article based on pedagogy-oriented articles from 11 translation and interpreting journals during the years 2006–2015 eliminated articles that were not based on empirical studies with a few exceptions of curriculum or teaching models (Abdel Latif, 2018). One type of research identified from the review study that was relevant to this study is "proposed training research" (Abdel Latif, 2018, p. 325). Of the subtypes of studies in this category, testing the effectiveness of web-based and spoken corpora (lexical or linguistic banks of terminology) tools were the only types that overtly intersected interpreting and technology (Abdel Latif, 2018). However, translating and interpreting studies do not often include a quantitative design; training studies usually involve a qualitative approach (Abdel Latif, 2018, p. 326). Another category of relevance to this study, "training programme evaluation research" (Abdel Latif, 2018, p. 327), identified studies on stakeholders' perspectives including interpreter educators in addition to studies about experiences with technology integration. Although this review study did not provide a current understanding based on the studies reviewed, it provided a resource for manual searches for more recent literature on these topics. However, these searches yielded little relevant research.

To provide a context for the types of technologies and the forms of digital citizenship that might be used in interpreter education and that interpreter educators might experience or incorporate, I did a search of the types of technology that appear in the literature for interpreting studies in general. I did the same search focusing on signed

language interpreting. These searches were performed as described, using the search terms listed.

The exploratory nature of this research is based on a lack of established research on the topic and population of inquiry. Drawing from the field of education and relying on research on educational technology was necessary to develop an understanding of interpreter education. Searches were conducted to understand the experiences of educators, particularly tertiary educators, as they incorporated technology or digital citizenship into their teaching practice. The literature found on this topic has been incorporated with an understanding that the experiences of higher or general educators may or may not be congruent with the experience of signed language interpreter educators. Because the study was focused on digital citizenship in higher education interpreter education, the intersection of *digital citizenship* and its associated terms (e.g., *digital literacy/competence/skills*, *new media literacy*, *21st century skills*), and *higher education* was searched. This led to findings related to barriers and supports for digital citizenship and/or the incorporation of technology in higher education. Through this avenue of research, themes related to preparing educators to incorporate digital citizenship in the curricula were identified. Research regarding the use of technology by educators of preservice professionals was also sought and incorporated. This triangulation of the literature across disciplines helped mitigate the lack of literature specific to interpreting and interpreter education. The literature review was designed to continue throughout the data collection and analysis phase as appropriate and relevant.

Conceptual Framework

To explore and describe the experiences and practices of educators related to incorporating digital citizenship curricula in interpreter education, guidance was sought from several fields. A conceptual framework was developed from my underlying epistemological approach and the fields of educational technology, general education, interpreting, and interpreter education. After examining numerous definitions and frameworks, the conceptual framework for was constructed from the nine elements of digital citizenship (Ribble, 2015; Ribble & Park, 2019), a framework from education and educational technology that has been extended to postsecondary education (Curran & Ribble, 2017).

Perspectives on Digital Citizenship and Digital Literacy

The digital citizenship construct developed by Ribble (Curran & Ribble, 2017; Ribble, 2015; Ribble & Park, 2019) was chosen from among several recently proposed frameworks. Scholars have developed countless terms and classification systems for the skills, knowledge, and abilities professionals in the 21st century will need to navigate a technology-saturated world (Choi, 2016; Choi et al., 2017; Curran & Ribble, 2017; Jones & Mitchell, 2016; Ribble, 2015; Ribble & Park 2019). Terms such as *media literacy, digital literacy, information and communication technology (ICT) literacy, digital competence, new media skills, 21st century skills,* and *digital citizenship* all come from a shared conceptual space related to literacy/fluency and technology. Most of these descriptors refer to the practical and critical thinking skills required to navigate the digital world.

In addition to frameworks scholars have devised, standards related to digital citizenship and/or the intersection of technology and education are available from the International Society for Technology in Education (2017), which provides standards for educators, students, administrators, and coaches. These standards are designed primarily for K-12 education and are often introduced to future K-12 educators while they are students in teacher education programs to help them develop ways to embed technological skill building into other academic content (Bakir, 2016; Lewis, 2015). Tertiary educators, which includes interpreter educators, often do not receive any training in teaching theory (Irby & O'Sullivan, 2018) and may not know about or benefit from available standards.

There is a lack of agreement on terms and definitions for the technology skills, knowledge, and abilities required for personal and professional success or efficacy (Choi et al., 2017; Curran & Ribble, 2017; Gallardo-Echenique et al., 2015; Jones & Mitchell, 2016; Ribble & Park, 2019; van Laar et al., 2017). For example, Gallardo-Echenique et al. (2015) conducted an integrative literature review of 73 articles on the topic of digital competence published between 1990 and 2014 and found no standard for defining or evaluating the concept but rather a variety of terms and frameworks that attempt to define and categorize digital competence. Many of the terms and scholars identified by Gallardo-Echenique et al. were incorporated into my literature search strategy. Just as there are a variety of terms associated with the concept of digital citizenship, there are also a variety of frameworks for the concept that have been developed.

An examination of scholars who have developed frameworks for teaching, acquiring, or measuring digital citizenship or similar skills returned several approaches. Acknowledging that there is no clear universal standard or definition of *digital citizenship*, Choi et al. (2017) identified five dimensions of digital citizenship: critical perspective, networking agency, technical skills, local/global awareness, and Internet political activism. However, Jones and Mitchell (2016) argued for a narrower definition of *digital citizenship* that focuses only on two areas: respectful online behavior and civic engagement online. Gretter and Yadav (2016) approached the topic from a media and information literacy perspective and proposed a series of seven big ideas for educators to leverage technology for teaching 21st century skills: creativity, abstraction, data and information, algorithms, programming, the Internet, and global impact (pp. 512-516).

The digital citizenship framework developed by Ribble (2015) and Ribble and Park (2019) was selected to inform this study because it incorporates aspects of digital citizenship in a comprehensive way. The construct acknowledges the hard skills—the productivity and presentation skills necessary for the 21st century practitioner such as digital access and digital security and privacy—as well as the more abstract considerations such as digital etiquette and digital rights and responsibilities. Curran and Ribble (2017) proposed the use of problem-based learning in higher education as an opportunity to teach, learn, and apply digital citizenship, which aligns with the current push for situated, authentic learning opportunities in interpreter education (Kiraly, Rüth, & Wiedmann, 2016). Although the definition of and framework for digital citizenship developed by Ribble and Park (2019) informs the methodology of the study, the inclusion

of alternative search terms such as *digital literacy* and *21ˢᵗ century skills* was sustained throughout the literature review even after the framework was chosen.

Digital Citizenship as Definition and Organizing Structure

As noted, the concept of digital citizenship is broad and ill defined. A construct was sought to help define the scope of the study and organize the data. There are extensive potential search terms related to the topic under study, which can be described as the integration of learning opportunities for use of technology appropriate for pre- and professional signed language interpreters as experienced by interpreter educators. This section specifies the construct chosen and how others have incorporated it in research. The process of choosing it is delineated in the review of perspectives on digital citizenship.

For purpose of this study, the construct of digital citizenship (Ribble, 2015; Ribble & Park, 2019) was used to define digital citizenship and the scope of what constitutes digital citizenship. The construct provides a classification for identifying acts of digital citizenship and pedagogical examples of digital citizenship. There are multiple constructs, definitions, and ways of identifying digital citizenship as found throughout the literature (Choi et al., 2017; Jones & Mitchell, 2016; Ribble 2015; Ribble & Park, 2019). This review also included the closely related term of *digital literacy* (Gallardo-Echenique et al, 2015; van Laar et al., 2017). However, the framework developed by Ribble and Park (2019) with nine elements of digital citizenship is the most comprehensive and applicable to this study. It allows for documentation of hard skills, such as how to

manipulate technology, and higher order skills, such as utilizing critical thinking to consume and produce information in the digitally mediated world.

Ribble and Park (2019) defined digital citizenship as "the continually evolving norms of appropriate, responsible, and empowered technology use" (p. 10). The construct Ribble (2015) developed is situated mainly in the K-12 environment, but his taxonomic structure is generic to any technical situation. Curran and Ribble (2017) subsequently proposed the use of problem-based learning incorporating Web 2.0 technology as one way to extend the application of digital citizenship (Ribble, 2015) to higher education. Ribble (2015) acknowledged that his initial research was spurred by the lack of an available systematic, comprehensive review of all the components that digital citizenship encompasses and provided educators and administrators with a holistic approach to the issue.

Ribble and Park (2019, pp. 39-41) define the following nine elements of digital citizenship:

- *Digital Access* is about the equitable distribution of technology and online resources. Teachers and administrators need to be aware of their community and who may or may not have access, not only in school but at home as well. Educators need to provide options for lessons and data collection such as free access in the community or provide resources for the home.

- *Digital Commerce* is the electronic buying and selling of goods and focuses on the tools and safeguards in place to assist those buying, selling, banking, or using

money in any way in the digital space. Career and technical education use the tools of technology to show students the path for their future.

- *Digital Communication and Collaboration* is the electronic exchange of information. All users need to define how they will share their thoughts so that others understand the message. For students struggling to understand their place in the world, technology can help them find their own voices and express themselves;

- *Digital Etiquette* refers to electronic standards of conduct or procedures and has to do with the process of thinking about others when using digital devices. Teachers can include Digital Etiquette as part of the classroom rules or academic goals. Whether in the classroom or online, being aware of others is an important idea for everyone.

- *Digital Fluency* is the process of understanding technology and its use. The better educated or "digitally fluent," students are, the more likely they are to make good decisions online, like supporting others instead of making negative comments. Digital literacy includes the discussion of media literacy and the ability to discern good information from poor, such as "fake news" from real news.

- *Digital Health and Welfare* refers to physical and psychological well-being in a digital world. Technology provides many opportunities and much enjoyment, but knowing how to modulate use with our needs and those of others is key to a healthy, balanced life. Educators, especially in 1:1 schools or classrooms, need to ask the question of how much screen time is appropriate for students.

- *Digital Law* refers to the electronic responsibility for actions and deeds and has to do with the creation of rules and policy that address issues related to the online world. Just as in the real world, the online world has had to create structure to protect those using these digital devices from harm. Administrators need to come up with positive approaches to these issues in their schools and districts.

- *Digital Rights and Responsibility* are those requirements and freedoms extended to everyone in a digital world. This area of Digital Citizenship is about helping students understand that when they are provided opportunities, such as the access to the Internet and use of online products, they need to be diligent in helping others as well, such as informing adults of potential problems. Educators must help students understand that protecting others both online and in the real world are essential skills to have.

- *Digital Security and Privacy* is the electronic precautions to guarantee safety. Viruses, worms and other bots can be passed along from one system to another just like an illness. When using devices in school or at home, understanding and being aware of attacks and how to prevent them are important skills for today and into the future.

In addition, the definition of digital citizenship developed by Ribble (2015; Ribble & Park, 2019) has been used in countless studies and the construct has been used in empirical studies for purposes such as developing an empirical instrument, guiding observations, and defining the scope of a study. For example, Nordin et al. (2016) used the digital citizenship framework, definition, and domains to construct and validate a self-

report instrument to measure the digital citizenship of 391 undergraduate students across 15 post-secondary institutions in Malaysia. The authors found that the digital citizenship dimensions from which the instrument was derived were reliable and that the instrument was valid and reliable for assessing student digital citizenship behaviors (Nordin et al., 2016). Karal & Bakir (2016) surveyed pre-service teachers to determine their understanding of each of the nine elements of digital citizenship, while Alqahtani, Alqahtani & Alqurashi (2017) performed a survey study of undergraduate students in the United States and their digital citizenship levels based on the three domains of *respect, educate,* and *protect* (Ribble, 2015) that categorize the nine separate elements. Due to the exploratory nature of the current study and how much is yet unknown about the topic and the population to be studied, digital citizenship (Ribble, 2015) is seen as the construct most capable of helping to organize the data returned from a widely-cast net.

Research on Technology in Education and Interpreter Education

To gain an understanding of the intersection of educational technology, digital citizenship, and signed language interpreter education, literature was drawn from several lines of research. Research on the use of technology in interpreting was reviewed to learn how technology is currently used in the field of interpreting in general and because there is little research available about technology in signed language interpreting. The available research on technology in signed language interpreting was also reviewed in order to understand the technologies used in the profession and how they may differ from spoken language interpreting. Each of these categories provided information on how interpreters

are using technology as professionals, which may inform the lesson plans and practices of interpreter educators and therefore have relevance to this study.

Likewise, because such a small amount of research on interpreter education was found, additional literature on the experiences of educators incorporating technology into their teaching practice was sought. Digital citizenship in higher education, incorporating technology in higher education, incorporating technology in interpreter education, and technology in signed language interpreter education were all examined for similarities and differences. The literature from educational technology and education has been synthesized with the literature from interpreter education.

The search for literature on digital citizenship in interpreter education started with exposure to the topic of digital citizenship in doctoral courses on educational technology. A curiosity about how the topic was evidenced in interpreter education yielded unsuccessful searches within specialty fields (i.e., signed language interpreter education). The lack of results led to searches of larger and larger disciplines (i.e., educational technology and education) to understand the topic. Though the literature review search followed a narrow-to-broad path, it is presented here in the opposite progression. Literature from the larger and better-researched fields of educational technology and education is presented to help lay a foundation for understanding the topic. This broader understanding supports the analysis of literature from the smaller fields of interpreting and interpreter education. Recurring themes across research areas were then identified and analyzed for similarities and differences, which is presented in the last section of the literature review.

Research on Perspectives of Educators Incorporating Technology in Education

A lack of both depth and breadth in research on the use of technology in translation and interpreting education led to a decision to seek literature from the fields of educational technology and education to help understand the experiences and practices of educators incorporating digital citizenship in their teaching. In the course of the literature search another category of research coalesced around the topic of integrating technology into the curriculum. While this topic is less broad than the spectrum of elements comprising the framework of digital citizenship (Ribble, 2015; Ribble & Park, 2019), in that it tends to focus on technical skills, it was a topic that continued to appear during the search for literature. The cultivation of digital citizenship skills in education necessitates incorporation of technology. Because of the overlap with digital citizenship, the incorporation of technology in educational practice became another search term and area of research. Many articles were found describing studies exploring teacher experiences and practices incorporating technology, techniques for technology integration, supports and barriers to technology integration, and examinations of the ways teacher education programs prepare future teachers to integrate technology and digital citizenship. Across the disciplines literature was drawn from (educational technology, education, interpreting, and interpreter education) many articles touch on or identify similar topics as factors in the decision to incorporate technology, such as institutional standards and support, training and professional development, teacher attributes, and perceived barriers and supports.

One of the first studies I found that activated a recognition of the relevance of the integration of technology for this study explored teacher education for evidence of practices that promote or hinder the integration of technology by new educators (Brenner & Brill, 2016). The researchers utilized a mixed method to survey 24 educators and subsequently interviewed five participants. The participants had completed a graduate-level teaching licensure program at a university in the United States and were currently employed as licensed teachers in K-12 settings. The study found that a majority of educators rated themselves as technologically proficient and having access to a wide range of technologies (Brenner & Brill, 2016). Educators incorporated many types of technologies in their classes, although more complicated technologies such as Web design authoring or developing digital media were noted to be less utilized. Barriers reported were a lack of time for developing technology-based lessons, lack of access to appropriate software, and too much content to cover. A lack of knowledge about technology integration and no mentorship were also mentioned as lesser barriers. Among the supportive practices mentioned were the ability to practice in authentic or realistic settings, supportive mentorship or supervision that was aware of the technology affordances of internship sites and prepared students accordingly, and having opportunities to experience and practice with technology embedded in courses throughout their content classes as opposed to having one separate, discrete class for technology skills.

Once recognized, the topic of how pre-service teachers are or are not prepared for integrating technology was found to yield several relevant articles. Another article found

early in the literature search examined the ability of pre-service teachers to identify

standards for technology in education, specifically the International Society for

Technology in Education standards (Lewis, 2015). The author designed a mixed methods

study to survey 62 pre-service teaching students and interview 15 of them. Additionally,

six faculty and three administrators were interviewed. Findings concluded that while

administrators expressed support for technology integration in the program, there was "an

overall lack of understanding from both students and instructors as to how to use

standards-based technology at a pedagogical level" (Lewis, 2015, p. 248). Clear

expectations on the part of the institution were identified as necessary, along with

professional development and training, and technology support (Lewis, 2015).

A case study of two teacher preparation programs in Norway comprised nine

teacher educators and 14 students (Instefjord, 2015). Educators were surveyed about their

perspectives on what constitutes digital competence, what a digitally competent teacher

should know, how they use technology in teaching, and their level of digital competence.

The focus groups were conducted with similar questions, although new topics arose as

well (Instefjord, 2015). Themes that were identified included inadequate preservice

training that did not allow for moving from mastery of technology to appropriation of

technology and that this requires "an awareness around the use of technology that goes

far beyond technical skills" (Instefjord, 2015, p. 166). Lack of professional development,

support, and time were noted as challenges. One point the author makes is that in an

average four-year teacher preparation program, the rate of change of technology means

that the technologies on which pre-service teachers are trained may be obsolete by the

time they graduate (Instefjord, 2015). Another multiple case study of three Norwegian

teacher education institutes had similar findings (Tømte, 2016). In this study, teachers

reported a lack of training and professional development for the use of or integration of

technology. Pre-service student teachers reported that equipment was not reliable, and

students were not sufficiently trained (Tømte, 2016). Teachers in both studies noted that

the most prevalent use of technology was for personal use, such as creating slide show

presentations for classes, rather than truly integrating technology into their pedagogy

(Instefjord, 2015; Tømte, 2016).

      A more recent study on technology integration looked at the subject from the

perspective of teacher educators (Taimalu & Luik, 2019). A sample of 54 teacher

educators from two Estonian universities were surveyed on the effect of beliefs and

knowledge on technology integration. The researchers used two different surveys to

capture the influence of beliefs and knowledge. They concluded that a strong pedagogical

base of knowledge has a positive effect on technology integration, but only if the

educator also has technology knowledge (Taimalu & Luik, 2019). Beliefs about the value

of technology were also shown to have an influence on integration. Training and

professional development were identified as potential supports/challenges (Taimalu &

Luik, 2019).

      In addition to research on pre-service teachers and teacher educators, literature

was sought on teacher perspectives. The search was designed to focus on higher

education but articles that focused on K-12 teachers were not automatically excluded, and

several studies on this context were reviewed. One study examined two cases of K-6

teachers who engaged in participatory action research to improve technology integration (Dooley, Ellison, & Welch, Allen, & Bauer, 2016). Researchers found that technical support for the integration of technology was important, as well as training and professional development for teachers (Dooley et al., 2016). The authors also note, "teachers can address the participation gap [i.e., students and teachers participating in technology-enhanced activities] while also enhancing content area instruction by taking seriously the kinds of digital practices that mathematicians, scientists, and other professionals do in their daily work" (Dooley et al., 2016, p. 61). This is similar to the move in translation and interpreter education toward authentic, situated-learning types of experiences (Kiraly et al.,2016).

In a case study of beliefs, practices, and barriers to technology integration 152 teachers in grades K-6 in the United States were surveyed. A subset of eight of the participants were then interviewed and observed (Hsu, 2016). In seeking to explore teacher beliefs about technology integration, the types of technologies teachers were using, and the barriers teachers experienced in this area. Hsu found that 78% of the survey respondents aligned with a constructivist pedagogy, while 32% aligned with a teacher-centered approach. The constructivist group had higher scores for self-efficacy and the value of technology than the teacher-centered group. These findings held true for the interviews and observations, as well. In addition, those with a constructivist approach incorporated more technology-based activities than the second group. Barriers identified included student lack of computer skills, educators not having enough technology training and exposure, inadequate technical support, and not enough time to develop and

use technology-integrated lessons (Hsu, 2016, p. 37). One interesting point made by the

author is that while previous studies have indicated that educators in grades 5 – 12 have

expressed that lack of time is a greater barrier to technology implementation than K-4

educators report, this study indicates that time is a concern for educators at all levels

(Hsu, 2016).

Another study of the K-12 context, in this case middle school educators ($n = 15$)

explored the factors that influenced teachers to adopt mobile learning technology (Khlaif,

2017). The interview study focused on teacher attitudes and how they influenced

integration. Though attitudes varied, teachers reported a willingness to use mobile

technologies such as tablets when they found the technology supported their teaching

(Khlaif, 2017). They also recognized that integrating technology allowed students access

to technology that they might otherwise not be able to experience. Teachers noted that

lack of access, support, and professional development or training were barriers to

integration (Khlaif, 2017).

Secondary teachers were the focus of two studies reviewed. One focused on

mathematics teachers and the factors that had an influence on technology integration

(McCulloch et al.,, 2018). Based on their literature review, the authors interviewed 21

educators regarding the previously identified potential factors of administrative approach,

access, beliefs, and preparation. The participants had graduated from an undergraduate

program for teachers of mathematics that emphasized the pedagogical use of technology,

so their perspectives may be more technologically informed than other populations.

Results indicated that teachers incorporated a number of technologies and based

decisions about use on the adequacy or appropriateness of the tool for the purposes of the

lesson (McCulloch et al., 2018). For example, categories of justification for using

technology included providing students with opportunities to build understanding or to

practice, and for help in understanding mathematical concepts or procedures. Teachers

used mathematical action tools, digital math objects, collaboration, communication, and

assessment tools (McCulloch et al., 2018). It was important that tools support instruction,

be easy to use by both teacher and student, and be accessible and compatible with other

technology. Participants identified several relevant factors, such as time, access, and the

attributes of the teacher. The authors suggest that teacher education programs should

focus on how to teach with and leverage technology more broadly to support different

mathematics learning goals rather than on specific software or hardware (McCulloch et

al., 2018), similar to the mastery versus appropriation perspective raised by Instefjord

(2015). Mathematics teachers identified that the time necessary to identify, plan, and

employ a technology was also a factor in their decisions about whether to integrate a

technology or not (McCulloch et al., 2018).

A study of upper secondary school teachers focused on the digital competence of

the teacher as evidenced by demographics, professional and personal characteristics of

the teacher (Krumsvik, Jones, Øfstegaard & Elkeland, 2016). Based on a survey of 2,477

educators, the authors identified the importance of training and professional development

as a factor affecting digital competence for educators, similar to other authors. However,

this study also identified that educators with more than 15 years of experience or who

were older than 50 years old scored lower for digital competence than those who had less

experience or who were younger (Krumsvik et al., 2016). Women were also identified as having higher digital competence, on average, than men (Krumsvik et al., 2016).

Several studies were found that concentrated on technology in the higher educational context. These include studies that examined technology integration in higher education from an institutional or administrative perspective, the educator perspective on integrating technology into the classroom, the educator perspective on online learning, and educator perspectives on the use of social media in education. The topic of why educators stop using technology is the subject of one study reviewed. Studies on the effect of teacher use of technology on student use of technology are also included. Each of these are described in more detail.

The institutional or administrative influence was the focus of a few of the studies found. A quantitative survey of 214 faculty members at Brigham Young University – Idaho to find the degree to which the institutional structure, support, and strategies supported or hindered faculty implementation of blended learning (Porter & Graham, 2016). Teachers identified a number of supports and barriers, including access to technology in terms of infrastructure and technical and pedagogical support for technology integration. Time was identified as an issue through the indicator of a desire for workload reductions (Porter & Graham, 2016). Institutional decisions such as financial planning for technology can affect teacher integration of technology. Individual attributes of the teachers, such as their willingness to adopt technology, has an affect also (Porter & Graham, 2016). The study notes that for early majority adopters – as compared to innovators and early adopters (using Rogers, 2003, adoption categories) – evidence of

the value of technology was important (Porter & Graham, 2016). Training and professional development were influential factors as well (Porter & Graham, 2016).

A qualitative interview study of educators ($n = 8$), administrators ($n = 8$), learning technologists ($n = 3$) and one student representative sought to define a framework for technology integration for tertiary institutions in the United Kingdom (Adekola et al., 2017). Among the institutional considerations and requirements for support, participants identified access to technology-enhanced collaborative learning spaces and support for using those spaces and new technologies, training and professional development, protected time for scholarship and innovation, and support from management and institution (Adekola et al., 2017). Faculty indicated a reluctance to use technology for the sake of using technology, but to have a pedagogical reason for doing so (Adekola et al., 2017).

A quantitative study that examined two cases of technology integration at Tennessee Technological University examined the motivation of faculty to implement integration (Irvin & Longmire, 2016). The study incorporates both administrative and faculty perspective. Among the factors having a significant effect were access and support in terms of being prepared to launch and support a new program, including providing training and professional development on the technology employed (Irvin & Longmire, 2016). The institutional support and emphasis of the program is important. In considering the case, the authors also draw reference to adopter categories and suggest that institutions can gain support for new programs by convincing early adopters to participate and support the new technology or program (Irvin & Longmire, 2016).

Studies have looked at teacher beliefs about technology (Blundell et al.,, 2016; Jääskelä et al., 2017), teacher concerns about technology integration (Min, 2017), intrinsic and extrinsic influences for technology integration by teachers (Blundell et al., 2016), teacher digital competence (Instefjord & Munthe, 2016), and combinations of these.

In a study from Norway, Instefjord and Munthe (2016) surveyed teacher educators (n = 387), mentor teachers (n = 340), and pre-service teachers (n = 654), about the integration of digital competence content in teacher education programs. The survey inquired about participant digital competence levels, participant level of support in the workplace, and efficacy of teaching philosophy or approach. For the teacher educators and mentors only there were additional items related to what they emphasize with students and their perception of how pre-service teachers are prepared compared to the needs they face once in service (Instefjord & Munthe, 2016). A majority of respondents rated their digital competence as average or above. Perceptions of support varied and there were no significant results on this item. Workplace support and professional development were seen as having an influence on teacher digital competence once in service (Instefjord & Munthe, 2016).

A qualitative interview study of 18 higher education faculty explored the beliefs teachers held about the use of technology in higher education, pedagogy, and learning (Jääskelä et al., 2017). This study found four types of beliefs prevalent among the faculty. These were those who viewed technology as a tool for self-paced study, those who viewed it as a tool for active and interactive learning, those who considered it a tool for

assessment and integration, and those who saw it as a tool for changing learning culture (Jääskelä et al., 2016). The authors call for more research on the pedagogical thinking of teachers in relation to technology integration (Jääskelä et al., 2017). Some of the findings discussed motivators. The topic of time was represented in that some teachers recognized the value of technology to enhance efficiency, while others saw incorporating technology as an increase on their workload (Jääskelä et al., 2017). The institutional emphasis on technology integration appeared in the beliefs of some of the participants in terms of discussion of "the massification of universities, and the need to find new modes of provision and delivery" (Jääskelä et al., 2017, p. 208). Training and pedagogical guidance was recommended, as participants tied their use of technology to the aims of the lesson (Jääskelä et al., 2017).

