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Technology Integration by General Education Teachers of English Language Learners

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This is to certify that the doctoral dissertation by

Marie Simone Anglin

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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Walden University
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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

There is a growing population of English language learners (ELLs) in elementary schools across the United States, and a current academic achievement gap between ELLs and non-ELLs. Researchers have found that integration of Web 2.0 tools has benefitted ELLs in language learning settings, outside of the general classroom. The research problem addressed in this study, based on TPACK, explored general education teachers' experiences with integrating Web 2.0 technology to support academic language acquisition by ELLs and revealed the successes and challenges the teachers encountered. The 6 female participants in this qualitative interview study were required to have experience (a) as a general education classroom teacher for at least 1 year (b) using Web 2.0 technologies in the classroom to support ELLs, and (c) teaching ELLs within the elementary classroom environment. Qualitative analysis of transcripts from 1-on-1 interviews involved a coding and recoding process, revealed that the teachers saw Web 2.0 technologies as effective in supporting student learning, building class community, and differentiating instruction. Challenges and needs they experienced included lack of access to technology, needs for professional development, and administrative support. Further research could explore integration of specific Web 2.0 technologies. Results of the study may lead to better informed decisions by policy makers and leaders about professional development, support needs, and language services. Addressing the technology needs of educators may potentially lead to equity for ELL students in general education settings that would empower ELLs to experience successful academic transitions through schooling, while decreasing the academic achievement gap.

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Dedication

This degree is dedicated to my heavenly father who continues to remind me of his promise, “For I know the plans I have for you,” declares the Lord, “plans to prosper you and not to harm you, plans to give you hope and a future” (Jeremiah 29:11). I recognize that this achievement is another stepping-stone.

To my earthly mom and dad, thank you for all the love, support, and compassion you have shown me, especially at my weakest times. There are not enough words to express how grateful I am that you have pulled me out of a dark place and helped me to start a new chapter in my life. I love you.

To the individuals in my inner circle who took this journey with me, you know who you are, thank you for lending your listening ears and being my sounding board.

To all general education elementary teachers who may or may not have had special training for working with English language learners, technology is the key.

Acknowledgments

Thank you to my committee chair, Dr. Christine Sorensen, who has been on this journey with me since day one. I appreciate your guidance and support. Thank you to the other members of my committee, Dr. Gladys Arome and Dr. Kathleen Lynch for your input as I completed my study.

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Chapter 1: Introduction to the Study

As advances are established in the technology arena, offering a wide array of options for communication, creativity, and innovation, the role of technology has been infused more and more into the education setting. New state standards incorporate technology as a crucial element in preparing students to compete and thrive in the 21st century. Demands of technology integration have altered teaching practices and learning objectives that affect student populations. One such population is English Language Learners (ELLs).

Currently, an academic achievement gap remains between English language learners (ELLs) and non-ELLs with a rapidly growing ELL population in classrooms across the United States (National Center for Education Statistics [NCES], 2015). The increasing ELL population places general education classroom teachers in a position to meet the needs of ELLs regardless of the education specialization teachers may have attained. The deficits of ELLs as it relates to English proficiency can cause a language barrier and pose a challenge for communication with teachers (Pereira & de Oliveira, 2015).

Technology has been adopted in classrooms with ELLs in a variety of ways, giving teachers the opportunity to adjust their teaching (Alhashen & Al-jar, 2015; Green, Inan, & Maushak, 2014; Keengwe & Hussein, 2012). Given the opportunity to reflect on their experiences, general education classroom teachers offered valuable insights regarding challenges and triumphs using Web 2.0 technologies with ELLs. Information gained from this study provided insights on effective classroom practices for integrating

technologies with ELLs. Discovery of the effective practices could then be incorporated into teacher preparation programs and in-service. By better preparing general education classroom teachers to work with ELLs and technology, it could potentially lead to better outcomes for ELL students.

This chapter provides background information for the study and presents the problem, purpose, and research questions to guide the study. The conceptual framework and parameters of the study are discussed, followed by the significance of the study.

Background of Study

Two areas that intersect and provide background for this study are increasing expectations for technology integration in K-12 education and the growth in the ELL population. General education teachers face both these challenges as they seek to educate a diverse population.

Technology Integration

According to the Partnership for 21st Century Learning (P21, n.d.), Common Core State Standards (CCSS) have been adopted by many states, requiring technology to be incorporated with the curriculum and emphasizing college and career readiness. In order for students to achieve success, classroom practices must reflect the expectations of CCSS. The beliefs of teachers influence their classroom practices, which in turn have an effect on student learning (Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Mi-Hwa, 2014). Ertmer et al. (2012) found that the practices of classroom teachers aligned closely with their pedagogical beliefs regarding technology and student learning. Mapping out the technological, pedagogical, and content knowledge (TPACK) of

teachers can reflect how knowledge is interconnected, thus enabling teachers to meet requirements for instructional planning (Harris, Mishra, & Koehler, 2009).

Technology integration as a classroom practice widens the array of opportunities to infuse the English language in instruction and for learners to be active participants. Technology integration takes on many forms in classrooms such as computer-assisted instruction (CAI) and Web 2.0 tools. Drill and practice exercises, instructional games, and simulation tasks are examples of CAI that have been implemented in classrooms (Keengwe & Hussein, 2012). Web 2.0 tools such as wikis, iPad, blogs, interactive whiteboards, digital videos, and podcasts have also been employed by teachers (Bruce & Chiu, 2015; Duran, Brunvand, Ellsworth & Şendağ, 2012; Ertmer et al., 2012). The creative and collaborative features of Web 2.0 tools support the task of differentiating instruction for multiple learning styles and the different academic levels of students (Hung et al., 2014).

Challenges with integrating technology may result in teachers' avoidance of using technology, failing to offer students engaging learning experiences with technology, or using technology in ways unrelated to academics (Aydin, 2012; Ertmer et al., 2012). Teacher preparation programs, professional development, and mentoring programs can help teachers to overcome the challenges with integrating technology into the curriculum (Ciampa & Gallagher, 2013; Duran et al., 2012; Hur & Suh, 2012; Liu, Tsai, & Huang, 2014; Machado & Chung, 2015). Better understanding how classroom teachers experience integrating technology with ELLs can help pre-service and in-service programs to better serve future teachers.

English Language Learners

ELLs have the task of learning the English language and school curriculum simultaneously, while spending a majority of their day in general education classrooms. According to the New York City Department of Education (NYCDOE, 2015a), among the ELL subpopulations are students with disabilities with Individualized Education Programs (IEPs), long-term ELLs who received services for over 6 years and have not passed required assessments, and students with interrupted formal education (SIFE) who entered schools after second grade, had at least a 2-year gap in education, and were functioning below grade level peers by a difference of at least two years.