A qualitative in-depth interview study of four higher education faculty who were integrating an ebook curriculum approached the topic from a stages of concern framework (Min, 2017). The faculty were categorized according to their concerns regarding the integration according to their place in the process. Faculty concerns were manifested in different areas, such as affordability, efficiency, technology difficulties, learning curve, prior experience, and others which can be grouped under the themes of access, support, time, and teacher attributes. Because the participants were adopting a university ebook initiative, the institutional emphasis on technology was also an element of the study (Min, 2017).

A case study of 60 higher education faculty sought to understand influences and challenges to teaching practices that digital learning posed (Blundell et al.,, 2016).

Influences were approached classified as intrinsic and extrinsic. Extrinsic influences were related to time, such as that required for learning, planning, and preparing, keeping up with changing technologies, and workload demands; access and support, such as need for resources, complaints about the technology used by the university, and incompatibility of systems; training and professional development were another extrinsic influence; and the institutional emphasis on technology integration was evident in concerns about assessment requirements that limited ability to use technology, general expectations for technology integration, and a lack of consistency in teaching placing limiting ability to build on prior technology learning objects and artifacts (Blundell et al., 2016). The topic of time also appeared under intrinsic influences, mainly in the form of intrapersonal concerns about technology such as the time and energy required to develop technological content and maintain its currency. Teacher attributes also fell under the category of intrinsic influences, such as teacher attitude toward technology, personal experiences, knowledge, and experience (Blundell et al., 2016).

A study that argues for looking at technology in higher education from a wider perspective focused on the contexts within which faculty make decisions about the use of technology (Shelton, 2018). A case study with 11 faculty at three university campuses elicited data through multiple interviews of each participant. Data were analyzed for evidence of types of ecosystems that influenced faculty thinking (Shelton, 2018). Elements in each of these ecosystems were elaborated, such as the internal and external entities that may impose technology requirements on programs in order to prepare students for professional experience and credentials; money, both in terms of student

expectations for the value of their education and university emphasis on technology as a means of saving money; access to and support for using technology; teacher perceptions and beliefs; and training and professional development (Shelton, 2018). The study examined institutional emphasis or influences, but themes of time, access, training, and teacher attributes were also identified as influences on instructor thinking related to technology. In addition, the author identifies that technology integration can be subject or discipline dependent, such as national professional standards that require use and knowledge of specific technologies (Shelton, 2018).

Swanson (2016) found, however, that integration of technology is more dependent on teaching philosophy than subject discipline. In a qualitative interview study with 16 higher education faculty from 16 different disciplines, the researcher found that "technology use varied more by teaching philosophy than by discipline" (Swanson, 2016, p. 29). While some participants noted the discipline-specific enhancements particular technologies afforded, in general it was the philosophy and beliefs of the instructors that had a greater influence on technology integration. Teacher attributes such as teaching philosophy and beliefs about technology and self-efficacy with technology were seen as major influences (Swanson, 2016).

A mixed methods study used surveys ($n = 291$) and interviews ($n = 22$) utilized TPACK (Mishra & Koehler, 2006) to examine the experiences of higher education faculty integrating technical knowledge (Marcelo & Yot-Domínguez, 2018). The authors note that TPACK alone is not enough to understand teacher decisions to use technology, and that it is based on self-report. Participants indicated that the content area in which

they teach is a major factor in their decisions to use technology, and which technologies to use (Marcelo & Yot-Domínguez, 2018). Access was noted as an issue, along with support and training. The researchers note "university teachers use only those technology-based learning activities with which they are familiar and comfortable" (Marcelo & Yot-Domínguez, 2018, p. 10), however they also note that increased use of technology enhances teacher comfort with its use. The topic of time arose in terms of compensation for innovation with technology and the additional work involved. The content being taught was also identified as an influence on if and how instructors incorporated technology (Marcelo & Yot-Domínguez, 2018).

A qualitative case study of three teacher educators explored their experiences during a one-to-one mentoring program for use of technology (Yu & Karakaya, 2018). This study also incorporated the TPACK (Mishra & Koehler, 2006) framework. Findings indicated that mentoring on how to incorporate technology to support or supplement content knowledge "was effective in helping these teacher educators prioritize TK [technology knowledge], TCK [technology content knowledge], and TPK [technology pedagogical knowledge] in relationship to TPACK as a whole" (Yu & Karakaya, 2018). The additional training and professional development helped to increase confidence among participants. Barriers noted were technology issues and the time commitment required both for mentoring and for increased use of technology (Yu & Karakaya, 2018).

Studies related to social media in higher education yielded data on faculty perspective on incorporating technology. One study of higher education faculty and students in Serbia, which may have a different technology context than that of the current

study, used data from a survey of 2400 Serbian adults regarding their technology use and

conducted interviews with 15 tertiary educators and 15 students (Radovanović, Hogan, &

Lalić, 2015). The focus of the study was the potential digital divide between teachers and

students in higher education. Findings from the nationwide survey showed that "most of

the digital skills being adopted concern social media" (Radovanović et al., 2015, p.

1739). Access to technology was a factor in general for the country of Serbia, as Internet

access is not consistent nationwide. Additional concerns were infrastructure and the

institutional culture (Radovanović et al., 2015) were noted. However, faculty resistance

to incorporation of technology was documented as a major factor in the digital divide.

Faculty reported that technology represents a challenge to their authority and credibility.

Younger people are more willing to use technology than their professors and this results

in students having to teach themselves about technology because their teachers do not use

it or provide instruction on use (Radovanović et al., 2015).

Acceptance of the use of social media by business communication faculty was

studied using a modification of the technology acceptance model (Sapkota & Vander

Putten, 2018). Faculty (n =11) were interviewed and their syllabi examined for their

usage and perceptions of social media in courses. Perspectives on attitudes toward social

media, its relevance in business courses, methods and guidelines for incorporation of

technology were sought (Sapkota & Vander Putten, 2018). Perceived usefulness of social

media represented teacher perspective of the relevance of social media in business was

unanimously recognized, however not all agreed that it was useful in the classroom.

Perspectives were divided on whether the use of social media as a teaching tool was a

time saver or a drain on time and energy (Sapkota & Vander Putten, 2018). Barriers to use identified in the study included time and teacher attributes such as self-efficacy and personal abilities (Sapkota & Vander Putten, 2018).

Teacher perspectives and experiences with online and distance learning were the topics of several studies. Dumont and Raggo (2018) conducted a mixed methods survey of 43 higher education faculty who taught online. Of the factors identified as challenges, the additional time required by online teaching was one of the most frequently reported. Training was also identified as a factor, one which could affect the time required for online teaching (Dumont & Raggo, 2018). Technical access and support were issues that were reported as important, as well as institutional support for technology shown in policies or funding (Dumont & Raggo, 2018).

The experiences and perspectives of higher education mathematics teachers with different online learning backgrounds was the focus of a qualitative interview study of eight instructors (Adnan & Boz, 2015). The participants were either mathematicians or mathematics educators. "Both mathematicians and mathematics educators are significantly positive about teaching mathematics online where they have participated in a professional development programme about online learning and teaching" (Adnan & Boz, 2015, p. 33). This outlook was even more pronounced in those who had previous experience teaching online.

The use and perception of mobile information and communication technologies by 59 tertiary faculty in the United States and South Korea examined the ways mobile ICT was used and faculty perception on how the use of mobile ICT affected their

teaching practice (Biddix, Chung, & Park, 2016). While the use of mobile ICT was noted to increase opportunities for access to learning for students, it was also seen as affecting faculty time for research and other activities (Biddix et al., 2016). The authors note that "little is currently known about faculty use and attitudes towards technology that enable opportunities" (Biddix et al., 2016, p. 384) for empowering student learners.

A 10-year, longitudinal study of nine online teachers used a mixed methods approach to learn more about teacher approaches to and conceptions of learning and teaching with technology and how those may have changed over time (Englund, Olofsson, & Price, 2017). The authors identified five different approaches to learning and teaching and how those manifest in relation to technology, which ranged from a teacher-centered approach that viewed technology as a means to transmit information but not to collaborate, to a student-centered philosophy that encouraged use of technology for transformative, generative purposes and to prepare for future professional careers and roles (Englund et al., 2017). Among the findings, the researchers note that "the novice teachers developed their conceptions of and approaches to teaching with technology, which in turn are related more to student-centred approaches, while their more established colleagues failed to do so" (Englund et al., 2017, p. 83).

One study looked at the reasons educators stop using technology in their teaching practices (Shelton, 2017). In a qualitative, multi-site case study of 11 university educators from three universities, educators were asked to describe situations where they had given up use of a technology. Reasons for doing so included a lack of success using the technology, obsolescence or updating of the technology, and a change in teaching

contexts (Shelton, 2017). Respondents noted challenges such as the time required to learn to use a new or updated technology, technical issues or incompatibilities, and institutional changes. Support and access are influential factors, as well as institutional factors such as expectations, unwritten or written rules (Shelton, 2017). Technology can facilitate more access to the teacher, which can be a challenge because a ubiquitous cyber presence can require more time for interaction and a feeling of always being on-the-job (Shelton, 2017).

Two studies had findings specifically related to the future professional use of technology by pre-service students and how it relates to higher education. In a quantitative study of 1,165 tertiary science students, information was sought regarding student use of digital equipment, communication with the institution, online behavior, and familiarity with software programs (Thorell, Fridorff-Jens, Lassen, Lange, & Kayser, 2015). Responses indicated that when faculty did not use technology, students did not see the value of it or how to use it. Additionally, students were frequently unable to use specific technologies in the ways required by the discipline of study (Thorell et al., 2015).

The professional use of social media was the focus of a study that outlined a professionalism and social media class that was developed for first-year medical students (Gomes et al.,, 2017). The authors note, "Many of the students in our study stated that they grew up using the Internet and posted to social media without awareness of possible future consequences. Poor judgment in the use of social media can affect admission to medical school and residencies" (Gomes et al., 2017, p. 302), highlighting a need for professional programs to address this lack. In addition to pointing out to students the

negative potential effects of social media, the authors note that it is important to also examine and explore positive examples of the professional use of social media (Gomes et al., 2017).

To resolve the issue of a lack of current empirical research on technology in the fields of translation and interpreting studies and interpreter education, it was necessary to search for relevant literature in other fields, such as educational technology, education, higher education, and professional studies. What has been learned from these additional research areas has helped to provide a foundation to understand the topic. Literature from education has been combined with the research on technology in interpreting and interpreter education to analyze differences and similarities. Next, an introduction to the literature on the use of technology in interpreting, spoken and signed, is presented followed by the literature on technology in interpreter education. The recurring themes across research disciplines are identified and presented. A synthesis of themes across all the literature reviewed can help inform methodological planning and decisions for answering the research questions of the current study.

Research on the Use of Technology in Spoken Language Interpreting

Research on technology in interpreting studies has occurred nearly since its inception, as the profession of interpreting is considered to have started with the introduction of simultaneous interpreting in the late 1930s, made possible by microphone and headset technology (Pöchhacker, 2016). Translation studies, the parent discipline of interpreting studies, has examined technology in long use by translators such as machine translation, electronic storage banks of terminology, and other forms of technology

(Atabekova, Gorbatenko, Shoustikova, & Valero-Garces, 2018; Goldsmith, 2018; Koller & Pöchhacker, 2018). Interpreting has a shorter and arguably resistant history of incorporating technology (Ortiz & Cavallo, 2018), however there is some recent research that helps illustrate how interpreters interact professionally with technology. This includes research on terminology management systems and computer assisted interpreting, telephone and video remote interpreting, tablet interpreting, and note-taking pen technology for consecutive interpreting, which is when the interpreter listens for a period of time while taking notes and then provides the interpretation of the discourse when the speaker has paused or finished speaking rather than beginning to interpret simultaneously to the speaker.

Terminology management systems and computer assisted interpreting. Systems for managing terminology banks, or corpora, have been used in translation for some time and are beginning to be incorporated in interpreting (Arumi & Vargas Urpi, 2018; Corpas Pastor, 2018; Desmet, Vandierendonck, & Defranq, 2018; Fantinuoli, 2017; Federici & Al Sharou, 2018; Ferraresi, 2016; Kerremans, Cox, & Stengers, 2018; Prandi, 2015, 2017, 2018). Digital technology has helped the process of developing and maintaining lexical corpora, which are repositories of terminology for various settings such as recordings of European Union Parliament speeches (Ferraresi, 2016) or other domain-specialized terminology (Arumi & Vargas Urpi, 2018; Fantinuoli, 2017). Recent advances in automatic speech recognition technology hold future potential for computer assisted interpreting (Desmet et al., 2018).

Telephone and video remote interpreting. Telephonic interpreting has been performed for some time by spoken language interpreters (Iglesias Fernández & Ouellet, 2018; Koller & Pöchhacker, 2018; Spinolo, Bertozzi, & Russo, 2018; Wang, 2018). The advance of streaming video technology is being utilized in spoken language interpreting (Braun, 2018; Fowler, 2018; Spinolo et al., 2018). Among spoken language interpreters, video interpreting is being increasingly used in conference and legal settings (Balogh & Salaets, 2018; Braun, 2018; Braun, Davitti, & Dicerto, 2018; Licoppe, Verdier, & Veyrier, 2018; Skinner, Napier, & Braun, 2018; Spinolo et al., 2018). It is also useful, like telephone interpreting, for providing communication access to low-incidence language users when there are no qualified local interpreters available (Braun, 2018; Skinner et al., 2018).

Tablet interpreting. The use of electronic tablets, such as iPads, by interpreters has begun to be documented in the literature (Atabekova et al., 2018; Goldsmith, 2018). These devices appear to be most often used for notetaking in consecutive interpreting, where the interpreter listens and takes notes for a period of time, then renders an interpretation of a longer passage of discourse, as opposed to beginning to interpret simultaneous to the speaker. More research is called for on the ways interpreters use this emerging technology (Atabekova et al., 2018; Goldsmith, 2018).

Note-taking pens. The invention of pens that record audio and can link written notes with the recording timestamp has been noted in the literature on education and interpreting. Digital note-taking pens have been put to use by interpreters (Chen, 2018; Fantinuoli, 2018; Orlando, 2015; Bidoli & Vardè, 2016). Like tablets, these devices

appear to be used mainly to support consecutive interpreting (Chen, 2018; Kellett & Vardè, 2016). One study proposed the use of such pens as a method for assessing the cognitive process of interpreters and interpreter trainees (Chen, 2018).

While the use of technology in translation has a longer history and more widespread use, technology use in interpreting is still developing as is the research on it (Atabekova et al., 2018; Goldsmith, 2018; Koller & Pöchhacker, 2018). It is anticipated that technology will be integrated into interpreting more and more in the future (Atabekova et al., 2018; Braun, 2018; Spinolo, Bertozzi, & Russo, 2018). Scholars call for more research to prepare students (Atabekova et al., 2018; Spinolo et al., 2018). There is less research on the use of technology in the younger subfield of signed language interpreting.

Research on the Use of Technology in Signed Language Interpreting

The field of signed language interpreting is an even younger and less researched subfield of interpreting studies (Pan et al., 2017). The bulk of research on technology in signed language interpreting centers on video interpreting. This may include video relay service interpreting or video remote interpreting, both cases in which the interpreter works from a location remote from the interlocutors (Bower, 2015; Brunson, 2018; Conway & Ryan, 2018; Napier, Skinner, & Turner, 2018; Tyer, 2018; Warnicke, 2018). There is some research on social media and social media etiquette (Best, 2017). There is a limited amount of research on the use of tablets in signed language interpreting (Ehrlich & Vance, 2015). A summary of these lines of research follows.

Video interpreting. Research in interpreting via video constitutes a majority of the recent research on technology in signed language interpreting. Members of the Deaf community have adopted videophone technology and interpreter relay services to gain access to phone communication with each other and the majority hearing society (Napier et al., 2018). A growing number of interpreters work in video-mediated settings (Brunson, 2018; Skinner et al., 2018), and this has created interest in working conditions (Bower, 2015; Brunson, 2018; Tyer, 2018; Warnicke, 2018), accuracy or effectiveness of interpreting via video compared to onsite (Conway & Ryan, 2018; Warnicke, 2018), and the perspectives and experiences of interpreters, practitioners, and consumers (Bower, 2015; Brunson, 2018; Conway & Ryan, 2018; Marks, 2018; Napier et al., 2017, 2018; Tyer, 2018; Warnicke, 2018), among others.

One of the earliest studies of working conditions in video remote settings (Bower, 2015) found that video relay service (VRS) interpreters in the United States experienced high rates of stress and burnout. Bower (2015) surveyed 424 VRS interpreters using the Maslach burnout inventory. Participants reported high levels of burnout and stress in this setting (Bower, 2015). The usefulness of interpreter-mediated video communications for Deaf community inclusion and access to society has been established (Napier et al., 2018). Therefore, the fact that "the stress interpreters experience in the VRS field has caused a considerable number of interpreters to limit how much they work in this field or to leave VRS interpreting altogether" (Bower, 2015, p. 12) is something for which interpreter educators may want to prepare their students. In an interview study of 22 U.S. VRS interpreters, Brunson (2018) found that despite stress and less-than-ideal working

situations, interpreters exhibit agency in their decision to continue to work in the setting and do so for a variety of reasons. Tyer (2018) conducted a mixed methods study of 22 VRS interpreters in the United Kingdom for insight into their experiences of professional isolation. Participants identified a number of ways that professional isolation in the setting negatively affected their accuracy and efficacy as practitioners, thereby having a negative effect on their consumers (Tyer, 2018). A corpus study of 25 calls and one recall session with interpreters (Warnicke, 2018) found that the institutional context (i.e., the call center) affected the co-construction of dialogue and meaning between interpreter and caller.

Several studies have examined the accuracy or effectiveness of signed language interpreting services rendered through video. One study examined the experiences of Deaf consumers, health care providers, and interpreters with video-mediated remote interpreting compared to onsite, in-person interpreting services (Conway & Ryan, 2018). While video-mediated remote interpreting was found effective in some situations, it was generally experienced as inferior or less dependable than in-person interpreting. Warnicke (2018) documented 25 VRS calls with 15 interpreters and then led the interpreters through a recall session to help understand factors influencing decisions made by the interpreters that affected the co-construction of meaning between callers and interpreter.

In addition to studies on stress and burnout (Bower, 2015) and agency (Brunson, 2018) and professional isolation (Tyer, 2018) among video interpreters, researchers have examined interpreters experiences including the special techniques interpreters working

in video interpreting settings have developed to handle specific situations such as turn-taking and other call management techniques (Marks, 2018; Napier et al, 2018), mediating the various roles required of video interpreters (Warnicke & Plejert, 2016), and the experiences and challenges faced by interpreters working in video interpreting settings (Conway & Ryan, 2018; Napier et al., 2017).

Social media. The topic of social media and its use by professional interpreters has appeared in the literature on signed language interpreting. Particularly, the use of social media for self-promotion was the topic of an international study of 12 signed language interpreters (Best, 2017). The study found that use of social media for the support and promotion of the Deaf community and its events was considered acceptable professional use, while use of social media for self-promotion was seen as unprofessional and potentially unethical considering the confidential nature of the work of interpreters (Best, 2017). The same author has gone on to develop proposed guidelines for interpreters on the professional use of social media.

Tablet interpreting. Tablet interpreting, or using an iPad or other mobile device in support of interpreting has been increasingly researched in spoken language interpreting. Just one such study has been identified in signed language interpreting. Ehrlich and Vance (2015) conducted a case study of one hard of hearing university student and the signed language interpreters who worked with him. University interpreters provided remote interpreting to the student via Internet-connected tablet (Ehrlich & Vance, 2015). The experiences of the student, an internship supervisor, and the interpreters were captured through surveys and interviews. Ultimately, it was

concluded that the use of the tablet to provide remote interpreting to the student on campus and off campus at an internship site was positively received, however, more research is needed to identify the challenges and potential resolutions to using tablets in the provision of signed language interpreting services (Ehrlich & Vance, 2015). Though this type of interpreting can be considered video remote interpreting, the use of the tablet by a team of normally onsite interpreters for on-demand interpreting and communication is unique and different from the experiences of video interpreters in more-structured commercial call centers or legal video-link settings. This is also evidence of the potential differences in how a technology may be used to support signed language interpreting compared to spoken language interpreting.

There is much less research on technology in signed language interpreting than there is in spoken language interpreting. A great deal of the literature relates to video-mediated interpreting, but there is some recent scholarship on other topics such as the professional use of social media and innovative adaptations of technology such as mobile devices for interpreting purposes. As the following section illustrates, the research on technology in the fields of education and educational technology is similarly much more robust than that of technology in interpreting and interpreter education. Therefore, research on the integration of technology in education in general has been essential for developing an understanding of how this topic may manifest in interpreter education.

Research on Technology in Interpreter Education

Recent, peer-reviewed research on technology in interpreter education is limited. This does not mean that it is not a topic of interest. Melchior (2018) notes,

Interpreter trainers are aware of the importance of continuous training and are

adapting their courses to new virtual environments and to the use of speech

repositories and engaging in new ways to give feedback, moving away from the

traditional spot-the-error approach. (p. 93)

Spoken language interpreter education has examined computer assisted interpreter

(CAIT) training for over a decade. Sandrelli & Juarez's (2007) article was one of the first

to explore the uses of ICT in interpreter education. While all research on technology in

interpreter education could be labeled computer assisted interpreter training, more recent

research on CAIT has been conducted (Deysel & Lesch, 2018), as well as research on

blended and online learning environments for interpreter education (Corpas Pastor, 2108;

Kerremans & Stengers, 2017; Lee & Huh, 2018; Melchior, 2018; Motta, 2016; Stengers

et al., 2018), and simulated discourse environments for training (Motta, 2016; Stengers et

al., 2018; Viljanmaa, 2018).

Computer assisted interpreter training. A recent study examined the use of

CAIT tools for self-improvement (Deysel & Lesch, 2018). An experimental design was

developed in which interpreters working for the National Parliament of the Republic of

South Africa were either offered the use of a specific commercial CAIT software for self-

improvement or were not offered the use of the software. A total of 10 interpreters took

part in the mixed methods study (Deysel & Lesch, 2018). Results of the study indicate

that use of the software for self-assessment did result in better self-assessment skills for

the experimental group of five interpreters (Deysel & Lesch, 2018).

Online and blended learning. Several scholars have explored the use of online and blended learning environments for interpreter education. Some studies focus on the student perspective, such as a survey study of 33 students in a blended learning environment based on deliberate practice for self-improvement (Motta, 2016). Other studies look at online and blended learning from an administrative or educator perspective. A pilot study of a professional development program for interpreters in the European Parliament (Melchior, 2018) describes a collaborative effort across European countries and universities with interpreting programs to utilize ICT for training. The results of the pilot study are already informing pedagogical decisions. A number of challenges were identified, including several also identified in the literature on integrating technology in education in general, such as an increase in teacher workload or time required, issues related to access and support, and training to use or incorporate the technology resources (Melchior, 2018). Other issues identified were that "the proliferation of platforms and the multiplicity of resources complicates to a certain extent the choice of the most appropriate materials" (p. 102), a feeling that student access to materials leads to a loss of educator control, and that students were not motivated to use the resources on their own (Melchior, 2018). Further, virtual classes were found by educators to be difficult to plan, prepare, and perform. The study concludes that virtual classes may not be appropriate for early stages of interpreter education, in part because of the additional stress of the virtual environment (Melchior, 2018).

A case study of a South Korean program for business translation and interpreting that adopted a blended learning approach solicited feedback from trainers ($n = 3$) and

trainees ($n = 2$) through a mixed methods approach (Lee & Huh, 2018). Trainers also indicated that teaching online required more time and work. They noted that the asynchronous nature of assignments allowed more time for thoughtful reflection by students, but also that students seemed less motivated to engage with each other through technology (Lee & Huh, 2018). They also found that conversations online were influenced by the first students to post and less dependent on or directed by teacher knowledge or expertise. While 1:1 feedback with students was seen as valuable and beneficial, the lack of peer discussion was seen as a disadvantage to the approach (Lee & Huh, 2018).

Stengers, Kerremans, and Segers (2018) conducted research on two cases that incorporated virtual conference tools in interpreter and translator training. One case was a class conducted virtually in real time with four participants in which participants tested various virtual interpreting technology (Stengers et al., 2018). The second case described the use of technology to deliver group feedback to a virtual translation class ($n = 20$ students and 1 educator). The first case, which focused on testing the features and functions of various videoconferencing programs, identified issues with technology as a barrier. This included assessing both the functionality of specific software and the reliability of the technology (Stengers et al., 2018). The second case collected feedback from both students and trainers who were engaged in a virtual translation class. In this session, the trainer did not experience technology issues, but noted that preparation for online education can be more complex, and felt teaching was less spontaneous than face-to-face environments (Stengers et al., 2018). Overall, technical problems were seen as the

biggest challenges to the incorporation of real-world, virtual conference tools in education, though the benefits were seen to outweigh the challenges (Stengers et al., 2018).

Simulated discourse environments. Some studies overlap categories, such as the Motta (2016) study of the University of Geneva's interpreting department and its blended learning environment. One of the goals of the approach is to provide a situated-learning experience for students, including simulated discourse environments (Motta, 2016). Ferrarisi (2016) similarly outlined a collaboration among European universities and the European Union's Parliament to provide recordings of Parliamentary speech for use as practice in simulated discourse environments. Viljanmaa (2018) reported on student reactions to a simulated discourse software, *LangPerformLab,* that was piloted with students in a master of interpreting degree program at the University of Tampere in Finland. In each study, the use of simulated discourse environments was seen as positive and that the benefits outweighed the challenges of time or technical problems.

The literature on technology in interpreter education indicates that scholarly interest in the topic is growing. Many of the scholars reviewed note that there is a need for more research to guide pedagogy and practice. The literature related to technology in signed language interpreting education is not as robust as that for spoken language interpreting, yet shows a similar growing scholarship.