Literacy development and English proficiency are crucial to student success in multiple academic content areas because ELLs are expected to meet the same academic achievement standards as non-ELLs. Based on the National Assessment of Educational Progress (NAEP, 2015), the reading scale scores across the Unites States from 2002-2011 reflected the disparity between ELLs and non-ELLs in grades four through eight. ELLs receive language services through different models such as Dual Language (DL), Transitional Bilingual Education (TBE), and Freestanding English as a Second Language (ESL) (NYCDOE, 2015a). ESL is a common method employed throughout schools and involves a pullout or push in model for language support. A pullout model involves an ESL teacher taking students out of general education classrooms to work with them in a separate environment. With the push in model, the ESL teacher goes into the general education classroom and works closely with the ELL students to provide language support related to the content that is being taught at the time (NYCDOE, 2015c). While

ELLs learn the English language through social interactions, the language used for formal learning in the classroom is different. Comprehension of the language associated with the subject matter, such as content vocabulary, can be a struggle for students (Pereira & de Oliveira, 2015). Depending on the language services that are provided in schools, ELLs spend a majority of their day in the general education classroom and only receive language support from the ESL teacher for a few segments of the entire school day (NYCDOE, 2015c). Academic language acquisition by ELLs is related to school success (Pereira & de Oliveira, 2015) and the general education teacher, who frequently has limited training in working with ELLs (Casey et al., 2011) has a role to fill in that endeavor that has been relatively unexplored.

Technology and ELLs

Technology integration with ELLs is known to improve academic language acquisition (Green et al., 2014; Gustad, 2014; Hur & Suh, 2012). The majority of research on this topic has been done in isolated language learning environments where ELLs were not mixed with non-ELL peers (Hur & Suh, 2012; Keengwe & Hussein, 2012; Larabee, Burns, & McComas, 2014); therefore, instruction was focused on the needs of ELLs. Research on technology integration has indicated improvements in student learning with Web 2.0 tools such as the iPad for phonics intervention (Larabee et al., 2014), interactive whiteboards, podcasts, and digital storytelling for vocabulary development (Hur & Suh, 2012; Yoon, 2012), and computer-assisted instruction generally (Keengwe & Hussein, 2012). However, from the literature review, a clear

distinction cannot be made between technology integration in general education classrooms and isolated language learning environments.

The design of this study was aimed to address the gap in research regarding the implementation of Web 2.0 technologies by general education teachers in general education settings with ELLs. Technology integration is an emerging topic in the academic arena because there is still more to learn about technology implementation, perceptions of teachers who use technology with linguistically diverse students, the long term impact on learning, and classroom use of various Web 2.0 technologies. Lim et al. (2013) stated that there is a gap between what is known about technology investments in schools and the usage of technology for educational purposes in school.

The emphasis on technology is geared towards preparing students to be college and career ready (P21, n.d.). Opportunities for students to experience technology in the general classroom is at the discretion of the teacher, whose technological, pedagogical, and content knowledge influences those decisions (Celik et al., 2014; Harris, Mishra, & Koehler, 2009; Koehler & Mishra, 2009; Liu, 2013). This study was needed because the results would signify forward movement in understanding the use of Web 2.0 technologies to support ELLs by general education teachers while in the general education classroom setting.

Problem Statement

The diversity of the student population in general education classrooms does not look the same as it did over 30 years ago partly due to the increasing ELL population across the United States (NCES, 2015; New York State Library, 2014). Teaching and

learning expectations have involved technology in many different forms making technology integration critical to teaching and learning environments (P21, n.d.). Teacher certification processes vary depending on traditional or alternative programs which may lead to classroom teachers facing a linguistically diverse student population they are unprepared to teach (Berg & Huang, 2015; Greenfield, 2013).

Technology integration is of high importance for 21st century teaching and learning (P21, n.d.). New York is one of the states on the east coast of the United States that has a high population of ELLs registered in the public school systems (NCES, 2015). There is an academic achievement gap between ELLs and non-ELLs in NYC schools (NYCDOE, 2015a). Different language support services are provided to ELLs but mostly involve the pullout method that requires ELL students to leave the general classroom (NYCDOE, 2015a). The use of Web 2.0 tools can provide needed support and practice for ELLs to improve their English proficiency and academic language acquisition in the general education classroom (Cabiness, Donovan, & Green, 2013; Ciampa & Gallagher, 2013; Gustad, 2014; Larabee et al., 2014; Liu et al., 2014). Thus, by better understanding general education teacher practices in integrating Web 2.0 technology with ELLs, successes, and challenges, strategies may be revealed. The conceivable difficulties and strategies to address the challenges could potentially be incorporated into in-service and preservice training for general education teachers, and eventually lead to improved use of Web 2.0 technology for general classroom support for ELLs that could impact their academic achievement.

In previous studies, researchers have found that Web 2.0 tools can be used to enhance language acquisition by students (see Al-Daihani, 2009; Basal, 2015; Donna & Miller, 2013; Golshan & Tafazoli, 2014; Gowdy, 2015; Greenfield, 2013; Hughes, 2013; Tay, Lim, & Lim, 2015; Uzum et al., 2014; Varol, 2013). Researchers have reported the benefits of using Web 2.0 technology to support ELLs in language learning settings (see Green et al., 2014; Hur & Suh, 2012; Keengwe & Hussein, 2012) but not specifically in general education classrooms with a focus on ELLs (Ciampa & Gallagher, 2012; Lee, 2012). The problem to be addressed is the academic language acquisition deficit between ELLs and non-ELLs in New York City.

The search for literature that were specifically about the use of Web 2.0 technologies in general education settings in support of ELLs was unsuccessful. Researchers who conducted studies in general education classrooms mentioned a small number of ELLs as participants from the classes but did not discuss how technology was specifically used to support learning by ELLs (Cabiness et al., 2013; Shin, 2014). The literature search revealed qualitative studies conducted with elementary teachers on the use of the iPad, wikis, online discussions, and virtual manipulatives, to examine if and how student learning was influenced (Ciampa & Gallagher, 2013; Lee, 2012; Liu, Ko, & Wu, 2014; Moyer-Packenham et al., 2013). The overall findings from the studies indicated that students who participated in the use of the iPad, wikis, online discussions, and virtual manipulatives, were engaged in learning and the mobile applications supported differentiated learning, but the researchers failed to discuss the makeup of the classroom population. Although perceptions of participants on the influence of the iPad

Touch, wikis, online discussions, and virtual manipulatives were investigated, it is unknown whether any of these participants were ELLs. Therefore, there was no clear indication of what general education classroom teachers were experiencing with technology integration of Web 2.0 tools, specifically with ELL populations.

This study expanded knowledge regarding Web 2.0 technology integration with ELLs by general education teachers in the general education classroom and sought to extend the knowledge base to understand what occurred outside of the more specialized language learning environment. In addition, this study further extended the collective body of knowledge about Web 2.0 technology integration by investigating it from the perspective of general education teachers.