Signed Language Interpreter Education

Spoken languages are oral/aural. Signed languages are gestural/visual. This difference influences the types of technologies each group may use, and that is evident in

the literature for each group. There is a paucity of recent research on technology in signed language interpreter education. A review study of articles on translation and interpreter education (Pan et al., 2017) retrieved 350 articles on translation and interpreter education from 10 major peer reviewed journals in translation and interpreting studies between 2000 - 2013. Of the 350 articles identified that were related to translation and interpreting education, just 97 were related to interpreting and only eight of those were related to signed language interpreter education. While the review study is not comprehensive of all journals or articles related to translation and interpreter education and the study period is dated, it helps to illustrate the challenges experienced in the literature review for this study. Somewhat more literature was found on spoken language interpreting than signed language interpreting, however an abundance of neither was found. Therefore, some of the literature included in this section is dated but included for historical reference and/or because it may be the most recent available research on the topic.

Video as educational aid and/or lexical bank. The use of video resources is widespread in interpreter education, with a variety of commercially produced resources in ASL and English available through companies that specialize in ASL and interpreting publications. There are articles published on the use of such resources in interpreter education, however there is not a great deal of empirical research on their use or effectiveness. Much of what has been published is theoretical, how-to-teach, or non-empirical self-report of an experience with technology. One of the earliest empirical studies on the use of video for signed language acquisition and interpreter education was a study of a software program that would allow students to video record their work, share

it with educators or each other, then receive video-based feedback from the educator and peers embedded at the time stamp of the original video (Rousch, 2010). This type of product is now commercially available, such as GoReact, but was in developmental stages at the time of the study (Rousch, 2010).

A more recent, but still dated, study described the development and execution of digital resources for signed language interpreter education in Brazil (de Quadros & Stumpf, 2015). The study provided an overview of the program from its establishment in 2008 to its successful, mature operation, which also helped to legitimize Brazil's signed language, known as Libras, as an official language (de Quadros & Stumpf, 2015). The topic of digital lexical resources for signed language was also studied by Leeson, Sheikh, and Vermeerbergen (2015) who described similar efforts to utilize new technologies in order to support language acquisition and interpreter education in Ireland and Belgium. The authors described blended learning programs, but among the technologies described, utilization of video and online resources to develop lexical banks and signed language materials were a significant benefit (Leeson et al., 2015). The use of the described technologies was also reported to present some complications. Leeson et al. (2015) identified some of the same challenges to blended learning as have been identified in the literature on education in general, namely the increased time and workload for educators developing and using digital/video resources, as well as struggles with technology. They note, "Academics will be challenged to become technically proficient in a multitude of tasks" (Leeson et al., 2015; p. 190).

The development of a lexical bank for Finnish Sign Language and Finland-Swedish Sign Language interpreters surveyed 39 users of the Via term bank about their experiences using the resource for professional development (Lakner & Turner, 2015). While created organically as a wiki with multiple contributors for use in a practitioner context, the authors note that it could easily be utilized in interpreter education. These three studies, de Quadros & Stumpf (2015) Lakner & Turner (2015) and Leeson et al. (2015), are the most recent empirical literature found on this topic.

Social media and digital etiquette. This topic has gained growing interest in signed language interpreting, evidenced by professional workshops and opinion papers appearing on the topic. However, very little empirical research has been published to date. One study of the perception of the use of social media by signed language interpreters has been conducted (Best, 2017), based on research conducted for a master's degree. While the study was not focused on interpreter education, the findings were published in an interpreter educator publication, the *International Journal of Interpreter Education.* The researcher has written non-empirical articles of advice or suggestions for interpreter education based on the findings of the study (e.g., Best, 2016, for example).

Online and blended learning. Online and blended learning has been addressed by a few scholars, at time overlapping with research on digital or video lexical banks. The previously mentioned study of the development of digital materials for Brazilian interpreter education included how those materials are utilized in online education (de Quadros & Stumpf, 2015). Leeson et al.'s (2015) study also included information about how online learning is occurring in interpreter education in Ireland and Belgium. Leeson

et al. (2015) note that there is little research on the effectiveness of blended learning in interpreter education.

A study of online interpreter education compared to face-to-face interpreter education utilized the Community of Inquiry framework to assess student perspectives (Mulayim & Lai, 2015). They found that their survey results "do not indicate any major differences between the online and the F2F cohorts in the development phases of a community of inquiry or any clear advantages of one mode over the other" (Muyalim & Lai, 2015, p. 120). The authors recommend that the community of inquiry framework can be a guide for interpreter educators regardless of the mode of delivery of education.

More recently, online signed language interpreter education via mobile technology was the topic of a study of American and Ghanaian interpreters (Darden & Maroney, 2018). A short-term online training for ASL and Ghanaian Sign Language interpreters was conducted to determine the feasibility of m-learning in interpreter education for developed and developing countries. Findings indicated that those in both developed and developing countries experienced technological problems (Darden & Maroney, 2018). Time was also identified as a complicating factor, causing the training to be extended from a planned three weeks to eight weeks in order to give participants time to engage, though this may have been influenced by cultural factors as well (Darden & Maroney, 2018).

Simulated discourse environments. The use of technology to create simulated environments for educational purposes has begun to be examined in signed language interpreter education. As with the overlap between the development and use of video

lexical banks and online or blended learning, there is an overlap between video lexical banks and simulated discourse environments, because the materials developed for lexical banks may be used in online learning and simulated discourse environments. There is a limited amount of research available on this newer use of technology. As with other topics in signed language interpreting, non-empirical theoretical and how-to-teach descriptions seem to appear first, and empirical research follows. In addition to previously reviewed articles on lexical banks and online and blended learning, just one recent study focusing specifically on this topic in signed language interpreter education has been found.

A simulated discourse environment was created for use in training British Sign Language interpreters for work in health care settings, a specialized setting in interpreting (Hughes, Bown, & Green, 2019). The study reported on training that was conducted in concert with the nursing program and simulation lab at the University of Wolverhampton over two years and comprised 11 and 7 students. To prepare student interpreters for working in health care settings, students attended simulations of interpreting scenarios rather than lecture-based classes. Findings showed that the simulation was highly successful. Students appreciated the opportunity for learning in an authentic setting and showed a high level of engagement in all activities including pre-simulation preparation and readings (Hughes et al., 2019).

Common Themes Identified in the Literature

To gain an understanding of the factors that may affect or influence the experiences and practices of educators as they provide students with opportunities for

digital citizenship skill-building, literature was reviewed from the fields of education, educational technology, higher education, professional studies, translation and interpreter studies, and interpreter education. A related topic, the perspectives and experiences of educators integrating technology in the curriculum was also identified as relevant and incorporated into the search. Several themes became evident during this process, appearing repeatedly in the literature across fields. Studies that were reviewed typically coded these themes variably as supports or barriers to technology integration, depending on the lack or availability of each. For example, institutional emphasis can be a support or a barrier depending on how it is executed.

Themes identified have been organized and presented as neutral with the potential for being either a support or a barrier for the integration of technology and digital-citizenship skill building opportunities in teaching. These include training and professional development, teacher attributes, access and support, institutional emphasis, teacher modeling, and time. Each of these are identified as elements that can have either a positive or negative influence on teacher use of technology in the classroom and the integration of opportunities for students to gain digital citizenship skills.

Training and Professional Development

Training and professional development were often reported as factors influencing the integration of technology by educators. Literature that identified training as a factor included research that looked at pre-service educators and the effectiveness of training they received. Lewis (2015) wondered if pre-service teachers were aware of standards for technology integration. Upon finding that 60% of respondents were not aware of

International Society for Technology in Education standards or the concept of digital citizenship, the author concluded that more specific training in this topic would benefit pre-service teachers who would be expected to be able to incorporate standards-based technology into their teaching upon completion of teacher education programs. The ability of teacher education programs to teach educators to move from an ability to use technology to a real appropriation of technology for preparing students for a technology saturated world was the focus of some studies (Instefjord, 2015; Tømte, 2016), each of which identified the value of training and modeling by teacher educators.

Training and ongoing professional development were widely noted as influential factors in the studies reviewed. Professional development was identified as a potential barrier or support for educators in studies that explored the influence of teacher beliefs on technology integration (Hsu, 2016; Jääskelä et al., 2017; Taimalu & Luik, 2019), a comparison of integration by teachers based on teacher demographics (Krumsvik et al., 2016), also by studies that looked at institutional influences on teacher integration of technology (Adekola et al., 2017; Porter & Graham, 2016), and studies that looked at technology acceptance by teachers (Irvin & Longmire, 2016) or adoption (Min, 2017). The topic has been examined within the context of formal teacher education programs and courses (Brenner & Brill, 2016; Instefjord, 2016; Krumsvik et al., 2016; Lewis, 2015; Taimalu & Luik, 2019; Tømte, 2016), professional development for technology integration on the job (Hsu, 2016; Irvin & Longmire, 2016; Krumsvik et al., 2016), and in one-to-one or small group mentoring (Dooley et al., 2016; Yu & Karakaya, 2018).

Training and professional development are noted as factors for technology integration at all levels of education. In addition to the pre-service contexts of some of the studies mentioned, several studies from the K-12 context recommend training and ongoing professional development as a factor for teachers integrating technology (Dooley et al., 2016; Khlaif, 2017; McCulloch et al., 2018). Literature on integrating technology in higher education has also identified training and professional development as a factor in studies that examine the issue from a teacher perspective (Adekola et al., 2017; Blundell et al., 2016; Marcelo & Yot-Domínguez, 2018; Min, 2017; Porter & Graham, 2016; Swanson, 2016; Shelton, 2017, 2018;), from an administrative perspective (Adekola et al., 2017; Irvin & Longmire, 2016), and from student perspectives (Radovanović et al., 2015; Thorell et al., 2015). The higher education context of professional studies is addressing this issue as well (Gomes et al., 2017).

Research in interpreter education also addressed training and professional development as factors for successful of use of technology by educators or practitioners (Deysel & Lesch, 2018; Fernandez & Ouellet, 2018; Kerremans & Stengers, 2017; Lee & Huh, 2018; Spinolo et al., 2018; Stengers et al., 2018). One study that identified several challenges for an online interpreter training and professional development tool and stated, "Possible solutions to these problems would be found in the training of all those involved, especially the trainers who act as the human interface between new technologies and students" (Melchor, 2018, p. 102). It therefore appears that this theme is relevant to interpreter education and relevant to the current study.

Teacher Attributes

Characteristics the teacher possessed were found to be a factor in the integration of technology. This was expressed in different ways. The focus of many studies was on teacher beliefs (Jääskelä et al., 2017; Hsu, 2016), attitudes (Khlaif, 2017), experiences (Adnan & Boz, 2015; Biddix et al., 2016; Englund et al., 2017; Krumsvik et al., 2016; Min, 2017; Radovanović et al., 2015; Sapkota & Vander Putten, 2018; Shelton, 2017, 2018), technology adoption category of the teacher (Porter & Graham, 2016), or pedagogical philosophy (Hsu, 2016; Swanson, 2016). Findings among studies varied but each identified teacher attributes as a factor influencing the integration of technology.

Teachers who had a constructivist pedagogical philosophy were found to integrate technology more often and believed their self-efficacy with technology was high (Hsu, 2016). Age and work experience were seen to have an inverse relationship with teacher digital competence in one study that found teachers with more than 15 years of experience and/or older than 50 years were likely to score lower in digital competence (Krumsvik et al, 2016). Women were found to have higher digital competence than men in one study (Krumsvik et al., 2016). Prior experience was noted as a factor in several studies (Adnan & Boz, 2015; Blundell et al., 2016; Khlaif, 2017; Marcelo & Yot-Domínguez, 2018; Radovanović et al., 2015; Shelton, 2018).

There are few current studies of interpreting educator perspectives on integrating technology into their teaching. While none of them specifically reported teacher attributes as a finding that influences integration of technology, some of them did collect and report data related to teacher characteristics such as prior experience (Darden & Maroney, 2018;

Fernández & Ouellet, 2018; Melchior, 2018; Stengers et al., 2018). The small amount of literature found on the field of interpreting in general contributes to the lack of current literature on technology in interpreter education.

There is one study that examined the intersection of interpreting and technology from the practitioner perspective, rather than interpreter education (Mellinger & Hanson, 2018). A quantitative survey of 152 interpreters, comprised of 33 signed language interpreters and 133 spoken language interpreters, was conducted to understand differences in the use of technology between community interpreters and courtroom interpreters (Mellinger & Hanson, 2018). Among the factors explored were interpreter attitudes about technology and technology adoption and use (Mellinger & Hanson, 2018). The study found significant differences in technology acceptance and professional use between community interpreters and court interpreters. These differences were attributed, in part, to the self-perception of the role of the interpreter each group exhibited (Mellinger & Hanson, 2018). This indicates that personal attributes may be an influence for adoption and use of technology in interpreter education as well.

The individual attributes of the educator have an influence on the integration of technology. These have been characterized as beliefs, perceptions, attitudes, experiences, technology adopter category, and pedagogical philosophy of the teacher. Elements that influence the use and integration of technology in education may influence the opportunity for students to build digital citizenship skills. This theme appears to have relevance to the present study.

Access/Supported Access

Access to technology, access to the appropriate technologies, and support in accessing the appropriate technologies was an area frequently identified as potential support or barrier. Access, in terms of physical access to technology, be it hardware, software, bandwidth, or some other factor, was cited as a potential barrier or support in 19 of the 29 studies reviewed related to the integration of technology in general education. This was characterized in different ways, such as having the appropriate infrastructure for technology integration (Adekola et al., 2017; Blundell et al., 2016; Dumont & Raggo, 2018; Hsu, 2016; Irvin & Longmire, 2016; Khlaif, 2017; Marcelo & Yot-Domínguez, 2018; Min, 2017; Porter & Graham, 2016; Radovanović et al., 2015; Shelton, 2017, 2018; Tømte, 2016). It also appeared in the literature as access to the necessary software or appropriate tools for the content being taught (Adekola et al., 2017; Blundell et al., 2016; Brenner & Brill, 2016; Dooley et al., 2016; Dumont & Raggo, 2018; Marcelo & Yot-Domínguez, 2018; McCulloch et al., 2018; Min, 2017; Porter & Graham, 2016; Shelton, 2017, 2018; Tømte, 2016). Other studies identified technology support services as a factor that influenced the ability to access technology (Adekola et al., 2017; Dumont & Raggo, 2018; Hsu, 2016; Irvin & Longmire, 2016; Khlaif, 2017; Lewis, 2015; Porter & Graham, 2016; Shelton, 2018; Yu & Karakaya, 2018). A couple of studies noted that access to technology was an influencing factor for teacher integration of technology when the teacher recognized that using the technology would give access to students who otherwise might not have an opportunity to use or learn about the technology (Biddix et al., 2016; Khlaif, 2017).

Interpreting and interpreter education research also reports on access to technology. One theme is that the use of online learning allows access to interpreter education for a greater number (Lee & Huh, 2018; Melchior, 2018) or that the use of technology allows for greater access to interpreting services for consumers (Atabekova et al., 2018; Napier et al., 2017; Kerremans et al., 2018; Wang, 2018). Another theme is related to technology requirements required for adequate access, particularly related to virtual learning environments (Darden & Maroney, 2018; Melchior, 2018; Stengers et al., 2018; Viljanmaa, 2018;) and in telephone or video-mediated interpreting settings (Balogh & Salaets, 2018; Braun, 2018; Braun et al., 2018; Conway & Ryan, 2018; Devaux, 2018; Fernández & Ouellet, 2018; Fowler, 2018; Koller & Pöchhacker, 2018; Napier et al, 2017; Zigler & Gigliobianco, 2018). Access to technology appears to be a relevant topic for research on technology in interpreting.

Access to technology in the form of Internet access, sufficient bandwidth, and appropriate hardware and software has been identified as a factor in the integration of technology in education, interpreting, and interpreter education. Access to technology has also been reported in the literature in terms of technical support to assist with issues of connectivity and operability. The topic appears to be important for understanding the experiences of educators incorporating opportunities for digital citizenship skill-building opportunities into their teaching practice.

Institutional Emphasis

The degree to which the institution emphasizes the use or integration of technology in the classroom has been reported as a factor influencing teacher integration

of technology. Institutional emphasis can manifest in different ways. Researchers have identified the institutional emphasis on financial support for technology infrastructure (Adekola et al., 2017; Blundell et al., 2016; Dumont & Raggo, 2018; Porter & Graham, 2016; Radovanović et al., 2015; Shelton, 2017, 2018). The existence or nonexistence of institutional plans or strategies for technology use and integration has been noted as having an influence on the integration of technology (Adekola et al., 2017; Blundell et al., 2016; Dumont & Raggo, 2018; Irvin & Longmire, 2016; Porter & Graham, 2016; Shelton, 2017, 2018; Thorell et al., 2015). Institutional requirements for technology use, both official and unwritten, have been studied by several investigators (Dumont & Raggo, 2018; Irvin & Longmire, 2016; Jääskelä et al., 2017; Lewis, 2015; Shelton, 2017, 2018). This element appears to be a factor in the use of technology in education across levels and disciplines.

Interpreter education literature touches on the topic of institutional emphasis only obliquely. For example, a study of the use of computer assisted interpreter training for South African parliamentary interpreters would not be possible without the support of the National Parliament of the Republic of South Africa (Deysel & Lesch, 2018). Though not related to interpreter education, but from a practitioner perspective, Mellinger and Hanson (2018) studied the technology acceptance and use of community interpreters compared to courtroom interpreters and found that the institutional emphasis on the use of technology in medical and legal contexts had an influence on the acceptance and use of technology by practitioners in those settings. A study of the pedagogical use of virtual communication tools in interpreter training noted that for translation and interpreting

studies programs in general, "In creating authentic learning contexts for student translators and interpreters, technology has become an important factor to take into consideration, given the unmistakable impact that it has on professional translation and interpreting practices" (Kerremans & Stengers, 2017). Despite a lack of direct examination of the topic of institutional emphasis in recent literature, it appears to be a factor that could affect interpreter educator decisions and practices related to incorporating technology.

The institutional emphasis on technology has been reported as a factor influencing the integration of technology by educators in K-12 and higher education. This topic encompasses studies that researched institutional financial support for technology infrastructure, deliberate plans or strategies for technology use and integration institution-wide, and institutional requirements for the use of technology both unwritten and official. Though interpreter education research does not directly address the topic, it appears indirectly in the literature. Institutional emphasis appears to be relevant to answering the research questions for this study.

Time

The time necessary to learn new technologies, to develop teaching objects with new technologies, and to design assessments for new technologies was frequently mentioned in studies as a factor in the integration of technology. Some studies reference time directly as a factor, whether the time required to plan and develop digital resources (Blundell et al., 2016; Brenner & Brill, 2016; Hsu, 2016; Jääskelä et al., 2017; Yu & Karakaya, 2018), the time required to learn new technologies (Blundell et al., 2016;

Dumont & Raggo, 2018; McCulloch et al., 2018; Sapkota & Vander Putten, 2018; Shelton, 2017), or the ease of use of technologies (Khlaif, 2017; McCulloch et al., 2018; Sapkota & Vander Putten, 2018). Time also appeared as a factor described in terms of monetary compensation (Dumont & Raggo, 2018; Marcelo & Yot-Domínguez, 2018), and requests or recommendations for workload reductions or time for scholarship (Adekola et al., 2017; Dumont & Raggo, 2018; Porter & Graham, 2016).

Some studies reference time in terms of the increased time and workload required by online classes (Biddix et al., 2016; Blundell et al., 2016; Dumont & Raggo, 2018; Jääskelä et al., 2017). One study found the increased virtual presence or availability of the teacher was a time-related factor (Dumont & Raggo, 2018). In addition to studies that reported on the use of technology as requiring more time, one study noted the topic of time by recognizing the ability of technology to increase efficiency (Min, 2017).

Literature from interpreter education also acknowledged the additional time required for online education (Darden & Maroney, 2018; Lee & Huh, 2018; Stengers et al., 2018). Virtual interpreter education classes have been noted as difficult to plan, prepare, and perform but also recognized as helping improve efficiency and access to materials (Melchior, 2018). The acknowledgement of time as a factor in integrating technology in interpreter education indicated it may be a topic of interest for the design of the current study.

The topic of time has been documented as a factor for educators incorporating technology in their teaching. Researchers have noted that working with technology requires time for learning, planning, developing, and executing technology-based

curricula. Online and blended learning is perceived as requiring more work than face-to-face teaching. Educators experience time as an influential factor in their decisions to incorporate technology based on elements such as increased workload, lack of compensation, and lack of protected time for technology scholarship. This was true in education and interpreter education. Both fields also produced research that noted technology has the potential to save time. All of these studies have relevance to this study and its research questions.

Summary

A comprehensive review of the literature was performed to inform a study on the experiences and practices of interpreter educators related to digital citizenship. An initial exposure to the concept of digital citizenship in education during doctoral coursework specializing in educational technology led to a curiosity about how that topic was addressed in interpreter education. A lack of success in identifying research related to digital citizenship in interpreter education led to expanding the literature search to include technology in interpreting to help understand the types of technologies that were being encountered and that might be relevant for interpreter education. It was essential to search the literature from the fields of educational technology and education to understand what is known, unknown, and controversial about the experiences of educators incorporating digital citizenship and technology in their teaching practice. Each of these areas yielded important information.

Starting with a narrow focus and then branching out more generally required an ongoing literature review to cross-check elements identified in general literature with a

fresh review of literature in the more specialized fields of translation and interpreting studies and interpreter education. This triangulation during the literature search helped to ensure that all potential research was being identified and also that saturation had been achieved. Themes that became apparent during the review of the educational technology and education literature were identified and coded, then checked against the smaller amounts of literature in the niche fields for similarities and differences. Themes identified in interpreting and interpreter education research were also compared to those in the general literature for similarities and differences. Common themes were identified and the ways in which they manifested across studies in all fields were described.

Ultimately, the search for literature revealed evidence for several themes, including that there is a limited amount of research in translation and interpreting studies, and less on technology in translation and interpreting studies. The literature from more established fields may provide background knowledge to support the gaps in the literature for smaller, less-established fields. Themes that were identified in the general literature were training and professional development, access and supported access to technology, the institutional emphasis on the use of technology, and the time required to learn and use technology in the classroom. Each of these themes were also at least mentioned in the limited literature on interpreter education. Although no current studies have been found that investigate interpreter educators as a population, it appears that factors that have been identified as supports and challenges for general educators incorporating technology may also have relevance for interpreter educators. The information returned by the literature

review was used to support the methodological design and decisions for the current study

and are described in more detail in Chapter 3.

Chapter 3: Research Method

Introduction

The purpose of this qualitative interview study was to learn about the experiences and practices of interpreter educators as they incorporate opportunities for students to gain digital citizenship skills. Interpreters who are under-prepared for their role and responsibilities, including those related to technology, are at risk for diminished professional experiences. More importantly, the lives, rights, and freedoms of the clients they serve may also be jeopardized. The field of interpreting studies is relatively young (Abdel Latif, 2018; Pan et al., 2015; Yan et al., 2017), and interpreter education is an "under-researched sub-field of Interpreting studies" (Hale & Napier, 2013, p. 180), creating a need for more empirical research. Greater understanding of the experiences of interpreter educators can lead to improved curricula, best pedagogical practices, and improved outcomes for students, practitioners, educators, and especially the D/deaf, DeafBlind, hard of hearing, and hearing communities served by interpreters. Because of the deficit of research on the topic, I designed an exploratory qualitative interview study.

This chapter will describe the method for the study and why it was chosen. It also clarifies the role of the researcher and its potential impact on the research. The sampling methodology, the instrument development process, data analysis plan, and data security precautions are each outlined. Further, trustworthiness and ethical issues are considered and ways to safeguard them are discussed.

Research Design and Rationale

To answer the research questions, I chose a qualitative, semistructured interview study design. This decision was guided by previous research (e.g., Janesick, 2016; Maxwell, 2013; Miles, Huberman, & Saldana, 2013; Patton, 2015). The literature review also contributed to an understanding of how various research designs and methods had been used and applied to the topic by other scholars. In selecting a research design, quantitative methods were ruled out due to several factors. For instance, there is a lack of knowledge and literature about the topic of digital citizenship in interpreter education as well as the population of interpreter educators. Thus, the small size of the population did not lend itself to the large samples typical of quantitative research (Frankfort-Nachmias & Nachmias, 2008). Additionally, the goal of the research questions was to help understand personal experiences in their variety (*how* and *in what ways*), which is typical of qualitative research (Patton, 2015). The goal was not to establish a cause and effect, which is often the goal of quantitative research (Frankfort-Nachmias & Nachmias, 2008). Therefore, a qualitative approach was selected, which is appropriate for subjects about which little is known (Patton, 2015).

There are a number of qualitative research designs, and several were considered for this study, such as narrative research, which is focused on the story or experiences of one person, or phenomenology, which seeks to distill the essence of an experience (Creswell, 2013; Patton, 2015). However, neither of these offered the ability to capture the unique experiences of members of a population. Because the study was exploratory and designed to generate questions as well as provide a snapshot of the range of

participant experiences with the topic, a design that narrowed or distilled the findings was not desirable (Patton, 2015; Yin, 2014). A case study approach was also considered, but cases generally concentrate on a single or small sample or case bounded by some structure such as an institution or locality (Yin, 2014). This approach would not be effective for answering the research questions. Finally, a grounded theory approach can be utilized for an area that has not generated a lot of literature. However, the approach is used to develop a theory on a phenomenon (Strauss & Corbin, 1990, p. 24), which did not align with the purpose of this study. Additionally, it is less predictable than other approaches, which can add to the timeline and cost of a study (Patton, 2015). Considering the lack of alignment and the time and resource limitations of the current study, this approach was also rejected.

A qualitative, in-depth interview study design was chosen for this study because both the topic and population are under-researched. Considering the small amount of research on the target population—five previous studies dating from 2004–2018—an interview study approach was chosen, which aligns with the research questions. Qualitative interview studies are appropriate for studying topics about which little is known, asking questions about *how* or *in what ways,* and for eliciting the experiences, practices, and thought-worlds of the participants or population (Patton, 2015). The methodology and research questions are grounded in the initial literature review, but some flexibility was built into the design (Patton, 2015). Additionally, I align with a social constructivist approach to learning and teaching, which suggests that meaning is co-constructed (Darden et al., 2015; Kiraly, 2000; Reddy, 1979; Wilcox & Shaffer,

2005). A social constructivist approach acknowledges that people operate, teach, and learn within social contexts that impact their decisions and behaviors (Kiraly et al. 2016; Patton, 2015; Vygotsky, 1978). To learn more about the experiences and practices of interpreter educators incorporating digital citizenship skill-building opportunities in their teaching, the following research questions were designed:

Research Question 1: What are the experiences of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices?

Research Question 2: What are the practices of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices?

Research Question 3: What do interpreter educators believe about the development of the digital citizenship skills of their students?