Purpose of the Study

The purpose of this qualitative interview study was to better understand the experiences of general education classroom teachers as they integrated Web 2.0 tools in support of English proficiency and academic language acquisition by ELLs. Participants in the study were general education teachers who had experience using Web 2.0 tools with ELLs in urban elementary schools in New York City.

Research Questions

The following questions were explored to understand the experiences of general education classroom teachers with integrating Web 2.0 technologies for ELLs.

RQ1: What are general education classroom teachers' perceptions of the effectiveness of integrating Web 2.0 technologies to support the academic language acquisition of ELLs?

RQ2: What successes do general education teachers experience in integrating Web 2.0 technology to support language acquisition among ELLs?

RQ3: What challenges do general education teachers experience in integrating Web 2.0 technology to support language acquisition among ELLs?

RQ4: What do general education classroom teachers believe they need in order to integrate technology to support ELLs' academic language acquisition?

Conceptual Framework

The conceptual framework used for the study was the TPACK model. This model was expanded upon to include technology and resulted in the three primary domains of the TPACK model: Technology knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK; Koehler & Mishra, 2009). CK relates to the knowledge that teachers have about the subject that will be taught to and learned by students. The knowledge that teachers possess about teaching and learning methods is pedagogical knowledge (Koehler & Mishra, 2009). Since technology is constantly changing, a static definition of TK is not appropriate. Koehler and Mishra (2009) explained that TK is the understanding of the different ways in which information technology can be applied in contexts, with consideration of the evolving tools and resources to meet goals.

According to Harris, Mishra, and Koehler (2009), effective teaching that involves technology is a result of the three domains flexibly intertwined in context representing TPACK. For example, PCK is the result of pedagogical and content knowledge overlapping, TPK is a combination of technological and pedagogical knowledge, and the intersection of technological and content knowledge is TCK (Harris et al., 2009). TPACK

has been used to measure current classroom practices of teachers (Alhashen & Al-jafar, 2015), analyze the influences of teacher knowledge of TPACK domains (Celik, Sahin, & Akturk, 2014), and to guide professional development on technology integration (Liu, 2013).

TPACK was relevant to the key research questions of the study because the focus was on the integration of Web 2.0 technologies by general education classroom teachers. Koehler and Mishra (2009) stated that TPACK addresses teacher knowledge for technology integration and this was beneficial to addressing the research questions of this study. Using a qualitative interview approach empowered participants to provide details about integrating Web 2.0 technologies with ELLs in support of decreasing the academic achievement gap, which also informed practitioners of the discipline. A thorough description of TPACK will follow in Chapter 2.

Nature of the Study

Technology integration of Web 2.0 tools by elementary general education teachers to support academic language acquisition for ELLs was explored with the qualitative interview study method. The qualitative interview study approach was most suitable for investigating the experiences of elementary general education classroom teachers who integrated Web 2.0 technologies in general education classrooms in support of academic language acquisition by ELLs. This design was chosen because it allowed me to study participants in-depth in order to gain insight into the context of their experiences and how they made meaning of those experiences (Yin, 2016). In addition, the characteristics of heuristic research involve a process for becoming informed that

enabled me to hone in on my awareness of Web 2.0 technology integration and working with ELLs as I investigated and gained insight into the experiences of participants (Moustakas, 1990).

Qualitative data was collected from several elementary level general education teachers in urban schools within New York City. The decision to target elementary grades three through five was based on the statistics of standardized math and English language arts state assessments that highlighted the achievement gap between ELLs and non-ELLs, as well as disparities in reading achievement in grades four through eight identified by the NAEP (2015). Data collection was based on two sets of semi structured in-person and telephone interviews. The initial interview was conducted with six general education classroom teachers who have had experience with integrating Web 2.0 technologies with ELLs in general education classroom settings. Based on the analysis of the first interview, two participants who demonstrated higher levels of expertise were interviewed a second time as a follow-up. I manually transcribed and analyzed the interview data for emerging themes.

Definitions of Terms

The following terms, as defined, are useful in understanding the information presented in this study.

Academic language: Language used with different subject matter such as math, social studies, reading, and science, to learn the concepts (Pereira & de Oliveira, 2015).

ELL: ELLs are students whose native language is not English (NYCDOE, 2015a).

General education classroom: A classroom in which students receive grade level instruction based on the standardized curriculum (Board of Education of the City of New York, n.d.).

General education teacher: A certified teacher trained to deliver grade level instruction in multiple subjects based on the standardized curriculum (Elfers & Stritikus, 2014).

Long-term ELL: Students who received services for over 6 years and have not passed required assessments (NYCDOE, 2015a).

SIFE: Students who entered school after second grade, had at least a 2-year gap in education, and were functioning below grade level peers by a difference of at least 2 years (NYCDOE, 2015a).

Technology integration: The way technology is used in the classroom to promote teaching and learning processes (Ertmer et al., 2012). For this study, technology integration will refer to the ways in which teachers incorporate the use of Web 2.0 technology with lessons and the way students use the technology for educational gains.

Web 2.0: Interactive and collaborative platforms on the Internet that allow users to actively participate in creating, sharing, and editing content (Al-Daihani, 2009; Clark, Logan, Luckin, Mee, & Oliver, 2009; Cicconi, 2014; Rubio, Martín, & Morán, 2007; Sharples, Graber, Harrison, & Logan, 2009; So, Seow, & Looi, 2009). For this study, Web 2.0 technologies will include tools such as blogs, wikis, podcasts, avatars, digital storytelling, document sharing, and videos.

Assumptions

According to Patton (2002), a key assumption of a qualitative study is that the world consists of patterns that are known and can be explained. Several assumptions were made during the design of the study. It was assumed that all participants were general education teachers who have had ELLs in their classes. My recruitment protocol excluded teachers who did not fit this description. Other assumptions were that general education teachers have had the opportunity and access to use Web 2.0 tools, and have had experience with integrating Web 2.0 tools relevant to academic language acquisition by students. Another assumption was that not all of the general education teachers held an ESL certificate or credentials. It was also assumed that participants accurately remembered and honestly reported their experiences of integrating Web 2.0 technologies to support learning by ELLs.

Scope and Delimitations

The scope of the study was to gather in-depth information from general education teachers who have integrated Web 2.0 tools in general education classrooms with ELLs. To address the research questions effectively, this study was limited to elementary general education classroom teachers in grades 3-5 in an urban setting in New York City. Language support teachers and non-classroom teachers were excluded from the study. The study used TPACK as the conceptual framework.

Limitations

Although detailed descriptions are gained from qualitative research, there were limitations to using the method. A limited number of participants is a common

characteristic of qualitative research and did not allow results to be generalized to a larger population. All respondents were from an urban area in New York City, and therefore, results may not be reflective of other teachers in rural area of the State of New York or school communities in other states or countries. The sample was limited to teachers in grades 3-5 whose responses may not reflect those of teachers in other grades.

Another limitation of this research is that it relies on self-reported information. Teachers may not have been honest or their memories of events may not have been accurate. They may not have recalled certain experiences that could have informed the research.

The types of Web 2.0 tools teachers reported integrating in classrooms was another limitation. By not focusing on a specific Web 2.0 tool for this study, results revealed a wide range of tools without deep insight into any one tool. A bias that could have possibly influenced the study outcomes was my teaching experience in elementary public school settings with ELLs as part of the classroom population. Another bias was my experience working with teacher candidates in a teacher preparation program in New York City, as my role required me to share best practices that involved technology integration. Bias was addressed in multiple ways beginning with purposeful sampling from unfamiliar school communities.

Significance

The emerging concept of Web 2.0 technology integration by general education classroom teachers in support of ELLs attaining English proficiency and academic language acquisition is relevant to theory, practice, and social change. The literature

regarding TPACK reviewed as the conceptual framework of this study indicated that technology integration was influenced by the knowledge of teachers. Information gained from this study added to the knowledge base of research on educational technology, specifically Web 2.0 tools, and research on educating culturally and linguistically diverse student populations, specifically in general education settings. Results of the study indicated the ease and challenges of integrating specific Web 2.0 tools with ELLs and aimed to confirm or refute the current understanding of TPACK concerning classroom practices by general education teachers.

The study was significant in that results led to an understanding of the necessary support general education classroom teachers and ELLs required when using Web 2.0 tools. Understanding the technology integration attempts of teachers working with ELLs for student-centered learning can potentially contribute to better teacher preparation, professional development, and long-term technology integration by teachers. The ability of general classroom teachers to address the deficits of ELLs through the use of Web 2.0 tools may lead to improving grade level achievement.

The study was significant to social change in various ways. Policy makers and school districts on a larger scale may be better informed about the need for possible modifications to teacher preparation programs, professional development, and the allocation of funding for technology or language services for students. Addressing the language deficits of ELLs may potentially lead to successful academic transitions through schooling, while decreasing the academic achievement gap. This may lead to ELLs

having a greater chance of successfully contributing and competing in the technologically advancing educated workforce.

Summary

Technology in K-12 education has taken on a role in promoting student-centered learning. The ELL student population and the academic achievement gap between non-ELL peers continue to increase. This places a demand on general education classroom teachers with limited ELL training to implement strategies for supporting English proficiency and academic language acquisition by ELLs. Research has focused on Web 2.0 technology integration in language learning environments by language specialists but not as much in mainstream classroom settings by general education teachers. Information gained from the study contributed to ELLs' understanding of integrating Web 2.0 technologies in general classroom settings.

In Chapter 2, the search strategy used for obtaining the literature to support this study will be described. The conceptual framework and literature review of previous studies will be discussed and followed by a summary.

Chapter 2: Literature Review

Introduction

Technology integration is of high importance for 21st century teaching and learning. There is an achievement gap in K-12 education between ELLs and non-ELLs (NCES, 2015). General education teachers need to be prepared to address the needs of ELLs while integrating Web 2.0 tools in mainstream classrooms to potentially reduce the achievement gap. The purpose of this qualitative study is to understand and explain general education classroom teachers' experiences with integrating Web 2.0 technologies for supporting academic language acquisition for elementary ELLs.

In order to develop a better understanding and explain Web 2.0 technology integration for general education classroom teachers, it was necessary to address several areas in the literature review. The categories used for the literature review were ELL populations in K-12 schools, teacher preparation programs and ELLs, professional development for integrating technology in K-12 classrooms, and technology integration with ELLs in K-12 classrooms. The literature review will examine the TPACK model and how it has been employed in other studies.

All teacher preparation programs are not designed the same regarding providing information, exposure, and experiences with ELLs (Casey et al., 2011). As candidates prepare to enter the classroom and take on the role of a teacher, their knowledge gained from traditional or nontraditional programs is put to the test. The growing population of ELLs in schools across the United States and the expectation to meet 21st century teaching and learning standards put a greater demand on general education classroom

teachers' abilities to address the needs of ELLs. At the same time, technology has altered the ways in which teaching and learning occur in the K-12 setting. Limited research has been conducted to investigate general education teachers' encounters with ELLs while integrating the use of Web 2.0 tools. Whether or not teachers participated in teacher preparation programs or professional development sessions that focused on working with ELLs may contribute to general education classroom teachers' perceptions of their experiences integrating Web 2.0 technologies with ELLs.

The remaining sections of this chapter will provide details about the strategies used for gathering current research on the themes that are applicable to the study. Following the explanation of the search strategy is an explanation of the conceptual framework on which the study is based.

Literature Search Strategy

Information for the review was compiled from a search through several databases and search engines via the Walden University Library database. The databases used were: ERIC, Education Research Complete, SAGE Premier, Academic Search Complete, ProQuest Central, LearnTechLib, and Computers and Applied Sciences Complete. EBSCO and ProQuest were the search engines. Search terms used were *language, perceptions, integration, learners, preparation, elementary, technology, English, Web 2.0,* and *teacher*.

The initial search began with the education databases followed by the multidisciplinary databases with a combination of key terms *elementary teachers, perceptions of technology integration,* and *English language learners*. Modifications to

the search terms led to *elementary teacher preparation programs*, *Web 2.0 tools in elementary*, and *technology for English language learners*. To ensure that results from the searches would list the most current articles, limitations were set. Limitations of the search criteria included scholarly journals that were peer-reviewed and ranged from 2012 to 2015. While reading through the articles, the names of researchers associated with the proposed conceptual framework were noted. The search term *TPACK* was used to locate resources between the years 2005 and 2015.

Conceptual Framework

Demands of a teacher require the ability to impart knowledge to others in different contexts. The measure of the pedagogical content knowledge of teachers, originated by Shulman (1986), was expanded upon to include technology and resulted in the three primary domains of the TPACK model. CK relates to the knowledge that teachers have about the subject that will be taught to and learned by students. Teachers' knowledge about teaching and learning methods is PK (Koehler & Mishra, 2009). Since technology is constantly changing, a static definition of TK is not appropriate. Koehler and Mishra (2009) explained that TK is about understanding the different ways in which information technology can be applied in contexts, with consideration of the evolving tools and resources to meet goals.

According to Harris et al. (2009), effective teaching that involves technology is a result of the three domains flexibly intertwined in context representing TPACK. For example, PCK is the result of pedagogical and content knowledge overlapping, TPK is a combination of technological and pedagogical knowledge, and the intersection of

technological and content knowledge is TCK (Harris, Mishra & Koehler, 2009). Figure 1 is a display of the TPACK model.