The sampling strategy was appropriate to the scope of the project and the population involved. Initial data collection and analysis procedures were developed, with flexibility for adapting to needs that arose in the process. Potential weaknesses and limitations were anticipated and mitigating measures employed to strengthen validity. Each of these are discussed in depth in this chapter.

Role of the Researcher

I am a member of the population the research was designed to study. This provided potential benefits and disadvantages to the study. An emic, or insider, perspective can lend insight to the study design, analysis, and findings that might be overlooked by outsiders (Patton, 2015). At the same time, familiarity with a setting, group, or topic, can lead the researcher to see what is expected (Patton, 2015). Further,

interpreting is a small field, and interpreter education is even smaller, so it is likely that the participants and I could know each other. To avoid conflicts or skewing of data collection or analysis, potential participants were screened for possible dual relationships with me, such as supervisory or mentorship roles and other power differentials. Volunteers who represented a potential conflict were not accepted to the study. Additionally, care was taken to ensure the confidentiality of the participant data within this small population.

As an interpreter, educator, and scholar, I have over two decades of experience with professional confidentiality as well as holding personal biases in check while working professionally and representing others with fidelity, as well as reflective practice and collegial supervision or case conferencing to limit bias and encourage best practices. These skills and experiences were used, along with qualitative methods, to ensure trustworthiness. I was responsible for all aspects of data collection and analysis, with few exceptions. I contacted potential participants from public websites via e-mail to invite them to the study. Members of my own institution were excluded from the study to minimize the possibility of biases skewing the data. I administered and collected the informed consent documents from each participant, including the option to decline or withdraw from the study at any time with no ill effects. Members of the population who knew me or knew of me were encouraged not to feel compelled to participate but were welcome to do so willingly. I conducted interviews with each participant using the platform, Zoom, and audio-recorded the interviews. I used machine transcription with

manual verification to transcribe the interviews. I coded the data collected and performed the analysis of the findings.

Trustworthiness

To ensure trustworthiness and minimize issues that could arise from me and the participants knowing each other, certain methodological steps were incorporated, as described in this chapter. In addition to maintaining transparency as the researcher and collecting informed consent from all participants, sets of data were triangulated against each other. Additionally, participants had opportunities to contribute to trustworthiness through the co-construction of meaning with me during the interview, participants' own statements to illustrate findings in the report, and member checking that has the members of the sample verify that they have been accurately and fairly represented in the findings. I also used researcher memos, ongoing literature review during data collection and analysis, looking for rival explanations of emerging themes, and other recommended methods appropriate in the analysis (Creswell, 2013; Miles et al., 2014; Patton, 2015).

Methodology

A methodology was developed for an exploratory interview study. The methodology entailed recruiting and selecting participants, developing and applying instruments for data collection, and the development of and adherence to a protocol for each of these processes. The design was grounded in established qualitative data collection and analysis research traditions. A description of each of the methodological elements follows, with rationale and justification.

Participant Selection Logic

The sample was drawn from the population of full-time educators who work in 4-year, bachelor-degree granting programs in ASL/English interpreting in the United States. At the time of the study, there were 54 such programs in North America, which also included Canadian institutions (RID, 2019). Extrapolating from prior research on this demographic (Darden, 2013), the only research found that estimated the number of signed language interpreter educators employed by 4-year institutions in the United States, the population of interpreter educators qualifying for this study was projected to be approximately 125-175 people. Potential participants were identified from the public websites of the institutions listed on RID's public searchable database. This yielded a potential participant pool of 75 educators.

Participants were purposively recruited for the sample, which was anticipated to be six to eight participants from institutions across the United States. Similar qualitative studies of interpreter educators and tertiary educators have comprised a similar sized or smaller sample. For example, a qualitative interview scoping study of the experiences of signed language interpreter educators comprised eight educators from four English-speaking countries (Webb & Napier, 2015). Additionally, a qualitative interview study of Canadian interpreter educators and ASL instructors and their ontological beliefs included approximately five to seven interpreter educators drawn from programs across Canada (McDermid, 2009). Moore, Smith, Hollingshead, and Wojcik (2018) also performed a qualitative interview study of six teacher preparation faculty members from six United States institutions to learn more about their experiences implementing Universal Design

for Learning. Other studies have included four educators to learn more about concerns as they adopted an integrated e-book curriculum (Min, 2017), six general education teachers' integration of technology to serve English language learners (Anglin, 2017), and nine university adult professional studies instructors' perceptions of transitioning their courses to an online environment (Skinner, 2016). Several of these studies based their methodology and sample size on the lack of available research on the population or topic. In a small population, a sample of six to eight members can return a rich picture of the experiences of the population; it is large enough to provide a picture of what is occurring across the population yet small enough to provide rich data collection and analysis that is the hallmark of qualitative research (Hale & Napier, 2013; Merriam & Tisdell, 2016; Patton, 2015).

As a population, ASL/English interpreter educators affiliate nationally under the Conference of Interpreter Trainers. There are no regional or state chapters of this national professional body, which convenes every 2 years. Previous research studies of interpreter educators have drawn educators from across a nation (Fitzmaurice, 2010; McDermid, 2009; Pinto & Sales, 2008) or from several nations (Ehrlich & Wessling, 2018; Webb & Napier, 2015). To focus on one institution or even a region would limit the data. Many institutions may only have one full-time interpreter educator and not every state has a 4-year program (Darden, 2013). Therefore, a decision was made to recruit nationally.

Educators were recruited by e-mail from addresses listed on institution websites to participate in the data collection phase. Though qualitative inquiry is not concerned with producing generalizable results or large sample sizes (Maxwell, 2013; Merriam &

Tisdell, 2016; Miles et al., 2014; Patton, 2015), a sample of six to eight participants from different institutions in the United States can return rich data about the population. Although not generalizable to other populations, a sample of this size allowed for an emergent understanding to be developed of this understudied group.

Instrumentation

I drew from several sources to design the instrumentation for this study, including Patton (2015), Maxwell (2013), Miles et al., (2014), Merriam and Tisdell (2016), and Hale and Napier (2013). An initial set of interview questions was developed based on the research questions, which were grounded in the literature review. An interview protocol was developed to ensure consistency across interviews (Patton, 2015). Data from initial interviews was triangulated against other interview responses and the findings from the literature review during the analysis phase to help identify, assess, and understand the findings. In the current study, interview data were collected from individuals during individual, in-depth, 30- to 45-minute interviews. Interviews with interpreter educators were conducted then coded. Protocols for coding the data were developed for conducting rounds of coding, including holistic, descriptive, provisional, and in vivo coding (Miles et al., 2014). Researcher memos were generated and maintained for analysis as well. A comprehensive design and effective instruments and protocols help manage the data (Maxwell, 2013; Merriam & Tisdell, 2016; Patton, 2015); therefore, I strove to incorporate those elements into this study.

Instrument Development

Data collection and analysis tools and protocols (Appendix A) were developed to help ensure consistency, quality, and reliability of the method. Data were gathered during in-depth interviews with participants. The interview questions were developed with guidance from the literature review. Interview questions were mapped to the research questions for which they are designed to return data as shown in Table 1.

Table 1

Interview Questions Aligned to Research Questions

Interview Questions:	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Research Question 1	X	X	X	X		X	X	X
Research Question 2	X	X	X	X	X	X	X	X
Research Question 3	X	X	X		X		X	X

Interviews followed a social constructivist approach, in which the researcher and participant work together to construct meaning and share understanding through dialogue about the topic of study (Patton, 2015). To help ensure that the information gathered during the interviews was relevant to the research questions, an interview protocol was developed to guide the conversation with semistructured interview questions. An interview protocol form (Appendix B) was developed to guide the interviews and assure consistency (Miles et al., 2014; Merriam & Tisdell, 2016; Patton, 2015). The interview protocol was based on the literature review, research texts, and the professional experience I had gained as an educator and interpreter. As part of the interview protocol,

I shared information about the underlying conceptual framework for the study—digital citizenship construct including its definition and nine elements (Ribble, 2015)—to help the participants further self-identify elements of experience and practice that may have had relevance to the study. Interviews were semistructured, with demographic, introductory questions as well as questions designed to elicit information for each research question with prompts for more information. This interview data were compared to the literature review, and researcher memos. As part of the methodology, matrices were developed to assist with analysis.

Procedures for Recruitment, Participation, and Data Collection

Upon approval to conduct the study, I generated a list of 75 potential participants by website search of each of the four-year programs active in the United States at the time of institutional review board (IRB) approval. Full-time faculty names listed were documented as potential participants. Because I am a member of the population, to reduce potential bias, I reviewed my history, if any, with potential participants for dual relationships or other experiences that could result in skewed findings. Only one potential participant was identified with whom there was a current or previous dual relationship. That person was not recruited. I employed other methods to reduce bias such as seeking the largest and most representative pool possible from which to recruit (Patton, 2015). I also sought advice from dissertation advisors and professional mentors to help maintain neutrality. Once a list was established, educators were invited to participate in the study.

The current study was exploratory in nature; therefore, a range of diverse participants was sought for the case. Program information gathered from the initial

website search helped to inform the selection based on elements such as size of program and institution, geographic location in the United States, and gender of participant in order to recruit a sample that represented a range of voices (Merriam & Tisdell, 2016; Patton, 2015). Invitations to participate were sent to all 75 potential participants.

Participants were invited to participate via their professional email associated with their institution. They received a description of the study with a combined invitation and informed consent language in the body of the email and an attached electronic copy of the body of the email for their records. Participants indicated their willingness to participate by emailing a response of "I consent" in reply to the invitation. Their response indicated that they had been informed of the purpose of the study and how their participation would be safeguarded. Participants were informed that they could withdraw from the study at any time with no penalty or ill effect and could also decline to respond to any interview question.

Participants who indicated consent and who were selected for the study were emailed confirmation of their acceptance. This included more detailed information about logistics for the study. Participants received information about using the Zoom platform for the interview, guidelines for personal safety and privacy during the interview, and my status as a mandated reporter. Ultimately, seven interpreter educators indicated consent to participate in the study. One person stopped responding to emails prior to data collection and was not included in the sample of six participants.

Upon receiving informed consent, each participant engaged in one interview designed to last approximately 30-45 minutes and was recorded and transcribed. An

interview protocol was developed to guide the process, including introducing the study to the participant, conducting the interview questions, and debriefing the participant and informing them of the post-interview process including member-checking the transcripts.

I used machine transcription services through Nvivo, the software used for data analysis and storage of data. I listened to each recording to make sure the transcription was accurate. I corrected all of the discrepancies between the transcription and the recording. Once I made sure the transcripts were accurate, I emailed them to the study participants for member checking. I uploaded the transcripts to Nvivo and began data analysis. I received minor corrections from one participant and incorporated those into the transcript and data analysis. Once confirmed that the transcripts were accurate, I completed the data analysis following the plan.

Data Analysis Plan

A data collection and analysis protocol for the entire project was projected (Appendix A), however a certain amount of flexibility was built in to accommodate unexpected circumstances that may arise during data collection and/or analysis (Patton, 2015). Within the overarching data analysis plan were protocols for collecting and analyzing the data based on recommended research practices, as noted. All data sets were stored on and analyzed with the help of Nvivo 12 for Mac qualitative data analysis software. Each research question was mapped to the relevant interview questions that were asked to answer it.

Each data set was analyzed by several methods. Data analysis included the use of researcher-developed matrices, pattern matching with themes identified in the literature

review, iterative coding, triangulation across data sets, researcher memos, and comparison of original data and emerging themes across an ongoing literature review (Janesick, 2016; Maxwell, 2013; Miles et al., 2014; Patton, 2015). The qualitative data analysis software program, Nvivo, was used to help organize and analyze the data.

The current study had three research questions exploring the experiences and practices of interpreter educators related to digital citizenship. Each research question and the interview questions that were anticipated to return relevant data for it are illustrated:

Research Question 1: What are the experiences of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices? (Interview Questions 1-4, 6-8)

Research Question 2: What are the practices of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices? (Interview Questions 1-8)

Research Question 3: What do interpreter educators believe about the development of the digital citizenship skills of their students? (Interview Questions 1-3, 5, 7-8)

Interview response data were collected and analyzed based on guidance from scholars of research methodology. For example, Maxwell (2013), Patton (2015), and Miles et al. (2014) all have guidelines for data collection and recommend the use of protocols to ensure consistency and to return data that address the research questions. Data analysis experts such as Janesick (2016), Maxwell (2013), Miles et al. (2014), Merriam & Tisdell (2016), and Patton (2015), all have recommendations for how to

analyze data that has been collected, including building coding schemes from the literature review and from the emerging data, the use of software for organizing data, reflexive practices such as generating researcher memos during data collection and analysis, member checking for accuracy, and triangulating across data sets. Drawing from these recommendations, the following tools were utilized:

- Use of interview protocol (Appendix B).

- Recording and transcription of interviews.

- Transcripts uploaded to Nvivo qualitative data analysis software for storage, coding, and analysis activities.

- Coding included beginning with open coding to see what similarities and differences arose from the data itself without the use of *a priori* or predetermined themes such as might be derived from the literature review. From the foundation provided by open coding, other types of coding were utilized, including holistic (identifying large overarching themes), descriptive (summarizing topics in short descriptions), provisional (use of the initial codes developed from the literature review), and in vivo or identifying themes and codes based on the words of the participants (Miles et al., 2014). Interviews were analyzed starting with open coding and in vivo coding to help identify similarities and possible themes. Each data set underwent descriptive, holistic, and provisional coding. Each set of data was triangulated against each other and against researcher memos.

- Generation of researcher memos during data collection and analysis.

- Member checking.

- Triangulating interview data with literature review and researcher memos.

This study was an exploratory qualitative interview study designed to examine the professional experiences and practices of interpreter educators. Because of the limited amount of research on the topic of digital citizenship in interpreter education, a somewhat representative sample was sought to add to what is known about the population. There was variety within respondent sample and their answers, however none appeared to be discrepant. Transparency in data collection and analysis supports the credibility, trustworthiness, and future replication of the study (Maxwell, 2013; Patton, 2015).

Issues of Trustworthiness

The basis for building trustworthiness starts with an appropriate and ethical research design. The current study was designed based on the recommendations of qualitative research scholars such as Maxwell (2013), Miles et al. (2014), Patton (2015), and interpreting research scholars, Hale & Napier (2013). A comprehensive literature review was completed that not only documented what is known, unknown, and controversial about digital citizenship in education, higher education, and interpreter education, but also examined the types of methodologies that have been employed to approach the issue. The data collection and analysis methods and techniques built into the study are well represented in the literature and this supports trustworthiness (Maxwell, 2013; Miles et al., 2014; Patton, 2015).

Trustworthiness issues that may arise in research include credibility, transferability, dependability, confirmability, and coder reliability. The qualitative

research tradition has measures for mitigating lack of trustworthiness (Maxwell, 2013; Miles et al., 2014; Patton, 2015). Many of those measures were included in the research design of the study.

Confirmability, or objectivity, started with self-awareness of the researcher role (Miles et al., 2014). Transparency and detail in reporting the data collection and analysis phases was also important (Maxwell, 2013; Miles et al., 2014; Patton, 2015). The use of multiple sources of data and triangulation across data sets is recommended and was incorporated. Also recommended is in vivo data analysis, which uses the direct words of the participants as descriptors or codes (Miles et al., 2014; Patton, 2015). Intra-coder reliability falls under this area as well. Reflexivity on the part of the researcher, the use of researcher memos, and following a well-developed and documented research protocol can protect confirmability and intra-coder reliability, and was pursued (Maxwell, 2013; Miles et al., 2014; Patton, 2015).

Credibility or internal validity was supported by the use of multiple sources of data, triangulation between data sets, rich description of phenomena, establishing a chain of evidence, pattern matching, seeking rival explanations, member checking, and transparency in reporting of procedures (Maxwell, 2013; Miles et al., 2014; Patton, 2015). Each of these were built into the research design. Establishing credibility requires challenging the assumptions and decisions made by the researcher. By examining threats to the logic of the study, one strengthens its credibility (Maxwell, 2013; Miles et al., 2014; Patton, 2015). Diligence against threats to credibility and internal validity were maintained.

External validity or transferability is concerned with how the findings of one study might have relevance for other populations, areas, or disciplines (Maxwell, 2013; Miles et al., 2014; Patton, 2015). While study findings are not always transferable, there are techniques that can improve the generalizability of a study (Maxwell, 2013; Miles et al., 2014; Patton, 2015). These included rich description that allows future readers or scholars to compare between contexts, use of prior theory to compare against findings, recruiting a diverse sample, and member checking for authenticity of voice (Maxwell, 2013; Miles et al., 2014; Patton, 2015).

Dependability is maintained in qualitative research by the use of protocol, minimizing researcher bias through reflexivity and member checking, building a research data base and audit trails, and triangulation across data sets (Maxwell, 2013; Miles et al., 2014; Patton, 2015). Detailed documentation of the research design and process is also recommended (Maxwell, 2013; Miles et al., 2014; Patton, 2015). Including these features enhanced the reliability of the current study.

Techniques can be employed to enhance the trustworthiness of research. This study was designed to utilize the techniques described in each category. Protocols were developed for each phase of data collection and analysis. These included researcher reflexivity, recruiting a diverse but representative sample, collecting data from and triangulating across several data sets, using prior theory and literature as a base for the research design, creating a study data base, looking for divergent causes or explanations, rich and detailed description in reporting findings, use of participant-generated words and descriptors, and member checking (Hale & Napier, 2013; Janesick, 2016; Maxwell, 2013;

Miles et al., 2014; Patton, 2015). A robust design that takes trustworthiness into account

can minimize ethical concerns (Maxwell, 2013; Patton, 2015).

Ethical Procedures

Ethics are always an important consideration in research, especially that which

includes human participants (Patton, 2015). Steps were taken to guard against breaches of

ethics in my current study. As a researcher, I have undergone training and certification by

the Collaborative Institutional Training Initiative to conduct ethical research with human

participants at two levels. As a graduate student, certification was achieved at the basic

level for all researchers. As a faculty member of a university IRB, I have undergone

additional training and testing, and I am certified at the IRB Member basic level

(Appendices C & D). Approval was sought and received from the IRB at Walden

University to collect data from human participants (approval number 06-10-19-0559541).

This required submission of documents such as the informed consent form to be given to

participants, interview questions, and data collection tools (Appendices A & B). The IRB

application was made after the study proposal was defended and approved. Once

approved and assigned an IRB study number, recruitment began.

Recruitment was purposeful. A range of participants was sought to represent

programs of different sizes and geographic locations. The participant pool consisted of

full-time interpreter educators as listed on public program websites. A combined

invitation/informed consent form was emailed to identified candidates. Participants were

made aware of the nature and purpose of the study, and informed consent was collected

before any data were collected from individuals. A low number of participants was

remedied by continuing to issue invitations to appropriate candidates until a sufficient number was found. One person indicated a willingness to participate but stopped responding to emails and did not participate. There were no withdrawals from the study.

Safeguarding the privacy of participants was accomplished through several avenues. The interviews and data collection were not anonymous but were kept confidential through the use of assigned codes. Data collected were de-identified from personal or institutional information. Data were stored in password protected files stored on password protected computers and/or hard copies, all secured with lock and key. Participant responses and information were only seen and handled by the researcher and the supervising faculty for the dissertation. Data were disseminated through publication of a dissertation that had checkpoints built in throughout for ethical handling of data analysis and reporting such as requirements for a thorough literature review and a research design based on established practice and empirical studies, triangulation of data across sources, in vivo analysis that incorporated participant voices, and member checking for authentic shared understanding (Maxwell, 2013; Miles et al., 2014; Patton, 2015). Raw data will be retained for a period of five years from completion of the study then it will be destroyed by deleting electronic files and shredding hard copies.

Other potential ethical issues that could have an affect arise from the relationship the researcher has to the case (Patton, 2015). I am a member of the population under study. The population is small, and it was likely that I was known to the participants. Faculty in the interpreter education program at my own institution were excluded from the participant pool to minimize any relationship harm, power differentials, or conflicts of

interest. Potential participants were reviewed for dual relationships in other areas of the profession that could present a conflict or be subject to power differentials, such as professional committee membership. No incentives were planned or provided for participants.

Efforts to follow ethical practices were made at each step of the study. The research design, the training of the researcher, and oversight provided by the Walden University IRB and doctoral faculty all supported the ethical execution of the study. This in turn supported the integrity of the findings.

Summary

Starting with a sound method is crucial for successful research (Maxwell, 2013; Patton, 2015). A methodological design for an exploratory, qualitative in-depth interview study was developed and utilized. This chapter accounts the research methodology design and rationale for why it was selected as the most appropriate design for the research questions. It describes the target population for the study and how members of the population were recruited and selected for the study. A comprehensive data collection and analysis protocol was developed to guide the study. Instruments and protocols for individual elements of data collection and analysis were developed that were grounded in the literature. Issues that may have jeopardized the integrity and trustworthiness of the study were anticipated and addressed, such as the role of the researcher, confirmability, credibility, transferability, and the need to follow ethical procedures.

A qualitative interview study was used to examine the experiences and practices of signed language interpreter educators in the United States related to digital citizenship

and the incorporation of technology in their teaching practices. A comprehensive literature review revealed a lack of research on the population and the topic. Drawing from more-established fields such as education, educational technology, and translation and interpreting studies helped identify factors relevant for interpreter educators incorporating opportunities for digital citizenship in their pedagogy. An overview of the technology used in spoken and signed language interpreting provided background information on the types of technologies that might be taught or introduced in interpreter education. Examining how the issue of incorporating technology has been experienced by other educators led to identifying significant elements that were supports or barriers for educators, such as training and professional development, teacher attributes, access and supported access to technology, institutional emphasis, and time for incorporating technology. Once these themes were identified, examining the limited research on technology in interpreter education for similar themes confirmed their relevance for the study. From this foundation, a methodology was developed to answer the research questions.

Chapter 4 depicts the data collection and analysis phase of my study. I describe the setting and the demographics of the participants. The data collection and analysis methods are explained in detail. Evidence of trustworthiness is considered and addressed. The results of the data from the qualitative interviews is shared.

Chapter 4: Results

Introduction

The purpose of this qualitative interview study was to explore and describe the experiences and practices of interpreter educators related to incorporating digital citizenship skill building curricula in their work with students. Semistructured interviews with interpreter educators across the United States were conducted to elicit their thoughts about their practices and the digital citizenship skills of their students. I used and shared my conceptual framework and construct of digital citizenship (Ribble, 2015, 2017; Ribble & Park, 2019) with educators before and during each interview to help guide the discussions. Questions were asked about which elements of digital citizenship were most important or relevant to their practice, how they provided opportunities for digital citizenship skill building, where and how students gain digital citizenship skills, and what policies their institution and program had regarding digital citizenship. Educators shared how they use and teach students to use technology, which elements of digital citizenship they feel are the most important to their practice, the supports and challenges they experience as educators related to technology, and their perspectives on the digital citizenship of their students.

This chapter describes the setting, the demographics of the participants, and how the data were collected and analyzed. The chapter also includes a discussion of how issues of trustworthiness were approached. It also presents the results of the analysis according to the three research questions:

Research Question 1: What are the experiences of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices?

Research Question 2: What are the practices of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices?

Research Question 3: What do interpreter educators believe about the development of the digital citizenship skills of their students??

Setting

The invitation to participate in the study was sent by e-mail in mid-June 2019 to the institutional e-mail addresses for potential participants. Because it was the end of the school year, this may have affected response and participation—several out-of-office auto-responses were received immediately. This study consisted of interviews with interpreter educators from across the United States. The interviews were conducted remotely from the participants using Zoom, an online conferencing platform. I was connected by audio to the participants, but we could not see each other. A document was shared with the participant on-screen for part of the interview. Educators were asked at the beginning of the interview to confirm that they felt their interview setting was safe and private before proceeding. Interviews were initiated and conducted on my end, where I was in my professional office, which was safe and secure.

Demographics

Data were collected according to plan from six interpreter educators. There were five females and one male. Years of teaching experience ranged from 5 to more than 30. Four of the educators had doctorate degrees and two had master's degrees. All the

participants had degrees in education. All the educators were employed full time by

institutions that offered a bachelor's degree in ASL/English interpreting. Five of the

educators were also the director or coordinator of the program in which they taught.

Geographic regions of the United States represented in the sample were the Northeast, the

East, the South, and the Midwest. The programs were in areas characterized as rural to

suburban to urban. The average size of graduating student cohorts ranged from 12–15 to

25–30 students. Because the number of 4-year, ASL/English interpreting programs in the

United States is small, just over 50, the population is also small. I have limited the details

about each individual in the sample to protect confidentiality. Each participant was given

an identifier of P, for participant, and a number when they interviewed (i.e., P1 was the

first participant interviewed).

Table 2

Participant Demographics

Participant	Years of teaching experience	Level of education
P1	13	Doctorate
P2	32	Doctorate
P3	5	Masters
P4	18	Doctorate
P5	14	Doctorate
P6	18	Masters

Data Collection

To answer the research questions, data were collected from six participants

through individual, semistructured interviews. The interviews were conducted via audio

connection through the online platform, Zoom. The audio was recorded to an .mp4 file

using a Zoom feature. An additional .mp3 audio file was made as a back-up on a separate device in case of failure of the Zoom recording. Audio recordings were transferred to an external hard drive that was kept with me or under lock and key. Once transcribed, audio files were deleted from laptop and recording device.

Interview times ranged from approximately 38 minutes to 67 minutes, with the average about 50 minutes. This was slightly longer than the planned 30–45 minutes, but time did not seem to be a constraint for participants. Interviews were conducted over a 13-day period in June 2019 with the participants located remotely from me. I was in my professional office setting, and participants were in their own settings over which I had no control but did confirm that they felt safe and secure. I conducted individual interviews with each participant using my personal laptop. After the first interview, in consultation with my dissertation committee, the interview script was modified slightly to ensure that subsequent interviews were conducted congruently.

Upon recording each interview, NVivo machine transcription was used to render an initial transcript. Each transcript was also hand verified and corrected while listening to the recording of the interview. Transcripts were sent to each participant for their verification of accuracy. I listened to each interview two to three times. The first time was when I conducted the interviews. The second time was when verifying the transcripts. I additionally listened to portions of each of them as needed to gather further information from vocal inflection or understand the meaning of an answer. I then read all the transcripts and wrote notes on my impressions of the data before reading each transcript individually and writing notes on my impressions of individual data sets. I then

did a round of open coding across each interview question and then again with each transcript. This helped me generate codes that were then categorized into themes.