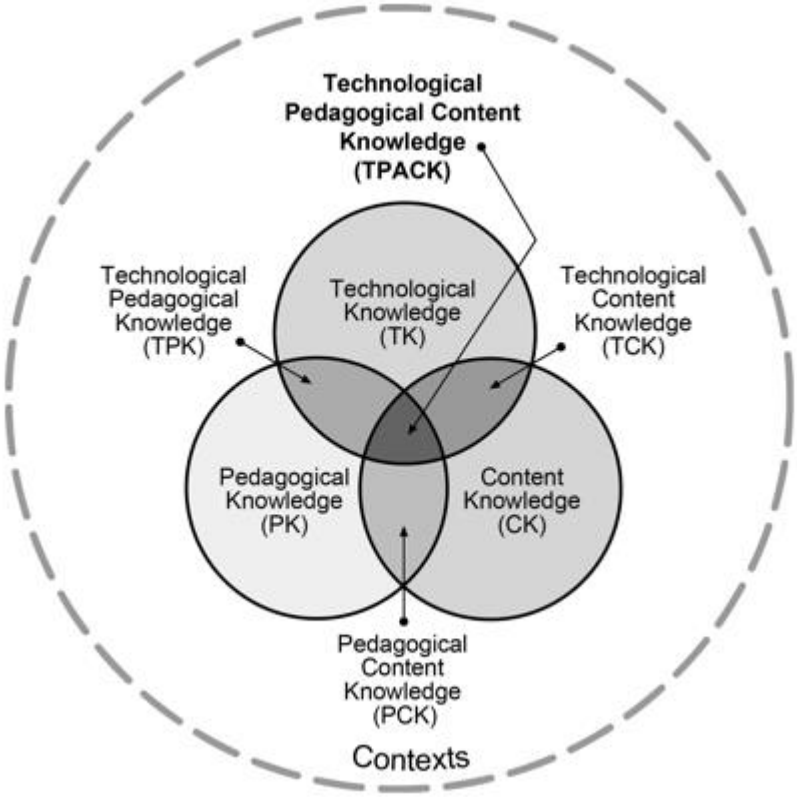

Figure 1. The TPACK Framework Reproduced by permission of the publisher, © 2012 by tpack.org Retrieved from http://tpack.org

According to Koehler and Mishra (2009), TPACK is helpful in several ways such as determining how teachers' professional knowledge is implemented throughout their practice and promoting research on technology use, professional development, and teacher education. Using TPACK as the theoretical framework, Celik, Sahin, and Akturk (2014) conducted a study with 744 teacher candidates in Turkey using results from a survey to analyze candidates' perceptions of their TPACK levels. Subscales of the survey consisted of the individual knowledge domains of TPACK and the combination of the

knowledge domains. Celik et al. (2014) found that TK influences more PK and CK, but pedagogy is significantly related to all other knowledge domains of TPACK.

Liu (2013) conducted a study using TPACK as a guide for professional development on instructional strategies for technology integration with six content-specific teachers of two elementary schools in Taiwan. Participants of the study did not have prior knowledge of TPACK. Through observations and focus group interviews where participants were questioned about each element of TPACK, Liu (2013) found that after involvement with professional development sessions, teachers' initial beliefs and practices regarding technology integration became more evident in their classroom practices as they applied the instructional strategies for technology integration. Participants' limited PK was expanded and combined with subject content, and they collaborated on applying TPACK through student-centered learning, therefore decreasing their lecture-based teaching activities (Liu, 2013).

Alhashem and Al-Jafar (2015) conducted a study in elementary science classrooms in Kuwait to understand teachers' perceptions about technology integration and how they integrated literacy and technology. Teachers created concept maps that were later analyzed with a rubric and elaborated upon through in-depth interviews. In the study, TPACK was used for a specific content and proved valuable in understanding the status of teachers connecting science, literacy, and technology. The rubric used with the concept maps along with in-depth interviews helped to illustrate the areas in which teachers were lacking and the barriers that hindered progress such as outdated libraries, insufficient technology devices, and a dense curriculum with limited opportunities for

extra-curricular activities. Alhashen and Al-Jafar (2015) found that participants did not acknowledge technology and pedagogy as essential factors for supporting student learning and improving practice.

In summary, TPACK has been used to measure teachers' current classroom practices (Alhashen & Al-jafar, 2015), to analyze the influences among the domains (Celik, Sahin & Akturk (2014), and to guide professional development on technology integration (Liu, 2013). Koehler and Mishra (2009) stated that TPACK addresses teacher knowledge for technology integration and this will be beneficial to addressing the research questions of this study. Using TPACK as the framework may shed light on understanding teachers' use of technology while working with ELLs in the general education classroom setting.

English Language Learners in K-12 Schools

National ELL Population

The ELL population in the United States public schools continues to expand with the majority of schools having the highest population of ELLs located in the west (NCES, 2015). Between 2002 and 2003, the population of ELLs enrolled in elementary and secondary public schools was 8.7%. That increased in 2011-2012 to 9.1%, and again to 9.2% in 2012-2013. New York was one of 15 states with an ELL population ranging from 6.9% to 9.9% in 2011-2012 and in 2012-2013, when three other states were added to the category of states that saw an increase. Except for Rhode Island having the same percentage of 6% to 9.9%, New York's neighboring states had an ELL population less than 3% or 3% to 5.9% in 2012-2013 (National Center for Education Statistics, 2015).

In 2012-2013, the majority of the ELL population in elementary and secondary public schools resided in urban areas (14.2%) with fewer in suburban areas (9.0%), within towns (6.2%) and in rural areas (3.9%). The percentage of ELLs in public school was larger in cities than suburban, town, and rural areas. Small, midsize, and large cities' ELL population was 9.4%, 12.6%, and 16.7% respectively in 2012-2013 (National Center for Education Statistics, 2015).

ELLs in the Boroughs of New York City

New York City public schools are disbursed among five boroughs; Brooklyn, Manhattan, Queens, Staten Island, and the Bronx (NYCDOE, 2015a). In 2013-2014, 43.3% of students in New York City public schools spoke a language other than English at home, with Spanish and Chinese as the dominant languages representing 61.8% and 14.2% respectively of all those speaking other languages at home. The ELL population in public schools across the five boroughs was 14.3% with a majority located in Queens at 29.9%. Brooklyn had the second highest ELL population of 28.1%, the Bronx at 25.6%, Manhattan at 14.1%, and the lowest population of 2.2% was located in Staten Island (NYCDOE, 2015a).

In New York City, services offered to ELLs consisted of Dual Language (DL), Transitional Bilingual Education (TBE), and Freestanding English as a Second Language (ESL) with variations of models across the schools. The citywide distribution of ELL services was comprised of 79.2 % ESL, 15.4% TBE, and 4.5% DL in comparison to services in the Bronx that offered 75.4% ESL, 20.7% TBE and 3.1% DL (NYCDOE, 2015a).

Among the ELL subpopulations were: (a) students with disabilities who received an Individualized Education Program (IEP), (b) long-term ELLs who received services for over six years and had not passed required assessments, and (c) Students with Interrupted Formal Education (SIFE) who entered the schools after second grade, had at least a two-year gap in education, and were functioning below grade level peers by a difference of at least two years. In comparison to the other four boroughs, the Bronx had the highest population of IEP, long-term, and SIFE at 29.3%, 32.4%, and 34.1% respectively (NYCDOE, 2015a).