Data Analysis

Transcripts were generated for six interviews and analyzed using a combination of NVivo12 for Mac software and hand coding. Demographic information was coded by hand. Interview question responses were analyzed through open coding by hand and then open coding using NVivo, broken down into smaller units, reorganized and aggregated into categories. Categories were then organized into themes responding to the research questions.

After listening to each interview two to three times and generating transcripts for each one, I began just by reading all the transcripts and jotting down notes. I then wrote a memo or journal entry about my general impressions. I saved the memo and did not look at it again until I had finished analyzing the data with NVivo. I then did the same thing with each individual transcript: read it, took notes, and wrote up my impressions of that individual data set. I used the notes I had made while reading to help with hand coding the demographic information collected from participants.

I then did a round of open coding on each interview question across all participants. I looked for broad topics that seemed to come up frequently, such as confidentiality or characterization of students. I applied a block code to each of the responses related to the nine elements of digital citizenship so that I could easily group them for further coding focused just on educator conceptualization of the elements. Aside

from these nine codes, I identified 30 codes, or nodes, to use the NVivo12 for Mac term,

from open coding of each question individually (Table 3).

Table 3

Codes Generated in First Round Open Coding

Code assigned	Definition of code
Acc4DA	Accessibility for persons with disability - a different perspective.
AssumDC	Self-declared assumption(s) about DC [Not researcher's interpretation that it is an assumption].
ComWTech	Guidance or instruction from educators to students regarding norms of communication via technology.
Confidentiality	The need for students to maintain confidentiality.
DCDef	This is the "definition" or understanding of digital citizenship given by the participant in response to the first question.
Def	An element that is identified as related to Digital Citizenship in the response to question 1.
DCSkillDev	Where and/or how educators say or posit students' DC skills are acquired.
Dig$	Response to Theme 2: Digital Commerce.
DigAcc	Response to Theme 1: Digital Access.
DigC&C	Response to Theme 3: Digital Communication and Collaboration.
DigEt	Response to Theme 4: Digital Etiquette.
DigFl	Response to Theme 5: Digital Fluency.
DigH&W	Response to Theme 6: Digital Health & Welfare.
DigLaw	Response to Theme 7: Digital Law.
DigR&R	Response to Theme 8: Digital Rights & Responsibility.
DigS&P	Response to Theme 9: Digital Security & Privacy.
Ergonomics	Mention of ergonomics, physical injury, physical health related to interpreting. May or may not be related to technology.
Experience	An experience related to or relevant to digital citizenship or technology from the educator's teaching or personal experience.
FYE	Any First Year Experience or freshman seminar or new student orientation that includes DC curricula mentioned by the educator
IS4DC	Institutional support for DC.
KofDC	Knowledge of Digital Citizenship.
M4DC	Motivation for incorporating DC or technology.
Need4DC	Statements by educators indicating recognition of a need for DC curricula or policies in their program.
NegExperience	A negative experience through technology.
NewTechPrac	New technology or technology practices tried or to be instituted.
OldTechPrac	Old or outdated former technology practices (educator, program, institution).
Practice	A practice of the educator, program, or university.
ProfDev4DC	Professional development related to DC that the educator has taken.
ProfIdentity	Professional Identity - the overlap of professionalism, building ones professional identity and DC.
QDC	Question about DC by participant.
Res4Students	Resources (people, programs - such as distance program, departments) for students or lack thereof.
StCharact	Student or student body characteristic as described by IE.
STU	A characterization of students' technology use.
TechSavvy	Comments related to educator's or educator peers' technology skills.
Tools4IEs	Tools (hardware, software, platforms, licenses, etc.) that interpreter educators use or have access to.
Tools4Students	Tools (hardware, software, platforms, licenses, etc.) that students have access to.
VRS-VRI	Any mention of video relay service or video remote interpreting.

After coding each group of six responses to the individual questions, I did further coding on the responses to the nine elements of digital citizenship as described by Ribble (2017). The responses had already been through one round of open coding, but this time I focused on just the data that was relevant to that element rather than across elements and questions. This yielded an additional 33 codes related to one of the nine elements.

I applied additional rounds of coding to chunks of coded data to identify discrete elements. For example, the first round open code of IS4DC (Institutional Support for Digital Citizenship) was further broken down into categories of Academic Support, ADA Support, Hardware Support, Institution Policy, Platforms/Programs/Licenses, Professional Development for Digital Citizenship, and Technical Support. As appropriate, these categories were also coded further. For example, second-round coding of the node IS4DC produced the child node of Professional Development for Digital Citizenship, which yielded the additional grandchild nodes of Classes, Individual Assistance, Instructional Design Support, Quality Matters Certification, Training, and Time and Effort Required. Each first-round open code was coded into smaller units until I was satisfied that I understood the basic components of each code. The codebook for the project was saved at each step to document data analysis steps. Research memos were also kept for this purpose.

Once all the first-round codes had been further coded into basic elements, each transcript was again individually coded against the entire list of established codes to make sure nothing was overlooked. Additional instances of established codes were documented, but no new codes were generated during the last round of coding. During

this process, I frequently consulted the codebook definitions I had created to be sure that all the data under that code really belonged there, and I modified the definition if necessary to accommodate additional data when identified.

Once satisfied that all the data had been analyzed sufficiently across and within individual participant data sets, I began to group the smaller units and codes together according to similarities. For example, one original code, M4DC (Motivation for Digital Citizenship) sprang from a direct question about teacher motivations. I realized that educator responses to other questions often described a teaching practice and then explained the situation it was designed to address. These situations were often related to confidentiality and professional identity, which each had its own code. I decided to move those two categories under M4DC and to change the name to R4DC, or Reasons for Digital Citizenship, because the category was no longer strictly related to the question on motivation. That code identifier lasted for a short time. Another first-round code that had been moved under M4DC was Need4DC, defined as statements by educators indicating recognition of a need for DC curricula or policies in their program. I decided to group Need4DC with other elements under a different category of Challenges to DC Practice. The node R4DC ultimately changed to Elements Addressed in Practice and expanded as other nodes were aggregated into that parent node. In this way, codes were broken down into individual elements that were regrouped according to similarities. Categories were built by grouping codes or nodes together.

Once categories began to become evident in the data, I began to consider how to aggregate them into themes. As I grouped and regrouped the categories, they naturally

aligned with the research questions, which was the most illustrative way to present the results. Therefore, I grouped categories under Experience, Practice, and Student Digital Citizenship, which align with the three research questions. From this entire process of coding the raw data into individual components, then compiling components according to patterns identified, the following themes and subthemes emerged, which are described in more depth in the Results section:

- Interpreter educator digital citizenship experience (Research Question 1)

  - Theme 1: experiences with technology

    - Subtheme 1: need for action

    - Subtheme 2: negative technology experiences

  - Theme 2: challenges and supports

- Interpreter educator digital citizenship practice (Research Question 2)

  - Theme 1: elements of digital citizenship most addressed by interpreter educators

    - Subtheme 1: confidentiality

  - Theme 2: elements least addressed by interpreter educators

- Beliefs about student digital citizenship (Research Question 3)

  - Theme 1: digital citizenship skill acquisition

    - Subtheme 1: already adept

    - Subtheme 2: life experience, parents, and family

    - Subtheme 3: unsure

    - Subtheme 4: institutional orientation

- Theme 2: student digital citizenship competence

    - Subtheme 1: types of technology and tools

    - Subtheme 2: digital strengths and challenges

Once the themes had been identified, I reviewed the research memos I wrote at the beginning of the data analysis process. I manually compared my impressions with the results of the coding and compiling and found that many of my initial impressions of the data at the textual level were also congruent with the NVivo findings that resulted when I parsed the elements into individual units. For example, my initial impression before doing any NVivo coding was that the topics of confidentiality and professional identity appeared important to the digital citizenship teaching practices of the participants. This was supported by the NVivo data that showed those topics were mentioned by all the educators multiple times, among the most of any of the codes.

Issues of Trustworthiness

When designing this exploratory qualitative study, I considered issues of trustworthiness. In addition to care in the design of the study, I took steps throughout the data collection and analysis stages to mitigate any potential problems. The process and actions taken to prevent potential problems with credibility, transferability, dependability, and confirmability are outlined in the following sections.

Credibility

Credibility, also known as internal validity, is supported by deep, rich, description; triangulation across multiple data sets; pattern matching; and seeking rival explanations (Maxwell, 2013; Miles et al., 2014; Patton, 2015). Credibility was addressed

and supported through my design of the study, which guided the collection of rich data sets from multiple sources and their analysis. Data sets were triangulated against each other by analyzing the data among and across data sets. Triangulation and pattern matching during the coding and analysis phase helped to establish a chain of evidence to support findings. Notes and journaling helped me to challenge my own assumptions and seek rival explanations for what I was observing in the data. My research memos helped to support transparency when reporting on procedures.

Transferability

In this study, transferability was supported in several ways. Information about the context of interpreter educators in general and the participants has been shared in detail, both through the literature review and in reporting the findings. This allows future readers or researchers to compare the findings against their own experiences (Patton, 2015). I sought a diverse sample that would be representative of the population, and member checking of interview transcripts was employed. As there is not much published research on either the topic or the population, there was little to use for comparison while designing the study. This helped me think about the kinds of information that might be helpful to other scholars and educators when reporting. These steps helped to strengthen the potential for transferability of the findings.

Dependability

To maintain the dependability of this study, I developed detailed protocol based on guidance from textbooks on qualitative research (e.g., Maxwell, 2013; Miles et al., 2014; Patton, 2015), doctoral level coursework, and dissertation committee instruction.

Following the protocol with each interview helped to ensure that comparable data were

elicited across participants. It also helped with the documentation of the interview

process for each participant. I used researcher memos and reflective journaling to support

reflexivity and establish an audit trail. Using the NVivo12 for Mac qualitative data

analysis software allowed me to build a research database from the transcripts and to

compare the data sets against each other. All of these support the dependability of the

current study.

Confirmability

Many of the strategies I used to address other areas of trustworthiness were also

helpful for supporting confirmability. Reflexivity on the part of the researcher is

important, and this was maintained through conversations with committee members,

journaling during data collection and analysis, and creating research memos. My

reporting on data collection and analysis is detailed and describes the processes

undertaken. Multiple data sets were collected and triangulated in analysis. When possible,

I used participant-generated words and phrases as code descriptors (or *nvivo* coding) and

in reporting the results in order to reflect meaning as directly expressed by the

participants.

<div align="center">

Results

</div>

This exploratory, basic qualitative study was designed to explore and describe

interpreter educator experiences with Digital Citizenship and the incorporation of

technology in their teaching practice. Data were collected from six interpreter educators

who work in bachelor-degree granting ASL/English interpreting programs at universities

or colleges across the United States. Data collected were analyzed through several rounds of coding within and across data sets. Findings were triangulated against each other and compared to researcher memos. Larger topics were broken down into their basic elements of meaning and coded. Those elements were analyzed, compared, contrasted, ungrouped and regrouped into categories. Categories were examined for relevance to the research questions and then aggregated into themes. The major themes and subthemes for each research question follow.

Research Question 1

The first research question I asked was "What are the experiences of interpreter educators as they incorporate digital citizenship skill-building into their teaching?" This question generated two themes: *Experiences with technology related to practice* and *Challenges and supports.* Each of these themes have several subthemes or elements.

Experiences with technology related to practice. Interpreter educators shared a variety of experiences related to the intersection of digital citizenship and their teaching practices. Comments about experiences were differentiated from comments about practice when they involved situations the educator experienced or observed outside of the immediate context of a specific course or assignment. For example, an educator may have related experiences their former students have had with cohort-mates outside of a specific course and this was coded under experiences. A variety of codes were aggregated under this category.

Need for action. One common experience reported by all participants was recognition of a Need for Action for digital citizenship in interpreter education. One educator, Participant 4, noted that their program did not have codified guidelines.

> It's always kind of been like, until—wait until somebody makes a booboo and then we have to backtrack and then we realize, "Wow we're not teaching this." This is a reaction instead of, let's be proactive and not assume that students know how to behave with technology because they don't.

Participant 5 shared,

> I don't think we ever predicted that technology would be such a big part of what we're doing. And so we're kind of playing catch up, a lot of times. So I really think the people who are going to take our jobs as we retire need to be very aware of this and much more tech savvy than we could have predicted.

Participants noted the need for policies and handbooks. They noted the need for increased digital competence for educators and more training on the topic. Several educators acknowledged that it would be beneficial to look at their programs to see where improvements could be made in covering digital citizenship.

Negative experiences. Educators shared a number of negative experiences they personally had or that they had observed or encountered. Many of them were related to interpersonal issues over technology or social media. These experiences seemed to inspire some of their teaching practices. For example, Participant 1 described a cautionary tale that is shared with students,

I give this example that happened to a colleague of mine, an interpreter colleague

of mine. A deaf person who had some kind of obsession with one of my

colleagues found out where she lived, and kept going to her house to see her. And

she is married with kids, you know. And so, you know, she quit answering the

door when this person came over. I remember I was at her house one time and the

person came over and she said "Quick get down! Hide." I was like, "What's going

on?" And so that person eventually left, but, you know, that's something where

you need to be mindful of what you're sharing and what's out there for people to

find.

Other educators spoke about how technology may negatively impact student skills for

communicating and interacting in person, which are necessary skills for interpreters. As

Participant 6 shared,

those skills are really difficult for students when we ask them to go out into the

community and to engage in relationships that are face-to-face. I find that there's

probably a bigger gap than I've ever seen before and I'm sure that's true in some,

in some way about the digital health and welfare of our students and how much

they're on the screen and they haven't really had to—They don't engage in the

way that they used to is what I'm saying. And so they haven't learned those social

skills, and they're not completely inept but there's a lot more fear and trepidation

that I see currently.

The largest number of comments in this topic were related to social media and

technology-mediated interactions that caused interpersonal friction or confidentiality or

safety concerns. Other topics were raised as well, such as the cost of technology as a potential barrier for students, academic integrity and issues of technology-enabled cheating, or the uncritical acceptance of online information. One negative experience shared by several of the participants was related to distraction and the use of technology in face-to-face settings and may be more of an issue for this population considering that they teach in bilingual, bi-modal spaces where visual awareness is important for communication and safety. As Participant 2 noted, "eye contact is important, still."

Interpreter educators recognized a need for action in addressing the digital citizenship and technology skills of their students through policies, handbooks, curricula, and professional development. Some of these items were already developed and employed, and some were in the planning stages. In their experiences, they have also had or witnessed negative experiences with technology. They reported using their experiences to inform their teaching practice.

Challenges and supports. Interpreter educators experienced challenges and supports to their digital citizenship practice, as evidenced by interview responses. Within each of those two sub-themes, Challenge*s* and Supports, there were a number of smaller units. Interpreter educators experience a number of supports to their practice, particularly from the institution, but they experience challenges as well.

Challenges. The challenges reported by interpreter educators included tangible things, such as Cost, and Quality of Equipment. These two things were linked by Participant 2, who described frustration with the platform the institution used for a

distance education program. Students attend classes in real time from a remote classroom on another campus.

> I can only see four stations at one time. I have seven students. If I want to see them all face to face they have to hunker down two to a camera, two to a computer. I find that basically unacceptable.

The same educator, Participant 2, goes on to say later, "We haven't arrived yet at a place that is also affordable to have the pure kind of educational platforms that our university will buy into."

However, the challenges experienced by the greatest number of educators were Need for Digital Citizenship Resources and Time and Effort Required to keep up with and utilize technology. Each of these sub-themes was mentioned by each of the educators. While reported on by the participants and coded as separate items, these two experiences are related and may also be affected by the other.

Educators expressed a need for guidance and resources. Several spoke of their desire or plan for addressing digital citizenship in a more formal way through a policy or handbook. As Participant 1 said,

> You know, you bringing these to light, into the forefront makes me think that I should have some kind of policy set forward related to digital etiquette and digital, digital citizenship. Because, you know, as much as you hope that students have learned things in their K through 12 before coming into college, they may have not. And again, as much as you can lead the horse to the water, they may not drink. So I think that it's not a bad idea to develop something. I don't have

anything set in stone for it. But this conversation is sparking that interest to do

something.

Others already had this on their agenda, with plans for policies or handbooks already or

soon to be under development.

Another educator, Participant 4, expressed a desire for curricula, "I would love to

have . . . curriculum that I could embed in our program." As a response to this type of

challenge, Participant 5 described a program course that was developed.

We also, just this year, we had our first, little, one-credit class in technology for

interpreters, and so that's a place where we're starting to put in more of creating a

portfolio, creating a website, and talking about these etiquette issues. "Be careful

what you're putting out there." So we're getting more into it and we're seeing

how we need more than, than we realized we did, before.

Creating new curricula and keeping up with changes in technology both factor into the

category Time and Effort Required.

Educators noted that incorporating technology and keeping up with evolving

technology required time and effort on their part. When asked directly about challenges

and supports to their practice, Participant 4 responded simply at first, "The challenges are

that, uh, time." Later, Participant 4 went on to tie it to a lack of resources,

I think it's time, just, just a matter of time that we have in the program and . . .

what you shared with me would be extremely helpful to me just to have, though,

the words, the way to articulate it in a formal academic way and to have some

resources.

A lack of resources for educators creates an issue with time. Embedding technology in ones practice to save student time and effort is another issue. Time and effort are required to locate and embed and use digital resources and reminders, to fully digitize and synchronize syllabi and calendars with hot links to every resource and submission area on the learning management system (LMS). This was seen as a worthy effort by Participant 3, "It's a little bit time consuming and cumbersome in the beginning to actually create it, but it's really beneficial" because it cuts down on time spent later explaining things or pointing out to students where things are stored on the LMS.

Another factor that affects the time and effort required for digital citizenship is the rate technology evolves. As Participant 5 noted, "The other thing is how quickly things become obsolete. So you learn something and then not too far down the road you have to learn something new."

Interpreter educators reported experiencing challenges related to digital citizenship and their teaching practices. Challenges reported encompassed many elements including tangible things such as inadequate equipment and cost. The challenges most frequently reported were related to a lack of resources for digital citizenship and the time and effort required to remain current in their skills, utilize technology with students, and embed digital citizenship in courses.

Supports. All of the support mentioned by interpreter educators for their work with digital citizenship were supports provided by the institution. Within the node, Institutional Supports for Digital Citizenship, the six educators listed various supportive institutional elements, such as:

- Academic Support, in the form of a curriculum committee for online content

- ADA Support, for adaptive equipment for educators and students for access

- Hardware Support, such as help/repair for malfunctioning technical equipment

- Institution Policy, policies the institution has for online behavior

- Platforms/Programs/Licenses, digital resources and tools the institution provides

- Technical Support, such as real-time support for online or technical needs.

In addition to these, the largest category, Types of Professional Development, was contributed to by 5 of the participants. Smaller individual nodes for that category included Classes, Individual Assistance, Instructional Design Support, and Trainings.

Professional development provided by the institution was largely seen as positive. One educator, Participant 3, shared an experience with a course offered by the university for faculty, "it was how to effectively teach an online course. . . and I found it very beneficial." In fact, the educator found it beneficial to apply what was learned to in-person teaching, as well. Another educator, Participant 5, shared, "Every semester it seems like I'm learning something new, how I can use Moodle better, how I can use other technology better, and the I.T. department has been really good."

However, professional development might also be seen as a negative. Several educators mentioned that they were required to attend trainings to stay up to date with systems and laws that intersect with technology, or to adapt to new technologies. As Participant 2 noted,

The learning curve tends to be pretty steep and it's not just how to use a computer or this new thing. It's also our new advising system, our new record keeping system online, our new, you know, we're constantly learning about - you know - we're going between an old system and a new system right now until all the students in the old system have graduated. So when I'm advising and doing graduation check out, it depends on what the catalog is. So that creates issues when the systems are changing, and they constantly are. And the training . . . to learn it.

Interpreter educators had resources available to them for incorporating digital citizenship curricula in their practice. They experienced many forms of support by their institutions. They also experienced challenges to their digital citizenship practices in the form of the time and effort required to stay current with their skills. They perceived the lack of guidance and resources as a hindrance to effective practice.

Research Question 1 was written to return information on the experiences of interpreter educators related to incorporating digital citizenship skill building in their teaching practice. Interpreter educators have had, observed, or encountered a variety of experiences with technology. They have acknowledged a need for action to address the digital citizenship of their students. They have also observed how technology can be a distracting influence in classes and in face to face situations. They used their experiences, as well as those they witnessed with students and colleagues, as resources for their digital citizenship teaching practice.

Research Question 2

The second question I wanted to answer was "What are the practices of interpreter educators related to incorporating digital citizenship skill building into their teaching practice?" Data were collected about the teaching practices of the participants. The data for this question have been categorized into the themes Elements of Digital Citizenship Most Addressed by Interpreter Educators and Elements of Digital Citizenship Least Addressed by Interpreter Educators. Each category produced themes and subthemes.

Elements most addressed. Interpreter educators shared information about their practice and how it intersected with elements of digital citizenship. I asked educators directly which of the nine elements of digital citizenship, according to Ribble (2017), were most important to their teaching practice. Three of the participants mentioned *digital communication and collaboration* (P2, P3, and P6)*,* and *digital etiquette* (P1, P2, and P6) among the most important. Two participants mentioned *digital access* (P2 and P6), and *digital privacy and security* (P1 and P2). *Digital health* was a theme chosen by one educator (P2) and Digital fluency by another (P6). In addition to the nine themes defined by Ribble (2017), other answers were offered, including *interpersonal relationships* (P1 and P4), *online professionalism* (P1), *portfolio development* (P5), and *utilizing resources* (P1). These are the elements the participants self-identified as being most important to their practice. Coding of their answers to other questions supported that the elements most addressed in their practices were related to confidentiality and interpersonal relationships or what might be termed soft skills.

In addition to comments about the nine elements of digital citizenship (Ribble, 2017), which were directly solicited, information was provided by participants about their teaching practices related to technology and digital citizenship in a series of other questions. My data analysis process started with open coding, meaning that I did not use the nine elements of digital citizenship as a structure for coding, initially. Instead, I looked at what educators talked about regarding their work with students and digital citizenship and created codes that described that work. In addition to coding a number of tools and programs that they utilized, I was also interested in what educators were trying to achieve with their practice, or the behavior they appeared to be trying to influence. This resulted in codes such as *discerning credibility* and *personal safety.* Among the codes in this theme, *confidentiality* appeared important, as the code with contributions from all six participants.

Confidentiality. Confidentiality is a major digital citizenship concern for interpreter educators. Certified interpreters in the United States and other countries follow a code of professional conduct according to the certification that they hold. Confidentiality of client information is a highly prioritized tenet of interpreter codes of conduct, such as that of the RID, where it holds the primary place among the seven tenets (RID, 2005). Therefore, it appears that this topic is important to interpreter educators. Participant 6 shared about students,

> . . . what they post, what they think to be harmless information actually could have very serious consequences. Information that they give about doing fieldwork, or information that they give about doing an internship site. You know,

how much information do they include, pictures—So what they, what they view

to be real innocent and with good intentions, can be perceived as, and is

sometimes, violating confidentiality. We do definitely talk about that, and what

they share as interpreters or as members of this deaf and interpreting community,

that they have to be very, very mindful. And we err on the side of, "don't post

anything," just don't even open that door because we want to protect the adults

and the kids that we are serving and working with. And there is a process of

things, when we share that, especially with kids, we have to have permissions in

place. But from time to time I do have students who innocently post things that

they shouldn't be posting.

Technology can add layers of concern for topics that are also encountered in the non-digital world, like maintaining confidentiality, as Participant 1 notes,

We talk about what should or should not be posted on Facebook and there's a

certain—I think it might be Instagram. I don't know. I'm not on it, but one of my

students was telling me about it, where they can see your location. So if you went

on an observation to a hospital and somebody looked at this location of where this

person was they could see where they're at. And then that becomes a

confidentiality issue. So we've talked about that and how to make sure that your

settings are appropriate in order to not break confidentiality where you go.

Concerns from educators about confidentiality were related to acts of volition by

students, rather than concerns about the security of online information being hacked by

others. Notes Participant 6, "So in terms of being hacked or concerns about privacy, I don't know that we've had any real issues, or I am not aware of it."

Some educators related the need to educate about confidentiality to the age and technology experiences of students. Participant 2 acknowledged,

They've grown up with social media and they think their phones should be attached to them and that every thought they have, every action they do, that they'll document, you know, on something, and we just have to caution them about that.

Similarly, Participant 6 stated, "A lot of them are very young and they don't realize . . . what they share, what they don't share, what's appropriate, not appropriate."

Other categories and codes also related to interpersonal interactions were identified within participant responses. The codes *communicating with technology* and *professional identity* had contributions by five of the six participants. *Communicating with technology* was related to practices shared by the participants that incorporated direct instruction about communicating with others through text, email, or social media. Participants 1, 2, 4, 5, and 6 all contributed information that was coded under this node. The code for *professional identity* included comments from educators that related to the need for the student to behave professionally, as if they were already interpreters, and to adhere to professional expectations. This applied to all student interactions but as with *confidentiality*, technology can add complications. As Participant 2 described,

One of the things that I've incorporated into the intro to interpreting class . . . is . . . becoming a professional. How to, how they present themselves through social

media, both in terms of their user name, what they share, how they share it, and that their reputation begins that that day, that semester as far as being an interpreter.

Participants who contributed to *professional identity* were P1, P2, P4, P5, and P6.

Interpreter educators in this study identified digital citizenship themes and elements that are important to, or frequently intersect with, their teaching practices. The major categories that arose were *confidentiality* and *communicating with technology.* Other categories or codes were also contributed to by educators. Four participants contributed data to *collegiality* (P1, P4, P5, P6), *personal safety* (P1, P4, P5, P6), and *preparing for future professional needs* (P2, P3, P4, P5). The last code is related to things that students will need to know or have experience with as professionals, such as billing systems for interpreting agencies and consumers, which are increasingly mediated through technology and online platforms, as noted by Participant 2.

Although only one educator mentioned *digital fluency* as one of the most important elements of interpreter education practice (P6), it appears that it is important to all of them. *Digital fluency* is related to understanding how to use technology, as well as being able to discern credible information one receives through technology. The topic did come up in other question responses that seemed to show that educators did address this topic in their practice. Several educators (P1, P3, P5, and P6) mentioned first year seminars or orientation courses offered by their institution to help students with technology skills and digital fluency. Two of the educators (P1 and P6) taught those courses to incoming students, including those outside of the interpreting program. One

educator (P3) who did not choose *digital fluency* as an important element shared in another response that students did not seem to understand how to operate or troubleshoot technology at very basic levels, such as disabling the mute feature on a device if unable to hear the sound.