Assessing ELLs in New York City

ELLs are part of the student population and therefore are to be assessed with the standardized state tests in Math and English Language Arts (ELA). According to the NYCDOE (2015b), during 2002-2008, ELLs in grades 3 through 8 in New York City demonstrated steady progress in meeting the standards on state math tests. The percentage of ELLs who met the state standards on the math assessment was 11.1% in 2002 and increased to 58.6% of ELLs who passed the standardized math test in 2008. The percentage of ELLs in New York City that met the standards on the statewide ELA test was 3.9% in 2003 and increased to 14.1% in 2005 before dropping to 10.7% in 2006 due to an expansion of the testing programs. ELLs in New York City continued to show progress on the 22.7% on the ELA standardized test in 2008 (NYCDOE, 2015b).

Students in kindergarten through 12th grade identified as ELLs receive English as a second language (ESL) services and are assessed in the spring every year with the New York State English as a Second Language Achievement Test (NYSESLAT). The

categories of the NYSESLAT are speaking, listening, writing, and reading that are scored as beginning, intermediate, proficient, or advanced. When students score at or above proficient, services will not be offered for the upcoming school year. However, students may potentially be offered extra language support for up to two years if it is deemed necessary. In 2003, 3.7% of ELLs demonstrated proficiency on the NYSESLAT and increased to 13.4% by 2008 (NYCDOE, 2015b).

According to EngageNY (2015), recent statewide data revealed the discrepancies between ELLs and non-ELL academic performance in K-12. Since the adoption of Common Core State Standards (CCSS), New York State has completed one-fourth of the 12-year phase in. Common Core assessments for math and ELA were administered for the first time in 2013 for grades three through eight. Proficiency levels ranged from 1 to 4 with level 3 meaning the student met the standard and level 4 indicating the student exceeded the standard.

In 2013, 7.5% of ELL students statewide scored on the proficiency level for Math and 32.9% of non-ELL students statewide were on level three, representing proficiency. ELA scores illustrated a much larger achievement gap between ELL students statewide and non-ELL students statewide compared to math. Only 1.7% of ELLs statewide were proficient with the ELA test, while 33.1% of non-ELLs statewide achieved proficiency. In 2014, 11% of ELLs statewide were proficient in math, while 37.6% of non-ELLs statewide were proficient in math. ELL students statewide demonstrated a slight increase in proficiency with 2.6% who achieved proficiency in ELA in 2014. Thirty-three percent of non-ELL students statewide were proficient in math (EngageNY, 2015). These data

indicate a large disparity remains between ELL and non-ELL students in terms of the proficiencies necessary for academic success. Effective practices of classroom teachers are critical to reducing this gap.

Teachers and ELL Preparation

The education law known as the Elementary and Secondary Education Act (ESEA) was legislated in 1965 to convey a commitment to equal educational opportunity for all students (U. S. Department of Education, n.d.). In 2002, the No Child Left Behind Act (NCLB) went into effect as the new education law that outlined changes to further ensure that all students were given equal opportunity to be successful in their learning. NCLB changed the expectations for teaching and learning in that areas where students needed additional support were highlighted and expected to be addressed by educational institutions, regardless of background, race, home language, income, disability, or location of the student. More recently in December 2015, the Every Student Succeeds Act (ESSA), a new education law, was signed by President Obama. ESSA was designed as a revision of NCLB in response to the challenges educators and schools faced with meeting NCLB requirements in two areas: student performance target and school ratings, and accountability, interventions and supports for struggling schools (U.S. Department of Education, n.d.).

In a recent report, Greenberg, Walsh, and McKee (2014) stated that new laws and stronger accreditation have shed light on the quality of teacher preparation programs emphasizing that improvement is needed. According to Greenberg et al. (2014), a total of 1, 612 elementary and secondary programs were scored on four levels in regards to

performance. Over 50% of teacher preparation programs across the United States that were reviewed in 2014 ranked on level one, the lowest of four levels. Out of 665 elementary programs that were reviewed for addressing the NCTQ standards for preparing candidates to teach ELLs to read, 24% of those programs satisfactorily met the standard (Greenberg, Walsh, & McKee, 2014).

Greenberg et al. (2014) stated that in comparison to the previous year's report, 15% of 104 programs increased their score, 10% decreased their score, and 76% stayed the same. The NCTQ study suggests not all general education teachers are adequately prepared to meet the learning needs of ELLs. Flaws in the NCTQ report included: (a) insufficient data from institutions that prevented their programs from being ranked, (b) unreported ranks for some programs, (c) inconsistency in data collection methods, (d) exclusion of some programs, and (e) lack of quality check for data that was submitted or collected (Greenberg et al., 2014).

In addition, Fuller (2014) identified several flaws in the study by NCTQ that involved the rationale and the methodology. Outcomes of teacher preparation programs such as the rate of teacher placement, teacher behaviors in the classroom, or the retention rate of teachers after completing their studies at the various universities, were not assessed and reported (Fuller, 2014). According to Fuller, course syllabi were used as an indicator when evaluating the teacher preparation programs but there was no evidence provided by NCTQ that course content aligned directly with syllabi (Fuller, 2014).

A district-level report on teacher preparation programs (TPPs) across the boroughs of NYC revealed data from 12 schools, private and city, based on six measures

related to: (a) teacher performance, (b) supply of new hires, and (c) retention (NYCDOE, 2013). Over 50% of new hires during 2008-2012 were graduates of the 12 schools represented in the report. Collaboration with post-secondary programs enabled the NYCDOE to be knowledgeable of ways to enhance TPPs that would potentially better align with school systems. Growth in standardized assessment scores for Math and English in 2012 and licenses for English as a Second Language, which is considered a high-need category, are two of the data points that are relevant to this study. The growth scores on assessments by teachers from city programs ranged from 57% to 83% as effective, and from 68% to 82% effective for teachers within the private institutions. The growth scores on assessments by teachers from city and private programs both ranged from 4% to 12% as highly effective (NYCDOE, 2013).

Pre-service Preparation and ELLs

Academic research-based standards and assessments for language learners in grades K-12 have been categorized by four domains: reading, writing, speaking, and listening, and have been adopted by multiple school systems across the United States and other countries (WIDA, 2016). WIDA (2014a) focuses on the development of the English language or Spanish by linguistically and culturally diverse students, and provides benchmark indicators for each content area to determine student progress in academic language acquisition. New York is not a member of the WIDA Consortium (WIDA, 2014b).

Although the English Language Learner (ELL) population in public schools is increasing (National Center for Education Statistics, 2015**)**, the requirements for English

as a second language (ESL) teacher certification vary by state, making teacher preparation programs (TPP) a relevant issue to examine. As with any subject-matter content, literacy is a key factor for ELLs because language is linked to literacy.