Another aspect of *digital fluency* that appears to be addressed in practice is the ability to discern valid information from unreliable information. Five of the educators (P1, P2, P4, P5, and P6), indicated that they addressed this issue, particularly in classes involving research or presentations. Participants described using course assignments, such as research papers, current issues courses, and class presentations as opportunities to teach students about credible sources of news, information, and research. Despite being named by only one educator as most important to their practices, interview responses indicated that digital fluency was an element of digital citizenship that respondents were addressing to some extent.

Interpreter educator teaching practices appeared to prioritize elements of digital citizenship that overlap with soft skills such as confidentiality and interpersonal communication skills. Skills that might be considered technical skills, or hard skills, such as operating technology or protecting oneself from viruses or personal data theft show up only seldom in their comments, as will be discussed further. A majority of the responses related to teaching practices emphasized or shared information about the need to help students with technology-mediated communications, whether for purposes of civility and politeness and to protect relationships in the community, or for safeguarding confidentiality. Concerns about confidentiality and technology encompassed the types of

information students chose to share as well as student understanding of the confidentiality of the media platform through which they shared information. Their interview responses indicated that, generally, their digital citizenship teaching priorities were to protect the student and future clients and the client right to confidentiality, and to help students learn to communicate and behave professionally.

Elements least addressed. Interpreter educators were asked directly which elements of digital citizenship were most important to their teaching practice. By default, the themes not considered most important, because they were not chosen, were *digital commerce, digital law,* and *digital rights and responsibilities.* These are the themes of digital citizenship that none of the participants mentioned in response to a direct question about which were most important to their teaching practice. As with the elements most addressed, the answers to other questions supported what was self-reported by participants.

Digital commerce refers to buying, selling, or conducting other financial transactions online. Although none of the educators selected this as most important, several did attempt to identify ways this theme connected with their practice. Several participants (P1, P2, and P5) made a connection to this theme and student ability to purchase books and materials, such as GoReact, online. The other three participants (P3, P4, and P6) did not see a connection with this theme. Just one participant (P2) mentioned anything about current business practices in ASL/English interpreting that intersect with this topic. Participant 2 described a system for giving students the opportunity to practice simulated billing experiences through technology. The educator noted that interpreters

who work as independent contractors for interpreting agencies do their billing through

apps and online platforms, and this system provided a similar experience. *Digital*

commerce does not seem to be an overt theme in interpreter education practices.

 Digital law is related to rules or structures that regulate digital behavior.

Responses were varied. Participant 1 mentioned that students needed to be cautioned

about posting pictures of potentially illegal behavior, such as underage drinking.

Participant 2 spoke about how academic integrity is emphasized and that the university

educates students about the FERPA law that protects student privacy. Participant 3 spoke

of confidentiality in relation to the law such as breaches in confidentiality in social media

postings by students and interpreters. This participant noted that the program relied on the

university handbook and expressed a wish for a stronger policy at the department level.

Participant 4 also referenced development of a program handbook to address this.

Participant 5 relayed that the institution as a whole was just starting to look at academic

integrity and plagiarism enabled by technology, though the program had not felt much

need to do so to that point. Participant 6 acknowledged that there were institutional

policies for the topic of *digital law* but did not see that as something generated at the

program level. Although *digital law* was not perceived as one of the most important

elements, educators did appear aware of it. Many of them seemed to think or assume that

it was handled outside of the interpreting courses and program.

 Another interesting thing to note about digital law is how this topic intersects with

another interview question and participant answers. Participants were asked what, if any,

was the digital citizenship policy of their institution. Only one respondent, Participant 3,

offered an answer, "Well, the university thinks everyone should have access to technology and should develop technical, technological skills, computer skills, computer literacy, basically." Each of the other participants said they didn't know if there was a policy, or they didn't know what the policy was.

Digital rights and responsibilities is related to the freedoms and also requirements of the online world. This includes unobstructed access to technology, unconstrained by inappropriate behavior or actions by others. It also relates to the responsibility to be helpful to others and support their rights and responsibilities. This theme was not chosen as one of the most important, but there are examples of educator awareness of it. Some educators (P1, P2, P5, and P6) indicated that their students are willing to report problems when they arise. Others spoke of how students helped each other with problems related to digital citizenship (P1, P5, and P6). Participant 3 shared a desire on the part of the program faculty to open up internship opportunities to other geographic locations. The program had not had success with transitioning so internship students would to be able to complete remaining coursework online. One student was able to do so, but it required a lot of work and individual accommodations from her instructors to ensure that the student was both receiving and participating in coursework in ways equivalent to classmates in face-to-face courses. Participant 4 did not think students were always aware of their digital citizenship rights and responsibilities. This theme, while not emphasized, is acknowledged in educator comments.

I asked educators directly about the themes of digital citizenship that were most important to them. There were no limitations on how many could be chosen. Educators

chose five themes (P2), four themes (P1, P6), and one theme (P3, P4, P5). Themes that were not chosen or chosen just by one participant as most important to interpreter educator practice were nevertheless mentioned by respondents during interviews. Based on the number of responses from educators, at least one of those, *digital fluency*, seems significant even though it was chosen by just one participant (P6). Digital health was also chosen by one educator (P2), but did not arise often in coding. Therefore, *digital health* does not seem to be considered significant in the practices of interpreter educators.

In summary, interpreter educators appeared to emphasize or prioritize digital citizenship skills that helped students maintain the confidentiality of the clients served by interpreters and pre-service students who will become interpreters, as well as those elements that helped to build and/or maintain student professional identities. This was evidenced by responses to direct questions about which elements were most important. The elements of digital citizenship chosen by the most participants were *digital communication and collaboration* and *digital etiquette*. This was supported by the numerous responses that were coded under descriptors such as *collegiality*, *communication with technology*, *confidentiality*, and *professional identity*.

Interpreter educators did not appear to emphasize or prioritize some elements of digital citizenship in their practice. The themes of digital citizenship that educators did not seem to prioritize were *digital commerce, digital health, digital law*, and *digital rights and responsibilities*. Here, too, the data on the themes that were chosen and the data from other interview responses seem congruent. Interpreter educators did not report many connections between their practice and *digital commerce*, mainly ordering course

materials online. Just one educator drew a connection between *digital commerce* and current professional billing practices. *Digital health* was mentioned by one educator as important, but did not garner many comments across the data. *Digital law* appears to be seen as something that is handled elsewhere, possibly at the institutional level. While not chosen as most important, *digital rights and responsibilities* was mentioned by each of the participants in some way, which indicates awareness.

Research Question 3

Research Question 3 was written to gather information about what interpreter educators believed about the development of the digital citizenship skills of their students. This question yielded two important themes: *digital citizenship skill acquisition* and *student digital citizenship competence*. *Digital citizenship skill acquisition* refers to educator beliefs about where and how students acquire digital citizenship skills. *Student digital citizenship competence* comprises educator characterizations about the digital citizenship competence of their students. I asked educators to share their thoughts on student digital citizenship skill development both within program courses and elsewhere. They also shared their experiences or observations about the status of student digital citizenship. These themes help to form a picture of interpreter educator beliefs about the digital citizenship of their students.

Digital citizenship skill acquisition. I asked interpreter educators directly where and how students gained digital citizenship skills, and I also coded responses to other questions with an eye to this topic. Educators offered a variety of responses. Most responses indicated that interpreter educators believe that students gain a majority of their

digital citizenship skills elsewhere, and prior to, entering an interpreter education program. Four educators offered responses that were coded *already adept* (P1, P2, P3, and P6), *K-12 education* (P1, P2, P3, and P5), *peers* (P2, P3, P4, and P5), and five participant responses were coded for *institutional orientation* (P1, P3, P4, P5, and P6). Answers to interview questions were also coded for evidence of digital citizenship within program courses and results show that all of the participants described multiple forms of digital citizenship skill acquisition in program courses, many of which overlap with, and were shared in the results for, Research Question 1.

Already adept. Educators seemed to assume that students already have the necessary digital citizenship skills for their future endeavors. Participant 1 shared, "I'm pretty much banking that they already have learned a lot of this earlier on." Participant 3 said, ". . . they've already developed those skills or, you know, they already have the foundationary skills."

Life experience, parents, and family. Three participants (P1, P3, and P4) thought students acquired skills through *life experience*. Participant 4 notes that "we're a very, very diverse campus. So we have students who have previous experience with work, working in a variety of settings that bring that piece to the table that then can help others." Participant 1 said of new generations, "they're born using technology."

Two educators, Participant 1 and Participant 4, thought that parents and family contributed to digital citizenship skill acquisition, although Participant 4 added the modifier, "some from family, but not—I don't see a lot of that from family."

Unsure. Three participants (P4, P5, and P6) expressed uncertainty, either in where students acquired skills, or about the accuracy of their statements about where students acquired skills. These comments were made especially in relation to digital security and privacy. Participant 6 said, "We here at the university have to take lots of trainings on how we protect ourselves. I don't know if students take that."

Institutional orientation. Most of the participants (P1, P3, P4, P5, and P6) referenced first year seminars or orientation courses that their institution offers to help students become aware of and competent with institutional resources and systems. Participant 3 initially was uncertain if students had access to such resources, but upon thinking about it described courses for new students that helped them orient to the institutional learning management system. Participant 5 also referenced core courses new students take. Two of the educators (P1 and P6) taught or were preparing to teach these types of courses at their institutions. Participant 6 shared about the experience,

> Right now, I'm part of a first-year experience pilot here at the University. I think we are recognizing that freshmen come in not knowing what resources we have, and technology being one of them. . . . that we've been making too many assumptions. And so I am going to be teaching a cohort of freshman students about what does the university offer, what resources are available, how can you use the technology, what supports are there for you?

Interpreter educators had awareness about the need for student digital citizenship. They were aware of resources the institution offered to students for digital citizenship, yet may not know specifics about how or what is offered. Most of the programs officially

accepted students in the junior year of the program, and some educators were uncertain

what the process for new students involved when they were freshman or early transfers.

Describing onboarding practices for student technology use, Participant 4 explained, "I

know that students, when they become a student . . .That they sign a document, but I'm

not in their lives at that point so I don't know what that looks like."

Interpreter educators were aware that students need digital citizenship skills. They

assumed that students acquired skills before arriving at college or before acceptance into

the interpreting program. They were not always sure where students got their digital

citizenship skills, but hypothesized that students got their skills from other institution

courses or orientations, in K-12 education, from family, from general life experience, and

from each other.

Student digital citizenship competence. Educators shared their thoughts about

student digital citizenship competence both directly and indirectly. Data were captured on

educator characterizations of the types of technologies students are using, the technical

tools they have available to them, and the ways in which students seemed competent or

lacking in digital citizenship. Data coded for this subtheme supported data collected from

participants about their experiences and practices.

Types of technologies and tools. Students were characterized as using a great

variety of technologies and technical tools. Every educator contributed to this category.

There was a natural overlap in the technologies that students and educators use. Students

use and experience many types of hardware, such as computers, smart phones and tablets,

digital recording devices, and smart classrooms. They were reported to use software such

as PowerPoint. They use smart phone apps such as Glide and Marco Polo which are video messaging apps used in the Deaf community, as well as dictionary and vocabulary-building apps, and social media accounts for closed or cohort group communication.

Students often collaborated with faculty and each other through online interfaces, such as learning management systems like Moodle and Blackboard, shared Google documents and other Google applications, online polling like Poll Everywhere, and videoconferencing platforms such as Zoom and Skype. One technology mentioned repeatedly was GoReact. Participants P1, P2, P3, and P5 each mentioned GoReact by name. Those interpreter education programs use the GoReact platform in ASL classes which are preparatory for undertaking interpreter education. GoReact is a licensed software platform that allows students to upload videos that the instructor can observe and provide video feedback linked to the time stamps of the student video work. American Sign Language instructors use the platform to grade and give feedback in ASL on recorded student work in ASL to provide language modeling and feedback. GoReact may not be used as frequently in interpreter education courses as in ASL language acquisition courses, or in the same way. Participant 3 uses GoReact but not in the same way that ASL instructors do.

> . . . I also don't utilize GoReact that maybe the same way as a lot of instructors do as a, as a means of providing feedback. I prefer to do that in person or like, I prefer—It could be in person or online but I prefer to do it live because I like to have a conversation with the person rather than, I feel, GoReact is a bit cold and it to me it's not an effective means of providing feedback for me. I know that our

ASL instructors do it and they provide a lot of, a lot more prescriptive feedback—

where you know "that sign was produced incorrectly," and whatnot. But I prefer

to really have that conversation of "what were you thinking in that moment when

you chose, you know, such and such." So I tend to, I tend to not use it. I only use

it as a means of storage for videos and so since that's the case I don't require

students to only utilize that if they haven't purchased it.

Students used many technologies and tools in interpreter education. In their use of

technology, students were characterized by educators as technologically aware (P1, P2,

and P3) and technology oriented (P2 and P3). Two participants (P2 and P5) noted that

students may not have adequate personal equipment or any personal equipment for

completing academic assignments requiring technology.

Digital strengths and challenges. Interpreter educators offered comments that

provided insight into their thoughts on the digital citizenship competence of their

students. All educators offered comments that indicated student competence with some

aspect of digital citizenship. Students were characterized as aware of technology and

competent with digital security issues like viruses and malware (P1, P2, P4, and P6).

Participants P1, P2, P5, and P6 each reported students being responsible in reporting

problems, either with non-functioning equipment or confidentiality issues and

inappropriate posts on social media. As previously noted, educators believe their students

are already adept at technology. This aligns with the digital citizenship theme of rights

and responsibilities. In fact, one educator (P2) noted that students will help with new

technologies with which teachers may be struggling or unfamiliar. Participant 5 remarked that "Students are constantly telling me about some new technology to use."

Not all of the educators agreed that students were digitally fluent. Participant 3 noted that students struggle with basic operational elements of technology.

> . . . what I notice is, at least my current students, they'll say to me, you know, we'll be using—I don't know, a stimulus, and they'll raise their hand and they'll say to me "I can't hear anything" and I asked them "did you check the mute button" and they go "No." And then I hit the mute button and then it works. Or "Did you plug in your headphones?" "No." Or so, it, it'll be simple things of technology like that they are not able to problem solve, which I find odd because I would think that growing up with the technology that they'd be more fit to do so and that is not the case at all.

Students may also appreciate working in ways that don't require technology. Participant 4, when speaking of balancing the use of technology and screen time, explained that students in that program are given a journal to use for handwritten reflections or other program activities. The student response was described as positive, "And you know almost 100 percent of the time students are relieved and encouraged, and love that they are not using a computer or a phone to interact with while they're in class."

Most of the participants reported student competence in areas related to the technical or hard skills of digital citizenship. According to educators, students were accessing technology, helping to troubleshoot technology, being responsible in reporting issues with technology, and aware of potential problems such as viruses and malware.

Students were also aware of new technologies and shared them with faculty. Digital

citizenship themes that align with educator-reported strengths in their students are *digital*

access, *digital fluency*, *digital rights and responsibilities*, and *digital security and*

privacy.

Data collected from participants indicated that students struggled with elements of

digital citizenship and that educators attempted to address this in their practices. Most of

the reported challenges occured with themes of digital citizenship that encompass soft

skills such as interpersonal communication and professional behavior. Again, educator

examples of student digital citizenship aligned with educator examples of their own

teaching practices. As was discussed under Research Question 2, participants reported

many teaching practices that focus on communicating respectfully and clearly through

text, whether in email or on social media.

Every participant contributed comments that were coded for issues with

interpersonal interactions over technology. In reporting student behavior related to

technology, educators shared many examples of students struggling with this issue.

Participant 4 described an email exchange between a student and a potential internship

site. When the internship site was not able to provide what was required for the

internship, the student response was curt and self-focused.

> . . . she just basically said "this doesn't fit for me. Sorry." So, and then I had to
>
> have a conversation with her about what, you know, depending on, depending on
>
> who the audience is and who you're emailing, texting, talking into . . . on

whatever digital platform, that there are expectations. That the students that I

work with, it's not intuitive.

Participant 4 described the need to work with students to help them understand that there

are different expectations for communication, depending on the circumstances and the

recipient of the communication. One would address a potential employer differently than

a peer.

Participant 2 shared how this issue affects cohort dynamics as well, which

necessitates faculty involvement,

There is the student sign language club and they elect officers and so they learn

leadership skills and part of it is communication. Every once in a while there's a

tiff because somebody misunderstood what somebody said in an email or vice

versa and so they have to learn from that. And usually at that point some, some

faculty will try to step in and see what help they need.

Interpreter educators reported needing to mediate and remediate student interactions

through technology. At times the misunderstandings were innocent, as Participant 6

explained previously, related to elements most addressed by interpreter educators in their

practice.

Some of the interpersonal issues that arise in technology-mediated

communication are unintentional, but educators shared instances of a deliberate lack of

collegiality such as one situation recalled by Participant 3 in which a student video of

work in ASL was shared by other students online, "I remember his video was shared

amongst some students and was a bit malicious in the sharing. The intent behind the

sharing was malicious. And it ended up getting out there, you know, basically mocking him." This also touches on issues of privacy and confidentiality.

Participant 4 shared a perspective on student struggles with sharing appropriate information on social media:

I think students waffle between what's accepted to share in the Deaf community and what's accepted to share on Facebook or in the hearing community. . . . That's a struggle for them, digitally. Because of the high priority and value of information sharing within the Deaf community . . . they sometimes will overshare on Facebook thinking that it's the right thing to do because that's what the Deaf community is expecting. So I'd be really curious of what, how Deaf people and the ages of Deaf people view digital citizenship. I think it's, it's confusing for students. I know it is. It's very confusing for students.

This comment highlighted another potential factor in digital citizenship for sign language interpreters and interpreting students. The work of interpreting requires mediation, not just between two languages but also between two sets of cultural norms and expectations. This need may have an influence or effect on digital citizenship behaviors.

To summarize the information shared by participants, interpreter educators in this study reported that the digital citizenship challenges their students experienced were related to interpersonal interactions rather than mechanical or operational issues with technology. Educators characterized students as technologically aware and adept. Students were reported to struggle with appropriate affect or tone in text communication. They also grappled with boundaries in sharing information, whether their own or that of

another student. Interpreter educators in this study felt their students had adequate skills for accessing technology and navigating the more mechanical elements of digital citizenship. Their observations of student competence with digital citizenship align with what they reported about their experiences and practices.

Summary

This basic qualitative interview study was conducted with six ASL/English interpreter educators from the United States. Participants shared information about their experiences and practices related to incorporating digital citizenship skill building opportunities into their pedagogy. They also shared their thoughts about the digital citizenship skills of their students. Through analysis of interviews, themes arose. Those themes appear consistent when looked at across research questions.

Research Question 1 explored the experiences of interpreter educators related to digital citizenship. Two themes, *Experiences with Technology* and *Challenges and Supports* arose. Coding of participant responses indicated that interpreter educators in this study felt a need for action related to digital citizenship in the form of guidance, curricula, and policies. They have had or observed negative experiences with technology that they then leveraged to inform their teaching practices. They experienced challenges such as the cost and quality of technology, inadequate resources, and the time and effort required to acquire and maintain technology skills. The support they reported receiving was provided by the institutions for which they worked.

Research Question 2 focused on the teaching practices of the participants. I asked participants to identify the elements of digital citizenship (Ribble, 2017) that were most

important or relevant to their practice. From this and other questions, I identified two themes related to practice, *Elements Most Addressed* and *Elements Least Addressed,* along with several subthemes. Educators indicated that elements related to confidentiality and professional identity were most important, particularly *digital communication and collaboration* and *digital etiquette.* Elements that were not considered by educators as important were related to the more technical or procedural aspects of digital citizenship, such as *digital commerce*, *digital law*, and *digital rights and responsibilities*. The elements least addressed by the educators in this sample were related to activities such as operating and trouble-shooting technology and the overlap of law and technology as it relates to interpreting. While *digital rights and responsibilities* was not identified as important, it nonetheless appeared as relevant in coding across the data. Most educators appeared unaware of institutional policies on digital citizenship but were aware that policies should be developed at the program level.

Responses to Research Question 3 explored educator beliefs about the digital citizenship of their students. The themes that I identified from coding of participant responses were *Digital Citizenship Skill Acquisition* and *Student Digital Citizenship Competence*. Interpreter educators appeared to assume that their students will have acquired technology skills prior to entering the interpreting program, whether from K-12 education, family and friends, life experience, or orientation classes offered by the institution for new students. They see their students as competent in the operational or procedural aspects of digital citizenship, and lacking in the more interpersonal,

interactive aspects such as communicating appropriately and respectfully with technology.

This chapter has described the demographics of the participants, the data collection process and how that data were analyzed for meaning, and the safeguards that were taken to ensure the trustworthiness of the study. It has described the findings resulting from data analysis. Chapter 5 contains an exploration of how the findings correspond with the established literature. It discusses the limitations of the study and makes recommendations for further research. It hypothesizes the implications for positive social change that could result from the findings and concludes the report on this study.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this qualitative interview study was to explore and describe the experiences and practices of interpreter educators related to incorporating digital citizenship curricula and technology in their pedagogy. Little is known about interpreter educators and their practices, including those related to preparing students for the future professional use of technology. Documenting current practices may lead to the identification or development of best practices to guide pedagogy as well as guiding future research.

My study supports the existing literature, and it extends what is known about digital citizenship in interpreter education. The findings indicate that interpreter educators in this study showed an awareness of digital citizenship, if not full mastery. They expressed a need for guidelines and curricula to support incorporating digital skill building opportunities for students, and they acknowledged a need for action to develop such materials. Participants' positive and negative experiences informed their teaching practices, and they prioritized certain elements of digital citizenship over others. Elements that corresponded with confidentiality and professionalism were reported as addressed, whereas elements that corresponded with the operation or security of technology were not. Interpreter educators in this study indicated that their students acquire digital citizenship skills elsewhere, prior to college or acceptance into the interpreting major. They characterized students as already adept at operating technology

and protecting themselves online but challenged by the social and interpersonal elements of digital citizenship.

Interpretation of the Findings

The findings of this study were interpreted through the structure and definitions provided by the conceptual framework of digital citizenship (Ribble & Park, 2019) as well as through the existing literature on the topic. In the following sections, I present the interpretation of the findings related to interpreter educator knowledge and awareness of digital citizenship and compare them to literature from education. I explore the elements of digital citizenship most and least prioritized by study participants, using the conceptual framework as a guide. The interpretation of participant responses was informed by the conceptual framework, the comprehensive literature review, and codified professional guidelines.

Educator Knowledge and Awareness

Interpreter educators in this study showed awareness of elements of digital citizenship even though they may not have specific terminology associated with these elements. The literature in interpreting and interpreter education parallels a similar emerging understanding. For example, Melchor (2018), among others, noted the growing awareness and stated that interpreter educators were modifying their practices to incorporate new virtual methods.

When interpreter educators shared their knowledge of digital citizenship, most indicated that they were not aware of the term or were not sure what it encompassed. Similarly, when asked, most participants were not aware of their institutional policies or

guidelines related to educational technology or digital citizenship. As the literature review indicated, institutional emphasis can be a support or barrier for educator incorporation of technology. Interpreter educators were aware of support provided by the institution in the form of infrastructure, hardware, software, technical support, and professional development. However, they identified a lack of policies and guidelines as a barrier to their practice. They were unaware of their institutional policies and guidelines regarding digital citizenship and technology, indicating a need for policies, guidelines, and curricula at the program level. Their experiences align with previous literature that reports elements such as infrastructure and financial support as a potential support or barrier (Adekola et al, 2017; Dumont & Raggo, 2018; Shelton, 2017, 2018). Their identification of a lack of awareness of policies and guidelines as a barrier supports literature on institutional plans for technology use and integration (Blundell et al., 2016; Dumont & Raggo, 2018; Irvin & Longmire, 2016) as well as literature on official and unwritten institutional requirements for technology having a supportive or inhibiting influence on teacher practices (Dumont & Raggo, 2018; Jääskelä et al., 2017; Shelton, 2018).

Interpreter Educators Prioritize the Soft Skills of Digital Citizenship

Participants described the most important elements of digital citizenship in response to a direct question on the nine elements identified by Ribble (2017) and Ribble and Park (2019). Responses to other interview questions supported some of these elements as being important but not all. This led to the finding that interpreter educators in this study prioritized and addressed the softer, more interpersonal skills of digital

citizenship in their teaching practice, such as digital communication and collaboration and digital etiquette, which relate to appropriate use of digital means for interacting with others and appropriate behavior when doing so. My study supports previous studies on social media and digital etiquette and expands on them with its exploration of all the elements of digital citizenship across a range of digital activities with signed language interpreter educators rather than just teacher educators.

Research has indicated that social media use by new and emerging professionals is an area that would benefit from direct instruction to support professional identity building and maintaining client confidentiality (Best, 2017; Gomes et al., 2017). Many studies have found that there is a positive association between instructors modeling the appropriate use of technology for preprofessional students and their future use of professional technology (Dooley et al., 2016; McCulloch et al., 2018; Radovanović et al., 2015; Thorell et al., 2015). Participants in this study also identified that it was a top concern to teach students to protect the confidentiality of client information as well as provide guidance for appropriate digital technology behavior in support of newly-forming professional identities. The RID places the right of consumers of interpreting services to confidentiality from their interpreter as the primary responsibility of ASL/English interpreters (RID, 2005). Although participants were concerned about breaches of confidentiality or other indiscretions caused by actively posting or sharing information online, they did not provide students with instruction related to digital security because they believed students were already knowledgeable and could protect themselves in a digital environment. Just one educator indicated awareness of new technological

affordances such as location-sharing in digital devices and apps and expressed a need to educate students about this. Thus, despite the potential for breaches of confidentiality, the elements of digital security and privacy and digital access did not appear to be frequently addressed in practice.

Acquiring the Hard Skills of Digital Citizenship

Three of the nine elements of digital citizenship (Ribble, 2017; Ribble & Park, 2019) were not chosen by any of the participants as important to their teaching practice. These three—digital commerce, digital law, and digital rights and responsibilities—along with the two elements infrequently or not addressed in practice—digital security and privacy and digital access—are all related to the less interpersonal, more technical, or hard skills of digital citizenship. This includes knowledge of how to operate digital technology, how to troubleshoot and report problems, and how to comply with digital business and legal requirements (Ribble, 2017; Ribble & Park, 2019). The more technical aspects of digital citizenship were not considered important to, and/or were not often addressed by, participants in relation to their teaching practice.

The element of digital commerce intersects with the fields of interpreting and education in ways such as online education, methods of receiving and billing for work assignments, and with the growing specialty of video interpreting, (Balogh & Salaets, 2018; Bower, 2015; Braun, 2018; Braun et al., 2018; Fowler, 2018; Licoppe et al., 2018; Skinner et al., 2018; Spinolo et al., 2018). Just one educator made a connection between digital commerce and future professional practices the students might encounter by mentioning online invoicing. Video interpreting was mentioned only once in interviews,

despite its growth as a major employer of signed language interpreters (Braun, 2018; Napier et al., 2017; Skinner et al., 2018; Tyer, 2018). Several studies have examined the negative experiences of interpreters in video interpreting settings with various recommendations for remediation including educating practitioners on how to protect themselves within the environment (Bower, 2015; Napier et al., 2017; Tyer, 2018). The findings of this study indicate this area is under-addressed by interpreter educators.

Digital law is related to the regulations that govern online activities. Coding of responses indicated that educators believed this was an aspect of digital citizenship students acquired elsewhere. Research in the field of teacher education has shown that pre-service and new educators may not be aware of standards related to digital citizenship (Brenner & Brill, 2016; Lewis, 2015), and these standards include the element of digital law. Interpreter educators in this study were not familiar with institutional policies related to digital citizenship, which also have a connection to *digital law*. Though educators in this study identified confidentiality as a prime value in relation to digital citizenship pedagogy, digital law does not appear to be addressed in their teaching practice.

The element of digital rights and responsibilities was not prioritized by participants when asked directly. This element relates to responsible use of the privilege that comes with digital citizenship (Ribble & Park, 2019). Maintaining or adhering to digital rights and responsibilities, similar to complying with digital law, requires awareness on the part of the practitioner. As noted in the literature, many educators are not aware of standards for digital citizenship (Lewis, 2016) or have not had adequate training in technology in order to prepare students to use it (Brenner & Brill, 2016;

Instefjord & Munthe, 2016). Participants in this study did not directly address digital rights and responsibilities but rather conveyed that students were quick to report problems with technology and were willing to help peers with technical problems. This supports the finding that educators in this study believed students had already acquired the hard skills of digital citizenship.

In summary, the findings of this study correspond with and further the current literature on digital citizenship and technology in education, educational technology, and interpreter education. Interpreter educators who participated in this study showed an awareness of some of the elements of digital citizenship but did not possess a fully informed understanding. They were not aware of the digital citizenship policies of their institution and they shared that policies at the program level were absent or incomplete. Participants appeared to prioritize the elements of digital citizenship that corresponded with the primary value of the Code of Professional Conduct (RID, 2005) for signed language interpreting—the right of consumers to confidentiality—and also the growing professional identity or reputation of the student. This group of educators did not prioritize elements of digital citizenship related to the operation and regulation of technology despite the potential for these elements to jeopardize confidentiality. Instead, educators assumed students had already acquired those skills.

Limitations of the Study

This study was limited in ways that were anticipated and also by circumstances that arose in the process. The study recruited from four-year institutions across all regions of the country and did not include any two-year institutions. Within the population, a

limitation of the study is the size of the sample and the fact that not all regions of the country are represented. The population is small and the density of programs is greater in the eastern part of the United States. There were no volunteers from the western region of the United States. Additionally, due to the requirement that interviews be audiotaped only, potential Deaf participants were not included and their perspective is absent. One anticipated potential limitation was researcher bias because of my proximity to the population. All precautions were taken to avoid researcher bias, however, it is possible that interpretation of the findings was affected by researcher membership in the population under study.

Recommendations

Further research is recommended for both the topic and the population. A similar study with a larger sample inclusive of the western region of the United States would return more information and add to what is known. Additionally, a similar study could be done with educators at two-year institutions. The perspective of Deaf educators is important as they are an integral part of interpreter education. The same or a similar study that recruited Deaf educators would add balance to the findings of the current study.

Further, research with different stakeholder groups is recommended to balance the view provided by interpreter educators about the digital citizenship of students. This could include research documenting the technology and digital citizenship skills of interpreting students and interpreter educators. Research investigating the technology needs of hearing, Deaf, and hard of hearing people as they interact with interpreters could also provide information for preservice and working interpreters as well as help guide

interpreter educators. Finally, research on the specific types of resources most beneficial for interpreter education and interpreted settings could further inform programs, administrators, and educational design specialists about the needs of this demographic.

Implications

The implications of this study are several. The findings may contribute to positive social change by leading to improvement in the education and preparation of pre-service and professional interpreters as well as positively affecting the lives of the clients they serve. The interpreter educators in this study expressed that they were unfamiliar with the concept of digital citizenship, though they were already responding to elements of it in their teaching practice. Publication and dissemination of this study may help to bring awareness of the topic of digital citizenship to a larger group of educators, administrators, and programs, leading to improved practices, guidelines, resources, and curricula. It may bring awareness of the topic to interpreting students and working interpreters and may help them assess their own digital citizenship and potential need for increased skills and knowledge. Participants in this study shared their unique experiences and perspectives as educators who work in bilingual, bi-modal interpreter education programs. Sharing this perspective more broadly may help to inform instructional design professionals about the needs of this niche group of educators, which may lead to improved resources for educators and improved outcomes for students. Ultimately, by broadly sharing what was found, this study may contribute to improving the experiences and lives of the Deaf, hard of hearing, and hearing clients who work with interpreters.

Recommendations for Action by Programs and Educators

Programs can support educators and students by developing digital citizenship policies and curricula, evaluating the actual digital citizenship skills and needs of students and teachers, and clearly identifying institutional resources and needs. Individual educators can support faculty and students by considering and evaluating the digital citizenship skills and needs of students, particularly related to current and future professional needs. Educators in this study recognized a need for technological savvy by instructors. To support this, educators can evaluate their own digital citizenship skills and needs and seek additional professional development or other resources necessary. Educators can develop and model activities that improve student digital citizenship skills and prepare them for a technology-mediated professional future.

Conclusion

This study was designed to explore the topic of digital citizenship in ASL/English interpreter education. The literature on the use of technology in interpreting indicates that it is increasing and will continue to do so (Atabekova et al., 2018; Braun, 2018; Brunson, 2018; Koller & Pöchhacker, 2018; Skinner et al., 2018; Spinolo, Bertozzi, & Russo, 2018). To see how this change is affecting interpreter educators, information was gathered via a qualitative study that collected data from six interpreter educators from institutions across the United States offering bachelor's degrees in ASL/English interpreting. Semi-structured interviews gathered data that were analyzed through established qualitative methods to identify similarities, differences, patterns, and themes among the responses.

What was found was that the interpreter educators in this study cared about the digital citizenship of their students and attempted to address it, despite a lack of literature, resources, and developed curricula for doing so. They expressed a desire for clear policies at the institutional and program level to guide their pedagogy. They used their experiences with technology to guide their practices and recognized their own need for digital citizenship skills. With students, they reported emphasizing the importance of confidentiality and professional behavior when using technology. They assumed that their students acquired knowledge of technology, how it works, and how to safely use it prior to entry into the interpreting program. They welcomed the conversation as an opportunity to explore their digital citizenship practices and policies.

Interpreter educators in this study were motivated to address digital citizenship with their students and recognized the growing importance of doing so. They acknowledged that more education, policies, resources, and curricula than they could access were necessary to provide students with a foundation for working with technology. They had the will to address digital citizenship in interpreter education; they expressed a need for support in finding the way.

References

Abdel Latif, M. M. (2018). Towards a typology of pedagogy-oriented translation and interpreting research. *The Interpreter and Translator Trainer*, *12*(3), 322-345. https://doi.org/10.1080/1750399x.2018.1502008

Adekola, J., Dale, V. H., & Gardiner, K. (2017). Development of an institutional framework to guide transitions into enhanced blended learning in higher education. *Research in Learning Technology, 25*. https://doi.org/10.25304/rlt.v25.1973

Adnan, M., & Boz, B. (2015). Faculty members' perspectives on teaching mathematics online: Does prior online learning experience count? *Turkish Online Journal of Qualitative Inquiry, 6*(1), 21-38. https://doi.org/10.17569/tojqi.60223

Alqahtani, A., Alqahtani, F., & Alqurashi, M. (2017). The extent of comprehension and knowledge with respect to digital citizenship among Middle Eastern and US students at UNC. *Journal of Education and Practice, 8*(9), 96-102. Retrieved from https://eric.ed.gov/?id=EJ1138839

Americans With Disabilities Act of 1990, Pub. L. No. 101-336, 104 Stat. 328 (1990).

Anglin, M. S. (2017). *Technology integration by general education teachers of English language learners* (Doctoral dissertation). Retrieved from https://scholarworks.waldenu.edu/

Arumí, M., & Vargas-Urpi, M. (2018). Annotation of interpreters' conversation management problems and strategies in a corpus of criminal proceedings in Spain. *Translation and Interpreting Studies. The Journal of the American Translation*

and Interpreting Studies Association, 13(3), 421-441.

https://doi.org/10.1075/tis.00023.aru

Atabekova, A. A., Gorbatenko, R. G., Shoustikova, T. V., & Valero-Garcés, C. (2018).

Cross-cultural mediation with refugees in emergency settings: ICT use by

language service providers. *Journal of Social Studies Education Research, 9*(3),

351-369. Retrieved from https://jsser.org/index.php/jsser/article/view/274

Bakir, N. (2016). Technology and teacher education: A brief glimpse of the research and

practice that have shaped the field. *TechTrends, 60*(1), 21-29.

https://doi.org/10.1007/s11528-015-0013-4

Balogh, K., & Salaets, H. (2018). Videoconferencing in legal context: a comparative

study of simulated and real-life settings. In Napier, J., Skinner, R., & Braun, S.

(Eds.) *Here or there: Research on interpreting via video link* (pp. 264-298).

Washington, DC: Gallaudet University Press.

Ball, C. (2013). *Legacies and legends: History of interpreter education from 1800 to the

21st century*. Alberta, Canada: Interpreting Consolidated.

Ben-Ari, N. (2017). Fictional vs. professional interpreters. In M. Biagini, M.S. Boyd, and

C. Monacelli, (Eds.), *The changing role of the interpreter* (pp. 7-31). NewYork

and London: Routledge.

Best, B. A. (2016). E-professionalism and signed language interpreters: Considering

social media, online disclosure, and small world ethics. *Journal of Interpretation,

25*(1), Article 2. Retrieved from https://digitalcommons.unf.edu/joi/vol25/iss1/2/

Best, B. (2017). 'Look-at-me' versus 'look-at-this': Signed language interpreters'

perceptions of promotion on Facebook. *International Journal of Interpreter Education, 9*(1), 5-16. Retrieved from http://www.cit-asl.org/new/signed-language-interpreters-perceptions-of-promotion-on-facebook/

Biddix, J. P., Chung, C. J., & Park, H. W. (2016). Faculty use and perception of mobile information and communication technology (m-ICT) for teaching practices. *Innovations in Education and Teaching International, 53*(4), 375-387. https://doi.org/10.1080/14703297.2014.997778

Bidoli, C. J. K., & Vardè, S. (2016) Digital pen technology and consecutive note-taking in the classroom and beyond. *Interchange between Languages and Cultures: The Quest for Quality*, 131. https://doi.org/10.4324/9781315648996-11

Blundell, C., Lee, K. T., & Nykvist, S. S. (2016). Digital learning in schools: Conceptualizing the challenges and influences on teacher practice. *Journal of Information Technology Education, 15*, 535-560. https://doi.org/10.28945/3578

Bower, K. (2015). Stress and burnout in video relay service (VRS) interpreting. *Journal of Interpretation, 24*(1), Article 2. Retrieved from https://digitalcommons.unf.edu/cgi/viewcontent.cgi?article=1047&context=joi

Braun, S. (2018). Video-mediated interpreting in legal settings in England. *Translation and Interpreting Studies. The Journal of the American Translation and Interpreting Studies Association, 13*(3), 393-420. https://doi.org/10.1075/tis.00022.bra

Braun, S., Davitti, E., & Dicerto, S. (2018). Video-mediated interpreting in legal settings: Assessing the implementation. In Napier, J., Skinner, R., & Braun, S. (Eds.) *Here*

or there: Research on interpreting via video link (pp. 144-182). Washington, DC: Gallaudet University Press.

Brenner, A. M., & Brill, J. M. (2016). Investigating practices in teacher education that promote and inhibit technology integration transfer in early career teachers. *TechTrends, 60*(2), 136-144. https://doi.org/10.1007/s11528-016-0025-8

Brunson, J. (2018). The irrational component in the rational system: Interpreters talk about their motivation to work in video relay services. In Napier, J., Skinner, R., & Braun, S. (Eds.). *Here or there: Research on interpreting via video link* (pp. 39-60). Washington, DC: Gallaudet University Press.

Chen, S. (2017). Note-taking in consecutive interpreting: New data from pen recording. *Translation & Interpreting, 9*(1), 4-23. Retrieved from http://www.trans-int.org/index.php/transint/article/view/570

Chen, S. (2018). A pen-eye-voice approach towards the process of note-taking and consecutive interpreting: An experimental design. *International Journal of Comparative Literature and Translation Studies, 6*(2), 1-8. https://doi.org/10.7575/aiac.ijclts.v.6n.2p.1

Choi, M. (2016). A concept analysis of digital citizenship for democratic citizenship education in the internet age. *Theory & Research in Social Education, 44*(4), 565-607. https://doi.org/10.1080/00933104.2016.1210549

Choi, M., Glassman, M., & Cristol, D. (2017). What it means to be a citizen in the internet age: Development of a reliable and valid digital citizenship scale. *Computers & Education, 107*, 100-112.

https://doi.org/10.1016/j.compedu.2017.01.002

Commission on Collegiate Interpreter Education. (2014). *CCIE Accreditation standards 2014*. Retrieved from http://ccie-accreditation.org/wp-content/uploads/2014/12/CCIE_Accreditation_Standards_2014.pdf

Conway, D., & Ryan, H. (2018). Feeling "fully human": Working to reduce health inequalities in primary care through video interpreting. In Napier, J., Skinner, R., & Braun, S. (Eds.). *Here or there: Research on interpreting via video link* (pp. 111-143). Washington, DC: Gallaudet University Press.

Corpas Pastor, G. (2017). VIP: Voice-text integrated system for interpreters. In *Proceedings of the 39th Conference Translating and the Computer. ASLING, London, UK, November 16-17, 2017* (pp. 7-10). Tradulex. Retrieved from https://www.asling.org/tc39/?page_id=955

Curran, M. B., & Ribble, M. (2017). P–20 model of digital citizenship. *New Directions for Student Leadership, 2017*(153), 35-46. https://doi.org/10.1002/yd.20228

Darden, V. (2013). *Changes in community contact characteristics in interpreter education* (Masters thesis). Retrieved from http://digitalcommons.wou.edu/theses/4

Darden, V., & Maroney, E. M. (2018). "Craving to hear from you…": An exploration of m-learning in global interpreter education. *Translation and Interpreting Studies. The Journal of the American Translation and Interpreting Studies Association*, *13*(3), 442-464. https://doi.org/10.1075/tis.00024.dar

de Quadros, R., & Rossi Stumpf, M. (2015). Sign language interpretation and translation

in Brazil: Innovative formal education. In Ehrlich, S. & Napier, J. (Eds.) *Interpreter education in the digital age: Innovation, access, and change*. (pp. 243-265). Washington DC: Gallaudet University Press.

Dean, R. K., & Pollard, R. Q. (2004). A practice-profession model of ethical reasoning. *Views, 21*(9), 25-28. Retrieved from https://s3.amazonaws.com/academia.edu.documents/31820207/3-Practice_Profession_Model_of_Ethics.pdf?response-content-disposition=inline%3B%20filename%3DInterpreting_as_a_Practice_Profession.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIWOWYYGZ2Y53UL3A%2F20191025%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20191025T020520Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=7fb3d048742e859b2910dee745616aba5fb2a9ee54c204a7ee1ed411b103220b

Dean, R. K., & Pollard Jr, R. Q. (2011). Context-based ethical reasoning in interpreting: A demand control schema perspective. *The Interpreter and Translator Trainer, 5*(1), 155-182. https://doi.org/10.1080/13556509.2011.10798816

Desmet, B., Vandierendonck, M., & Defrancq, B. (2018). Simultaneous interpretation of numbers and the impact of technological support. *Interpreting and Technology*, *11*, 13. Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C38&q=Desmet%2C+B.%2C+Vandierendonck%2C+M.%2C+%26+Defrancq%2C+B.+%282018%29.+Si

multaneous+interpretation+of+numbers+and+the+impact+of+technological+supp

ort.+Interpreting+and+technology%2C+11%2C+13.&btnG=

Devaux, J. (2018). Technologies and role-space: How videoconference interpreting

affects the court interpreter's perception of her role. *Interpreting and Technology*,

11, 91. Retrieved from

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C38&q=Devaux%2C+J.+

%282018%29.+Technologies+and+role-

space%3A+How+videoconference+interpreting+affects+the+court+interpreter%2

7s+perception+of+her+role.+Interpreting+and+technology%2C+11%2C+91&btn

G=

Deysel, E., & Lesch, H. (2018). Experimenting with computer-assisted interpreter

training tools for the development of self-assessment skills: National Parliament

of RSA. *Interpreting and Technology*, *11*, 61. Retrieved from

https://scholar.google.com/scholar?hl=en&as_sdt=0%2C38&q=+Deysel%2C+E.

%2C+%26+Lesch%2C+H.+%282018%29.+Experimenting+with+computer-

assisted+interpreter+training+tools+for+the+development+of+self-

assessment+skills%3A+National+Parliament+of+RSA.+Interpreting+and+techno

logy%2C+11%2C+61.&btnG=

Dooley, C. M., Lewis Ellison, T., Welch, M. M., Allen, M., & Bauer, D. (2016). Digital

participatory pedagogy: Digital participation as a method for technology

integration in curriculum. *Journal of Digital Learning in Teacher Education*,

32(2), 52-62. https://doi.org/10.1080/21532974.2016.1138912

Dumont, G., & Raggo, P. (2018). Faculty perspectives about distance teaching in the virtual classroom. *The Journal of Nonprofit Education and Leadership*, *8*(1). https://doi.org/10.18666/JNEL-2018-V8-I1-8372

Ehrlich, S., & Wessling, D. M. (2018). Modality of instruction in interpreter education: An exploration of policy. *Sign Language Studies*, *19*(2), 225-239. https://doi.org/10.1353/sls.2018.0033

Ehrlich, S., & Vance, K. (2015). Innovative interpreting: iPad technology as a bridge to interpreting services in a post-secondary setting. *Translation & Interpreting*, *7*(2), 60-74. doi:10.12807/ti.107202.2015.a05

Englund, C., Olofsson, A. D., & Price, L. (2017). Teaching with technology in higher education: Understanding conceptual change and development in practice. *Higher Education Research & Development*, *36*(1), 73-87. https://doi.org/10.1080/07294360.2016.1171300

Fantinuoli, C. (2017). Computer-assisted preparation in conference interpreting. *Translation & Interpreting*, *9*(2), 24-37. doi:10.12807/ti.109202.2017.a02

Federici, F. M., & Al Sharou, K. (2018). Moses, time, and crisis translation. *Translation and Interpreting Studies. The Journal of the American Translation and Interpreting Studies Association*, *13*(3), 486-508. https://doi.org/10.1075/tis.00026.fed

Ferraresi, A. (2016). Intermodal corpora and the translation classroom: What can translation trainers and trainees learn from interpreting?. *Linguaculture*, *2016*(2), 27-51. https://doi.org/10.1515/lincu-2016-0011

Fitzmaurice, S. 2010. Teaching goals of interpreter educators. *International Journal of Interpreter Education* (*2*), 14–26. Retrieved from https://www.cit-asl.org/new/ijie/volume-2/#toggle-id-3

Fowler, Y. (2018). Interpreted prison video link: The prisoner's eye view. In Napier, J., Skinner, R., & Braun, S. (Eds.) *Here or there: Research on interpreting via video link* (pp. 183-209). Washington, DC: Gallaudet University Press.

Frankfort-Nachmias, C., & Nachmias, D. (2008). *Research methods in the social sciences 5th ed.* New York, NY: Worth.

Gallardo-Echenique, E. E., de Oliveira, J. M., Marquez, L., & Esteve-Mon, F. (2015). Digital competence in the knowledge society. *Journal of Online Learning and Teaching*, *11*(1), 1. Retrieved from http://jolt.merlot.org/vol11no1/Gallardo-Echenique_0315.pdf

Goldsmith, J. (2018). Tablet interpreting. *Translation and Interpreting Studies. The Journal of the American Translation and Interpreting Studies Association*, *13*(3), 342-365. https://doi.org/10.1075/tis.00020.gol

Gomes, A. W., Butera, G., Chretien, K. C., & Kind, T. (2017). The development and impact of a social media and professionalism course for medical students. *Teaching and Learning in Medicine*, *29*(3), 296-303. https://doi.org/10.1080/10401334.2016.1275971

Gretter, S., & Yadav, A. (2016). Computational thinking and media & information literacy: An integrated approach to teaching twenty-first century skills. *TechTrends*, *60*(5), 510-516. https://doi.org/10.1007/s11528-016-0098-4

Hale, S., & Napier, J. (2013*). Interpreting research methods: A practical resource.*

London: Bloomsbury.

Hsu, P. S. (2016). Examining current beliefs, practices and barriers about technology

integration: A case study. *TechTrends, 60*(1), 30-40.

https://doi.org/10.1007/s11528-015-0014-3

Hughes, T., Bown, S., & Green, K. (2019). Engaging British Sign Language/English

interpreting students through the use of situated learning. *Student Engagement in*

Higher Education Journal, *2*(2), 149-160. Retrieved from

https://www.researchgate.net/profile/Thaisa_Hughes/publication/330713110_Eng

aging_British_Sign_Language_English_interpreting_students_through_the_use_o

f_situated_learning_Student_Engagement_in_Higher_Education_Journal/links/5c

506667299bf12be3eb8b40/Engaging-British-Sign-Language-English-

interpreting-students-through-the-use-of-situated-learning-Student-Engagement-

in-Higher-Education-Journal.pdf

Iglesias Fernández, E., & Ouellet, M. (2018). From the phone to the classroom:

Categories of problems for telephone interpreting training. *The Interpreters'*

Newsletter, 23. 19-44. doi:10.13137/2421-714X/22397

Instefjord, E. (2015). Appropriation of digital competence in teacher education. *Nordic*

Journal of Digital Literacy, *10*(Jubileumsnummer), (pp. 155-171). Retrieved from

https://www.idunn.no/dk/2015/Jubileumsnummer/appropriation_of_digitalcompet

ence_in_teacher_education

Instefjord, E., & Munthe, E. (2016). Preparing pre-service teachers to integrate

technology: An analysis of the emphasis on digital competence in teacher

education curricula. *European Journal of Teacher Education, 39*(1), 77-93.

https://doi.org/10.1080/02619768.2015.1100602

International Society for Technology in Education. (2017). *National education standards*.

Washington, DC: ISTE. Retrieved from: www.iste.org/standards

Irby, D. M., & O'Sullivan, P. S. (2018). Developing and rewarding teachers as educators

and scholars: Remarkable progress and daunting challenges. *Medical Education*,

52(1), 58-67. https://doi.org/10.1111/medu.13379

Irvin, M., & Longmire, J. (2016). Motivating and supporting faculty in new technology-

based student success initiatives: An exploration of case studies on technology

acceptance. *Journal of Student Success and Retention Vol*, *3*(1). Retrieved from

http://www.jossr.org/wp-content/uploads/2014/04/MOTIVATING-AND-

SUPPORTING-FACULTY_article.pdf

Jääskelä, P., Häkkinen, P., & Rasku-Puttonen, H. (2017). Teacher beliefs regarding

learning, pedagogy, and the use of technology in higher education. *Journal of

Research on Technology in Education*, *49*(3-4), 198-211.

https://doi.org/10.1080/15391523.2017.1343691

Janesick, V. J. (2016). '*Stretching' exercises for qualitative researchers.* Thousand Oaks;

Sage Publications.

Jones, L. M., & Mitchell, K. J. (2016). Defining and measuring youth digital citizenship.

New Media & Society, *18*(9), 2063-2079.

https://doi.org/10.1177/1461444815577797

169

Karal, H., & Bakir, E. (2016, March). Examining perceptions of preservice classroom

teachers in terms of dimensions of digital citizenship. In *Society for Information

Technology & Teacher Education International Conference* (pp. 942-944).

Association for the Advancement of Computing in Education (AACE). Retrieved

from

https://www.researchgate.net/profile/Eda_Bakir/publication/322716759_Examini

ng_Perceptions_of_Pre-

service_Classroom_Teachers_in_Terms_of_Dimensions_of_Digital_Citizenship/l

inks/5a6b0628458515b2d053913c/Examining-Perceptions-of-Pre-service-

Classroom-Teachers-in-Terms-of-Dimensions-of-Digital-Citizenship.pdf

Kerremans, K., & Stengers, H. (2017). Using online and/or mobile virtual

communication tools in interpreter and translator training: Pedagogical

advantages and drawbacks. *Translating and the Computer 39*, 55. Retrieved from

https://core.ac.uk/download/pdf/153399686.pdf#page=64

Kerremans, K., Cox, A., Stengers, H., Gutiérrez, R. L., & Rillof, P., (2018). On the use of

technologies in public service interpreting and translation settings. In Read, T.,

Montaner, S, Sedano, B., (Eds.) *Technological innovation for specialized

linguistic domains: Languages for digital lives and cultures. Proceedings of

TISID'18* (pp. 107-122)*.* Beau Bassin, Mauritius: Éditions universitaires

européennes. Retrieved from http://www3.uah.es/fitispos_ij/OJS/ojs-

2.4.5/index.php/fitispos/article/view/211

Khlaif, Z. (2018). Teachers' perceptions of factors affecting their adoption and

acceptance of mobile technology in K-12 settings. *Computers in the Schools*, *35*(1), 49-67. https://doi.org/10.1080/07380569.2018.1428001

Kiraly, D. (2014). *A social constructivist approach to translator education: Empowerment from theory to practice*. London and New York: Routledge.

Kiraly, D., Rüth, L., & Wiedmann, M. (2016). Enhancing translation course design and didactic interventions with e-learning. *Towards authentic experiential learning in translator education*, pp. 175-198. https://doi.org/10.14220/9783737004954.89

Koller, M., & Pöchhacker, F. (2018). "The work and the skills": A profile of first-generation video remote interpreters. In Napier, J., Skinner, R., & Braun, S. (Eds.) *Here or there: Research on interpreting via video link* (pp. 89-110). Washington, DC: Gallaudet University Press..