Through data collection based on writing, researchers gained insight into the beliefs, concepts, understanding, and methods of pre-service teachers in training to work with ELLs. Rodriguez (2013) targeted ESL and bilingual pre service teachers enrolled in a service learning project to develop teaching methods for addressing second language learners through content that also encompassed reading, writing, speaking, and listening skills. Uzum, Petrón, and Berg, (2014) focused on individuals who were majoring in special education or elementary education to explore their first experience with teaching ELLs. Baecher, Schieble, Rosalia, and Rorimer (2013) focused on the opportunity to prepare teacher candidates for educating ELLs on academic writing through a blogging activity. The researchers found that participants benefitted from collaboration opportunities about strategies for educating ELLs while they also made connections to life experiences (Baecher et al., 2013; Rodriguez, 2013; Uzum et al., 2014).

Learning and teaching issues related to educating ELLs are common themes that were identified by researchers (Daniel, 2014; De Oliveira & Olesova, 2013). De Oliveira and Olesova (2013) found that through online discussions of readings and activities that were moderated by participants within the groups, participants gained knowledge and understanding of the literacy development needs of ELLs. In contrast, Daniel (2014) found that conversations about educating ELLs did not occur among the participants, nor

did the mentors model collaboration and building relationships with linguistically and culturally diverse students.

Qualitative studies on preparing teacher candidates to be culturally responsive to ELLs, including delivery of instruction that is differentiated, have been explored through field experiences. Assaf & López (2015) investigated the value of an afterschool writing club for bilingual and ESL students, while Islam and Park (2015) concentrated on literacy comprehension by ELLs supported by teacher candidates. Schellen and King (2014) focused on assigned multicultural readings and participant-created portfolios. Providing opportunities for teacher candidates to work with ELLs by implementing methods from course work into context, and training individuals to reflect on their experiences have been proven to be a positive influence on the concept of educating ELLs (Assaf & López, 2015; Islam & Park, 2015; Schellen & King, 2014).

In-service Professional Development and ELLs

Understanding that teachers have different backgrounds, studies have centered on teacher perceptions of linguistically diverse students (Casey, Dunlap, Brister, Davidson, & Starrett, 2013; Elfers & Stritikus, 2014; Greenfield, 2013) and support for working with ELLs (Adamson, Santau, & Lee, 2012; Casey et al., 2011; Collins & Liang, 2014; Elfers & Stritikus, 2014; Franco-Fuenmayor, Padrón, & Waxman, 2015; Kibler, 2013). Studies on professional development designed to help teachers instruct English language learners have been explored through qualitative (Elfers & Stritikus, 2014; Greenfield, 2013) and mixed-method research (Berg & Huang, 2015; Casey, Dunlap, Brister, Davidson & Starrett, 2011).

Greenfield's (2013) approach used the sociocultural theory as the framework with the understanding that learning and development are connected to ones' social context and cannot be separated. Results from the study indicated that for ELLs to receive adequate instruction, teachers will need exposure and interaction with a variation of professional development and experiences (Greenfield, 2013). Concerns about struggles that educators may encounter with instructing ELLs were addressed to explore support needs and examine the nature of support provided by the school and district levels of elementary, middle, and high school teachers of ELLs (Casey et al., 2013; Elfers & Stritikus, 2014). The studies resulted in similar findings that to create productive learning environments for ELLs, a holistic integration of supports including experiences and professional development for administrators and school-wide staff, benefit teachers of ELLs (Casey et al., 2011; Elfers & Stritikus, 2014; Greenfield, 2013).

Several researchers were concerned about the knowledge base of teachers who worked with ELLs and how it relates to classroom practices, and explored their concerns through various approaches to professional development programs (Adamson et al., 2012; August, Branum-Martin, Cárdenas-Hagan, Francis, Powell, Moore, & Haynes, 2014; Berg & Huang, 2015; Collins, 2014; Franco-Fuenmayor et al., 2015; Kibler, 2013). Franco-Fuenmayor, Padron, and Waxman (2015) conducted a mixed-method research that involved bilingual and ESL teachers in suburban elementary schools in investigating their background knowledge for working with ELLs and opportunities encountered for professional development. The researchers compared different language-based programs such as a one-way language immersion, ESL, two-way bilingual, and developmental

bilingual and found disparity among the knowledge ESL and bilingual teachers gained through professional development (Franco-Fuenmayor et al., 2014). Discrepancies among bilingual and ESL teachers indicated that information regarding research and best practices for educating ELLs, were not known to the individuals who worked with linguistically and culturally diverse students (Franco-Fuenmayor et al., 2015).

The relationship between language learning and social context as described by Greenfield (2013) was evident in other studies related to professional development for working with ELLs. The strategies that were explored through professional development programs were designed in partnership with urban, suburban, and rural school districts to focus on the linguistic aspects of teaching ELLs (Berg & Huang, 2015; Kibler, 2013) and how to support content-based instruction to promote the development of English language by ELLs (Adamson et al., 2013; August et al., 2014; Collins, 2014). Using Mohan's knowledge framework, Berg and Huang's (2015) mixed-method research with 23 experienced K-12 educators from elementary and secondary schools, examined if any changes occurred in the perceptions of participants following the professional development on explicit language instruction, and whether they made connections to changes in classroom. Results revealed that after participation in professional development, in-service teachers were better equipped to instruct diverse students (Berg & Huang, 2015; Kibler, 2013). Kibler (2013) reported on K-12 educators in California who were not bilingual or had encounters with bilingual programs, who participated in an online professional development program that focused on incorporating native languages

when educating ELLs. The researchers found that participants recognized the need to provide differentiated instruction for ELLs (Berg & Huang, 2015; Kibler, 2013).

Researchers involved literacy coaches, ELLs, and teachers in different studies to learn more about instructional practices to support ELLs. Adamson et al. (2013) targeted elementary teachers in urban schools to engage in the 3-year long professional development program that focused on curriculum units and workshops for implementing the curriculum. Collins (2014) focused on literacy coaches and classroom teachers, while August et al. (2014) included sixth-grade ELLs who were enrolled in ESOL or bilingual services. Similar to Adamson et al. (2013), the professional development that August et al. (2014) reported on involved the use of curriculum that was designed specifically for addressing ELLs and training sessions on how to implement the curriculum. Similar findings from the studies indicated that tasks and strategies that explicitly target ELLs, including attention to the use of the home language of students in the classroom, can support instructional practices for language development in different contexts (Adamson et al., 2012; August et al., 2014; Collins, 2014; Kibler, 2013). The researchers found that the relevance of tasks and strategies employed were based on the context and role of participants (Collins, 2014; Kibler, 2013).