Krumsvik, R. J., Jones, L. Ø., Øfstegaard, M., & Eikeland, O. J. (2016). Upper secondary school teachers' digital competence: Analysed by demographic, personal and professional characteristics. *Nordic Journal of Digital Literacy*, *11*(03), 143-164. https://doi.org/10.18261/issn.1891-943x-2016-03-02

Lakner, K., & Turner, G. H. (2015). Connecting research and practice to create digital resources for sign language interpreters: Professional development through knowledge exchange. In Ehrlich, S. & Napier, J. (Eds.) *Interpreter education in the digital age: Innovation, access, and change* (pp. 199-217)*. Washington DC: Gallaudet University Press.

Lee, J., & Huh, J. (2018). Why not go online?: A case study of blended mode business interpreting and translation certificate program. *The Interpreter and Translator*

Trainer, *12*(4), 444-466. https://doi.org/10.1080/1750399X.2018.1540227

Leeson, L., Sheikh, H., & Vermeerbergen, M. (2015). The superhighway or the slow

    lane? Evaluating challenges in creating new learning spaces for interpreters. In

    Ehrlich, S. & Napier, J. (Eds.) *Interpreter education in the digital age:*

    Innovation, access, and change (pp. 153-198). Washington DC: Gallaudet

    University Press.

Leigh, I. W., Andrews, J. F., & Harris, R. (2018). *Deaf culture: Exploring deaf*

    communities in the United States. Plural Publishing.

Lewis, C. (2015). Preservice teachers' ability to identify technology standards: Does

    curriculum matter?. *Contemporary Issues in Technology and Teacher Education*,

    15(2), 235-254. Retrieved from http://www.learntechlib.org/p/147369/

Licoppe, C., Verdier, M., & Veyrier, C. A. (2018). Voice, power and turn-taking in

    multilingual, consecutively interpreted courtroom proceedings with video links. In

    Napier, J., Skinner, R., & Braun, S. (Eds.) *Here or there: Research on*

    interpreting via video link (pp. 299-322)*.* Washington, DC: Gallaudet University

    Press.

Marcelo, C., & Yot-Domínguez, C. (2018). From chalk to keyboard in higher education

    classrooms: changes and coherence when integrating technological knowledge

    into pedagogical content knowledge. *Journal of Further and Higher Education*, 1-

    14. https://doi.org/10.1080/0309877X.2018.1429584

Marks, A. (2018). Hold the phone!. *Translation and Interpreting Studies. The Journal of*

    the American Translation and Interpreting Studies Association, *13*(1), 87-109.

https://doi.org/10.1075/tis.00006.mar

Maxwell, J. A. (2013). *Qualitative research design: An interactive approach* (Vol. 41). Thousand Oaks: Sage Publications.

McCulloch, A. W., Hollebrands, K., Lee, H., Harrison, T., & Mutlu, A. (2018). Factors that influence secondary mathematics teachers' integration of technology in mathematics lessons. *Computers & Education*, *123*, 26-40. https://doi.org/10.1016/j.compedu.2018.04.008

McDermid, C. (2009). The ontological beliefs and curriculum design of Canadian interpreter and ASL educators. *International Journal of Interpreter Education*, *1*, 7-32. Retrieved from https://www.cit-asl.org/new/ijie/volume-1/#toggle-id-2

Melchor, M. D. R. (2018). Pedagogical assistance for the XXI century: The interaction between DG-SCIC, DG-INTE and universities in the field of blended learning for interpreter training. *CLINA: An Interdisciplinary Journal of Translation, Interpreting and Intercultural Communication*, *4*(1), 89-103. http://dx.doi.org/10.14201/clina20184189103

Mellinger, C. D., & Hanson, T. A. (2018). Interpreter traits and the relationship with technology and visibility. *Translation and Interpreting Studies. The Journal of the American Translation and Interpreting Studies Association*, *13*(3), 366-392. https://doi.org/10.1075/tis.00021.mel

Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative research: A guide to design and implementation*. San Francisco: John Wiley & Sons.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A*

methods sourcebook. Thousand Oaks: Sage Publications.

Min, M. (2017). Teachers who initiate changes with an ebook-integrated curriculum: Revisiting the developmental assumptions of stages of concerns in the concerns-based adoption model. *Alberta Journal of Educational Research*, *63*(1). Retrieved from https://cjc-rcc.ucalgary.ca/index.php/ajer/article/view/56146

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, *108*(6), 1017. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Moore, E. J., Smith, F. G., Hollingshead, A., & Wojcik, B. (2018). Voices from the field: Implementing and scaling-up Universal Design for learning in teacher preparation programs. *Journal of Special Education Technology*, *33*(1), 40-53. https://doi.org/10.1177/0162643417732293

Motta, M. (2016). A blended learning environment based on the principles of deliberate practice for the acquisition of interpreting skills. *The Interpreter and Translator Trainer*, *10*(1), 133-149. https://doi.org/10.1080/1750399X.2016.1154347

Mulayim S., & Lai, M. (2015). The Community-of-Inquiry framework in online interpreter training. In Ehrlich, S. & Napier, J. (Eds.) *Interpreter education in the digital age: Innovation, access, and change* (pp. 95-124). Washington DC: Gallaudet University Press.

Napier, J. (2004). Interpreting omissions: A new perspective. *Interpreting*, *6*(2), 117-142. https://doi.org/10.1075/intp.6.2.02nap

Napier, J. (2011). "It's not what they say but the way they say it." A content analysis of

interpreter and consumer perceptions of signed language interpreting in Australia. *International Journal of the Sociology of Language, 207*, 59-87. https://doi.org/10.1515/ijsl.2011.003

Napier, J., Skinner, R., & Turner, G. H. (2017). "It's good for them but not so for me": Inside the sign language interpreting call centre. *Translation & Interpreting*, *9*(2), 1-23. doi:10.12807/ti.109202.2017.a01

Napier, J., Skinner, R., & Turner, G. (2018). Enabling political participation through video remote interpreting: A case study. In Napier, J., Skinner, R., & Braun, S. (Eds.) *Here or there: Research on interpreting via video link.* (pp. 230-264). Washington, DC: Gallaudet University Press.

Napier, J., Song, Z., & Ye, S. (2013). Innovative and collaborative use of iPad in interpreter education. *International Journal of Interpreter Education, 5(*2) 13-42*. Retrieved from http://www.cit-asl.org/new/ijie/volume-5-2/#toggle-id-3

Nordin, M. S., Ahmad, T. B. T., Zubairi, A. M., Ismail, N. A. H., Rahman, A. H. A., Trayek, F. A., & Ibrahim, M. B. (2016). Psychometric properties of a digital citizenship questionnaire. *International Education Studies, 9*(3), 71. https://doi.org/10.5539/ies.v9n3p71

Orlando, M. (2015). Digital pen technology and interpreting training, practice and research: Status and trends. In Ehrlich, S., and Napier, J. (Eds.) *Interpreter education in the digital age: Innovation, access and change*, (pp. 125-152). Washington DC: Gallaudet University Press.

Ortiz, L. E. S., & Cavallo, P. (2018). Computer-assisted interpreting tools (CAI) and

options for automation with automatic speech recognition. *Tradterm*, *32*, 9-31.

https://doi.org/10.11606/issn.2317-9511.v32i0p9-31

Pan, J., Wang, H., & Yan, J. X. (2017). Convergences and divergences between studies

on translator training and interpreter training. *Target. International Journal of

Translation Studies*, *29*(1), 110-144. https://doi.org/10.1075/target.29.1.05pan

Patton, M. Q. (2015). *Qualitative research & evaluation methods* (4th ed.). Thousand

Oaks, CA: Sage Publications.

Pöchhacker, F. (2016). *Introducing interpreting studies*. London: Routledge.

https://doi.org/10.4324/9781315649573

Porter, W. W., & Graham, C. R. (2016). Institutional drivers and barriers to faculty

adoption of blended learning in higher education. *British Journal of Educational

Technology*, *47*(4), 748-762. https://doi.org/10.1111/bjet.12269

Prandi, B. (2015). The use of CAI tools in interpreters' training: A pilot study. In

*Proceedings of the 37 conference Translating and the Computer. Editions

Tradulex, London* (pp. 48-57). Retrieved from

https://pdfs.semanticscholar.org/fb50/4841d3d22ee7ef5482ff702ca674ebf5772a.p

df

Prandi, B. (2017). Designing a multimethod study on the use of CAI tools during

simultaneous interpreting. *Translating and the Computer*, *39*, 76-113. Retrieved

from https://core.ac.uk/download/pdf/153399686.pdf#page=85

Prandi, B. (2018). An exploratory study on CAI tools in simultaneous interpreting:

Theoretical framework and stimulus validation. *Interpreting and technology*, *11*, 29. Retrieved from

https://books.google.com/books?hl=en&lr=&id=dsiCDwAAQBAJ&oi=fnd&pg=PA29&ots=QCPSyKIdik&sig=rBebWsAvqCpEUmpQBi7BcRcDDb4#v=onepage&q&f=false

Radovanović, D., Hogan, B., & Lalić, D. (2015). Overcoming digital divides in higher education: Digital literacy beyond Facebook. *New Media & Society*, *17*(10), 1733-1749. https://doi.org/10.1177/1461444815588323

Reddy, M. (1979). The conduit metaphor. *Metaphor and Thought*, *2*, 285-324. Retrieved from

https://s3.amazonaws.com/academia.edu.documents/33136054/The_Conduit_Metaphor_A_Case_of_Frame_Conflict_in_Our_Language_about_Languag.pdf?response-content-disposition=inline%3B%20filename%3DThe_Conduit_Metaphor_A_Case_of_Frame_Con.pdf&X-Amz-Algorithm=AWS4-HMAC-SHA256&X-Amz-Credential=AKIAIWOWYYGZ2Y53UL3A%2F20191025%2Fus-east-1%2Fs3%2Faws4_request&X-Amz-Date=20191025T033830Z&X-Amz-Expires=3600&X-Amz-SignedHeaders=host&X-Amz-Signature=e9b55c6f0c0245018e49b27a4c31265ab99f90d7073b1ef820f26d01b9fe9409

Registry of Interpreters for the Deaf. (2005). *NAD-RID Code of Professional Conduct*. Retrieved from http://rid.org/ethics/code-of-professional-conduct/

Rehabilitation Act of 1973 § Section 508, 29 U.S.C. § 794 (1973, as amended 1998).

Ribble, M. (2015). *Digital citizenship in schools: Nine elements all students should know*.

Eugene OR: International Society for Technology in Education.

Ribble, M. (2017). Digital Citizenship. Retrieved from

http://www.digitalcitizenship.net/nine-elements.html

Ribble, M., & Park, M. (2019). *The digital citizenship handbook for school leaders:*

Fostering positive interactions online. Eugene, OR: International Society for

Technology in Education.

Rogers, E.M. (2003). *Diffusion of innovations*. New York, NY: Free Press.

Roush, D. (2010). Universal Design in technology used in interpreter education.

International Journal of Interpreter Education, 2, 25-40. Retrieved from

https://www.cit-asl.org/new/ijie/volume-2/#toggle-id-4

Sandrelli, A., & Jerez, J. D. M. (2007). The impact of information and communication

technology on interpreter training: State-of-the-art and future prospects. *The*

Interpreter and Translator Trainer, 1(2), 269-303.

https://doi.org/10.1080/1750399X.2007.10798761

Sapkota, K. N., & Vander Putten, J. (2018). Social media acceptance and usage by

business communication faculty. *Business and Professional Communication*

Quarterly, *81*(3), 328-350. https://doi.org/10.1177/2329490618777818

Shelton, C. (2017). Giving up technology and social media: why university lecturers stop

using technology in teaching. *Technology, Pedagogy and Education*, *26*(3), 303-

321. https://doi.org/10.1080/1475939X.2016.1217269

Shelton, C. (2018). An ecological model for university faculty members' thinking about technology. *Journal of Computing in Higher Education*, *30*(2), 279-297. https://doi.org/10.1007/s12528-018-9168-2

Singleton, J. L., Remillard, E. T., Mitzner, T. L., & Rogers, W. A. (2018). Everyday technology use among older deaf adults. *Disability and Rehabilitation: Assistive Technology*, 1-8. https://doi.org/10.1080/17483107.2018.1447609

Skinner, M. M. (2016). *Perceptions of adult professional studies instructors regarding developing and transitioning online courses.* [Doctoral dissertation.] Walden University. Retrieved from https://scholarworks.waldenu.edu/

Skinner, R., Napier, J., & Braun, S. (2018). Interpreting via video link: Mapping of the field. In Napier, J., Skinner, R., & Braun, S. (Eds.) *Here or there: Research on interpreting via video link* (pp.11-35)*.* Washington, DC: Gallaudet University Press.

Spinolo, N., Bertozzi, M., & Russo, M. (2018). Shaping the interpreters of the future and of today: Preliminary results of the SHIFT project. *The Interpreters' Newsletter, 23.* 45-61. https://doi.org/10.13137/2421-714x/22398

Stengers, H., Kerremans, K., & Segers, J. (2018). Integrating virtual conference tools in interpreter and translator training. *Trans-kom*, *11*(2), 220-237. Retrieved from http://www.trans-kom.eu/bd11nr02/trans-kom_11_02_05_Stengers_Kerremans_Segers_Conference.20181220.pdf

Strauss, A., & Corbin, J. M. (1990). *Basics of qualitative research: Grounded Theory procedures and techniques.* Thousand Oaks: Sage Publications.

Swanson, J. A. (2016). The impact of technology integration upon collegiate pedagogy from the lens of multiple disciplines. *CELDA16: Conference on Cognition and Exploratory Learning in the Digital Age.* Retrieved from https://eric.ed.gov/?id=ED571432

Taimalu, M., & Luik, P. (2019). The impact of beliefs and knowledge on the integration of technology among teacher educators: A path analysis. *Teaching and Teacher Education*, *79*, 101-110. https://doi.org/10.1016/j.tate.2018.12.012

Thorell, M., Fridorff-Jens, P. K., Lassen, P., Lange, T., & Kayser, L. (2015). Transforming students into digital academics: a challenge at both the individual and the institutional level. *BMC Medical Education*, *15*(1), 48. https://doi.org/10.1186/s12909-015-0330-5

Turner, G. H., Napier, J., Skinner, R., & Wheatley, M. (2017). Telecommunication relay services as a tool for deaf political participation and citizenship. *Information, Communication & Society*, *20*(10), 1521-1538. https://doi.org/10.1080/1369118X.2016.1234633

Tyer, T., (2018). Don't leave me hanging on the telephone: Telework, professional isolation, and the work of video remote British Sign Language/English interpreters. In Napier, J., Skinner, R., & Braun, S. (Eds.) *Here or there: Research on interpreting via video link* (pp. 61-88)*.* Washington, DC: Gallaudet University Press.

van Laar, E., van Deursen, A. J., van Dijk, J. A., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review.

Computers in Human Behavior, *72*, 577-588.

https://doi.org/10.1016/j.chb.2017.03.010

Viljanmaa, A. (2018). Students' views on the use of film-based LangPerform computer

simulations for dialogue interpreting. *Translation and Interpreting Studies. The*

Journal of the American Translation and Interpreting Studies Association, *13*(3),

465-485. https://doi.org/10.1075/tis.00025.vil

Wang, J. (2018). 'Telephone interpreting should be used only as a last resort.'

Interpreters' perceptions of the suitability, remuneration and quality of telephone

interpreting. *Perspectives*, *26*(1), 100-116.

https://doi.org/10.1080/0907676X.2017.1321025

Warnicke, C. (2018). Co-creating communicative projects within the Swedish video-relay

service. In Napier, J., Skinner, R., & Braun, S. (Eds.) *Here or there: Research on*

interpreting via video link (pp. 210-229)*. Washington, DC: Gallaudet University*

Press.

Warnicke, C., & Plejert, C. (2016). The positioning and bimodal mediation of the

interpreter in a video relay interpreting (VRI) service setting. *Interpreting*, *18*(2),

198-230. https://doi.org/10.1075/intp.18.2.03war

Webb, S., & Napier, J. (2015). Job demands and resources: An exploration of sign

language interpreter educators' experiences. *International Journal of Interpreter*

Education, *7*(1), 23-50. Retrieved from https://www.cit-asl.org/new/ijie/volume-

7-1/#toggle-id-3

Wilcox, S., & Shaffer, B. (2005). Towards a cognitive model of interpreting. In Janzen,

T. (Ed.) *Topics in Signed Language Interpreting: Theory and practice*, (pp. 27-50). John Benjamins Publishing. https://doi.org/10.1075/btl.63.06wil

Witter-Merithew, A., L. Johnson and M. Taylor (2004). A national perspective on entry-to-practice competencies for ASL-English interpreters. In Maroney, E. (Ed.) *CIT: Still Shining after 25 Years: Proceedings of the 15th National Convention of the Conference of Interpreter Trainers.* (pp. 23-42). USA: CIT.

Yan, J. X., Pan, J., & Wang, H. (2015). Studies on translator and interpreter training: A data-driven review of journal articles 2000–12. *The Interpreter and Translator Trainer*, *9*(3), 263-286. https://doi.org/10.1080/1750399X.2015.1100397

Yin, R. K. (2014). *Case study research and applications: Design and methods*. Thousand Oaks: Sage publications.

Yu, J., & Karakaya, O. (2018, March). Examination of the impact of a one-on-one technology mentoring program: Multiple case studies on the mentees' perspectives. In *Society for Information Technology & Teacher Education International Conference* (pp. 594-599). Association for the Advancement of Computing in Education (AACE). Retrieved from https://www.learntechlib.org/p/182588/

Appendix A: Digital Collection and Analysis Plan

Research Question	Related Data Sets Collected From	Data Analysis Plan
RQ 1: What are the experiences of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices? ***Note the additional data analysis methods that apply to all research questions.**	Interview questions 1, 2, 3, 4, 5, 7, 8 Collected from participants	• Use of interview protocol (Appendix B). • Audio recording and transcription of interviews. • Coding planned includes open, holistic, descriptive, provisional, and in vivo (Miles et al., 2014). • Researcher memos during data analysis. • Member checking. • Triangulating interview data with course documents and website data.
RQ 2: What are the practices of interpreter educators as they incorporate digital citizenship skill-building into their teaching practices?	Interview questions 1, 2, 5, 8 Collected from participants	• Use of interview protocol (Appendix B). • Audio recording and transcription of interviews. • Coding planned includes open, holistic, descriptive, provisional, and in vivo (Miles et al., 2014). • Researcher memos during data analysis. • Member checking. • Triangulating interview data with literature review and across respondents. (Miles et al, 2014; Patton, 2015).
RQ 3: What do interpreter educators believe about the development of the digital citizenship skills of their students?	Interview questions 1, 2, 5, 6, 7, 8 Collected from participants	• Use of interview protocol (Appendix B). • Audio recording and transcription of interviews. • Coding planned includes open, holistic, descriptive, provisional, and in vivo (Miles et al., 2014). • Researcher memos during data analysis . • Member checking. • Triangulating interview data with literature review and across respondents. (Miles et al, 2014; Patton, 2015).

*ALL RQs	All data sets:
	Interviews
	   • Initial
	   • Follow up
	Literature Review
	Researcher Memos
	Matrices
		• Nvivo qualitative data analysis software will be used to store data sets, to code raw data, to organize and categorize data, to assess the data deductively and inductively, and to assist with the coding structure and process.

Appendix B: Interview Protocol

Interview Protocol	
Name of Participant	
Language of Interview	**English**
Date:	**Time:**
Place/Type of interview	**Remote:** **Videoconference**
Recording File Name	
Instructions to researcher:	**Ensure participant is comfortable with the interview setting, equipment, etc., and that they feel their setting is safe and private.** **Thank participant for their willingness to join the study.** **Remind participant that I am a mandatory reporter, which means that I am required to report any abusive acts I observe or am made aware of. The confidentiality of the interview will be maintained, except in the case of receiving information that would require mandatory reporting.** **Confirm informed consent and confidentiality.** **Remind that the interview will be recorded and transcribed, with an opportunity to review and correct errors.** **Intro study:** • "I am studying the experiences and practices, of interpreter educators related to including digital citizenship elements in their teaching." • "My philosophy of research, teaching, and learning is that meaning is co-constructed. Therefore, I will also share information with you during the interview to help us build a shared understanding of the topic, the questions, and your responses." • "In order to make sure I get the same information from everyone, I will be asking a specific set of questions. Some may seem repetitive to you. Thank you for hanging in there as we work through this process." • "Are you ready to begin?"

Preliminary demographic questions	• Please start by telling me a bit about yourself and your program, such as:
	    ○ How long have you been teaching interpreting?
	    ○ Describe any academic training or background in education you had prior to starting teaching.
	    ▪ Have you taken training or courses since starting teaching?
	    ○ How many students typically attend your program?
	    ○ How many interpreting faculty are in your program?

Question 1	• "I'd like to start very generally, by just asking what you know about the topic. Please describe what the term "digital citizenship" means to you, or what you know about digital citizenship."
Share Ribble's construct	• "For this study, I am using Ribble's definition and construct of Digital Citizenship," which I emailed to you previously, and which I will also share on the screen with you now. [Provide information sheet on DC.] • Briefly explain the construct: "Ribble's most current definition of Digital Citizenship is: Digital citizenship is the continuously developing norms of appropriate, responsible, and empowered technology use. In order to:

- - To lead and assist others in building positive digital experiences
  - To recognize that our actions have consequences to others
  - To participate in a manner for the common good
- Ask if participant has questions about the definition
- "Now that you have seen the definition and themes of digital citizenship that I am using and investigating, let's go through the themes individually and you can share if there is anything you would like to add about your thoughts about how digital citizenship does or could interact, connect with, or influence your teaching practice?

> **The first theme is Digital Access**, which is about the equitable distribution of technology and online resources. Teachers and administrators need to be aware of their community and who may or may not have access, not only in school but at home as well. Educators need to provide options for lessons and data collection such as free access in the community or provide resources for the home.

Is there anything you'd like to share about how this theme intersects with your teaching experience and practice?

> **The second theme is Digital Commerce,** the electronic buying and selling of goods and focuses on the tools and safeguards in place to assist those buying, selling, banking, or using money in any way in the digital space. Career and technical education use the tools of technology to show students the path for their future.

Is there anything you'd like to share related to this theme?

> **The third theme is Digital Communication and Collaboration,** the electronic exchange of information. All users need to define how they will share their thoughts so that others understand the message. For students struggling to understand their place in the world, technology can help them find their own voices and express themselves.

Is there anything you'd like to share about this theme and how it relates to your teaching practice and experience?

> **The fourth theme is Digital Etiquette,** which refers to electronic standards of conduct or procedures and has to do with the process of thinking about others when using digital devices. Teachers can include Digital Etiquette as part of the classroom rules or academic goals. Whether in the classroom or online, being aware of others is an important idea for everyone.

Is there anything you'd like to share related to the fourth theme?

> **The fifth theme is Digital Fluency,** the process of understanding technology and its use. The better educated or "digitally fluent," students are, the more likely they are to make good decisions online, like supporting others instead of making negative comments. Digital literacy includes the discussion of media literacy and the ability to discern good information from poor, such as "fake news" from real news.

Is there anything you'd like to share about this theme and how it relates to your teaching practice and experience?

> **The sixth theme is Digital Health and Welfare** refers to the physical and psychological well-being in a digital world. Technology provides many opportunities and enjoyment, but knowing how to segment use with the needs of ourselves and others is key to a healthy, balanced life. Educators, especially in 1:1 schools or classrooms need to ask the question of how much screen time is appropriate for students.

Is there anything you'd like to share about the sixth theme and your teaching practice and experience?

	The seventh theme is Digital Law. This refers to the electronic responsibility for actions and deeds and has to do with the creation of rules and policy that address issues related to the online world. Just as in the real world, the online world has had to create structure to protect those using these digital devices from harm. Administrators need to come up with positive approaches to these issues in their schools and districts. Is there anything about the intersection of Digital Law and your teaching that you would like to share The eighth theme is Digital Rights and Responsibility. These are the requirements and freedoms extended to everyone in a digital world. This area of Digital Citizenship is about helping students understand that when they are provided opportunities, such as the access to the Internet and use of online products, they need to be diligent in helping others as well, such as informing adults of potential problems. Educators must help students understand that protecting others both online and in the real world are essential skills to have. Is there anything you'd like to share related to the eighth theme? And the ninth and final theme is Digital Security and Privacy, which are the electronic precautions to guarantee safety. Viruses, worms and other bots can be passed along from one system to another just like an illness. When using devices in school or at home, understanding and being aware of attacks and how to prevent them are important skills for today and into the future. Is there anything you would like to share about the final theme, Digital Security and Privacy?"
Question 2	Potential probes: • What elements of Digital Citizenship, if any, do you think you focus on most or are most important in your teaching practice? • What motivates you to incorporate DC skill-building opportunities in your practice?
Question 3	In what ways, if any, do you provide opportunities for students to gain digital citizenship skills within your courses? Potential probes: • How are you model technology for your students? • How do you require your students to use ? What types? • What digital tools digital tools/programs do you use to teach?
Question 4	What are the barriers and supports you experience or could experience in embedding digital citizenship curricula?
Question 5	How and where do your students gain digital citizenship skills? Potential probe: How and where should they?
Question 6	What, if any, is your institution's policy on digital citizenship and digital citizenship curricula? Potential probe: How does this affect your teaching practice regarding embedding opportunities for digital citizenship skill-building?
Question 7	What, if any, are your program's digital citizenship/technology requirements or policies for interpreting students? Potential probe: How does this affect your teaching practice regarding embedding opportunities for digital citizenship skill-building?
Question 8	Is there anything else you would like to add?
Debrief:	**Ask participant if they have any further questions.** **Explain that participants will have the opportunity to review their interview transcript and correct any errors or misunderstandings.** **Confirm preferred email address for member checking and sharing findings:**

Appendix C: CITI Certification – All Researchers

Appendix D: CITI Certification – IRB Members – Basic

CITI PROGRAM

Completion Date 17-Mar-2018
Expiration Date 16-Mar-2021
Record ID 24820513

This is to certify that:

Vicki Darden

Has completed the following CITI Program course:

Group 2:IRB Members (Curriculum Group)
Group 2:IRB Members - Basic/Refresher (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Western Oregon University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w76f7485b-52d1-430b-9f08-209f4074fa6a-24820513