Educating ELLs is a collaborative task that involves communication with individuals such as classroom teachers (Adamson et al., 2012; Franco-Fuenmayor et al., 2015) education specialists (Adamson et al., 2012), support staff (Collins, 2014), administrators, students and families (Casey et al., 2013). Field experience with teaching ELLs provides authentic opportunities for pre-service or veteran teachers to make

connections between theory and practice (Berg & Huang, 2015; Franco-Fuenmayor et al., 2015). For teachers who may or may not have received formal training for working with ELLs, professional development designed for the purpose of understanding linguistic diversity and providing explicit language instruction can have an impact on teacher practices regardless of the content area they teach (Adamson et al., 2013; Berg & Huang, 2015; Franco-Fuenmayor et al., 2015; Greenfield, 2013; Kibler, 2013).

As noted earlier in this study, two key trends are influencing current classroom practices. One is the increasing level of diversity teachers face in the student population, including the growth in the ELL population, which they are often ill prepared to address. The second is the push to integrate more technology into classroom instruction.

Teachers and Technology Preparation

The expectation for all students to be capable of using technology as part of being college and career ready requires thoughtful integration with the curriculum for planning and implementation (P21, n.d.). To better understand the presence of technology integration in K-12 classrooms or the lack of, researchers have focused on the beliefs of teachers towards technology and the role of such technology in classrooms (Cakir, 2012; Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, & Sendurur, 2012; Golshan & Tafazoli, 2014; Rahmany, Sadeghi, & Chegini, 2014; Varol, 2013; Weber & Waxman, 2015). Ertmer et al. (2012) conducted a qualitative multiple-case study to examine the relationship between the pedagogical beliefs and technology practices by 12 classroom teachers. The participants were K-12 educators who were recognized and awarded for their technology integration practices. The researchers analyzed teacher-created websites

and interviewed participants one-on-one. Although Ertmer et al. (2012) did not attempt to gain insight from teachers who were less experienced with technology, the researchers found that the experienced participants believed in using technology for student-centered learning and their classroom practices aligned with their pedagogical beliefs.

Unlike the study conducted by Ertmer et al. (2012), less experienced educators were the subjects of a study conducted by Weber and Waxman (2015). Through a quantitative approach, the researchers focused on novice teachers in Texas as they began their first year of teaching, following completion of a master of education program (Weber & Waxman, 2015). Thirty-seven middle and high school teachers located in urban and rural areas taught a variety of content areas and completed a survey regarding self-efficacy for incorporating technology for teaching and learning. Weber and Waxman (2015) found that the level of confidence among the participants decreased after the first half of the school year due to the process of learning ways to integrate technology while carrying out actions of integration. During the second half of the school year, self-efficacy among the participants increased slightly and was explained by Weber and Waxman (2015) as an implication that as the novice educators gained experience their confidence level increased.

Other studies included elementary classroom teachers (Varol, 2013), computer teachers, and administrators (Cakir, 2012) as participants in Turkish elementary schools, who revealed their general attitudes, confidence, and expectations towards information and communication technologies (ICT), including Web 2.0. Varol (2013) conducted a quantitative study with 100 elementary teachers to complete two questionnaires regarding

their knowledge and beliefs related to ICT and the relationship to their teaching. Cakir (2012) conducted a study with 38 school administrators to investigate their attitudes towards technology, and examined the awareness of Web 2.0 and other technological developments known to 35 computer teachers as well as their attitudes. Through analyses of self-reported survey responses, researchers found that teachers had limited or no knowledge of specialized software applications that was indicated by the low use of ICT (Varol, 2013), and the least confidence in using Web 2.0 technologies such as designing a website (Varol, 2013), using blogs and using wikis (Cakir, 2012). In addition, Cakir (2012) found that administrators expected computer teachers to take the lead with integrating technology with teachers and students, while computer teachers revealed that there were too many expectations from administrators and that support was needed from classroom teachers as well.

Several researchers investigated barriers to the integration of Web 2.0 technology in classrooms to understand the challenges and found issues with compatibility (Tay, Lim, & Lim, 2015), availability (Fredrickson, Vu, & Crow, 2014), and support (Fredrickson et al., 2014; Hechter & Vernette, 2014). Tay et al. (2015) employed a two-year long mixed method research with elementary teachers of multiple content areas to examine the differences in the use of information and communication technologies. The researchers found technology integration fit more easily with English as opposed to Math or Science because of the compatibility for communication (Tay et al., 2015). Through a descriptive research with primary through twelfth grade classroom teachers from 14 countries, Fredrickson et al. (2014) found that a variety of digital technologies were

accessible mostly in developed countries such as the U. S., than in developing countries, but the technologies were not used the most in developed countries. Hechter and Vermette (2014) surveyed K-12 science teachers and found that while administrators invested in teachers and technologies, effective use of technology was prevented by administrative, organizational, technological, and philosophical factors.

TPPs designed for working with ELLs or integrating technology are essential to teacher readiness when planning and implementing curriculum for the diverse population of language learners. TPPs are relevant to the proposed research questions regarding ELLs use of Web 2.0 tools as the research may provide a greater understanding of the experiences of teachers and that understanding could lead to changes in TPPs. It is evident through the literature that appropriate delivery of instruction from general education classroom teachers that meet the needs of ELLs and state standards requires knowledge, training, and experience. The studies discussed were relevant to the current research because an emphasis was placed on the idea that formal training prepares teachers to design and carry out lessons using technology and formal training is necessary to learn strategies that are supportive to ELLs.

Common findings among the researchers were that many teachers and administrators had positive attitudes towards technology and found integration to be beneficial to teaching and learning (Cakir, 2012; Ertmer et al., 2012; Golshan & Tafazoli, 2014; Varol, 2013; Weber & Waxman, 2015). Barriers to technology integration affected the relationship between teacher beliefs and teacher practices (Cakir, 2012; Ertmer et al., 2012; Golshan & Tafazoli, 2014; Varol, 2013; Weber & Waxman, 2015). These studies

point to the current context of technology integration in schools. Further examination of how teachers are prepared in both pre-service and in-service to integrate technology may shed some light on this context.

Pre-service Preparation and Technology Integration

In a quantitative study, Alexander et al. (2014) focused on pre-service teachers enrolled in a technology integration course that required them to participate in and analyze digitally fabricated project-based learning activities that were technology-rich and content specific. The researchers aimed to compare the perceptions of pre-service teachers regarding their attitudes toward STEM, technology proficiencies, and integration skills throughout the semester using pre- and post-measures. Alexander et al. (2014) found that there were significant gains regarding attitudes toward STEM, technology proficiency, and integration skills.

Various studies have been conducted on technology-rich TPPs that involved the use of information and communication technology (ICT), including Web 2.0 tools. Participants of the studies engaged in online learning environments that incorporated the use of ICT (Basal, 2015; Hughes, 2013) and more specifically blogs and wikis (Ishtaiwa, 2012) as well as Voxpop, Blendspace, and Padlet (Basal, 2015). Findings from studies are similar in that participants revealed positive perceptions about ICT for teaching and learning (Basal, 2015; Hughes, 2013), the usefulness of Web 2.0 tools to supplement instruction (Basal, 2015; Ishtaiwa, 2012), and intent to integrate ICT in their future classrooms (Basal, 2015; Hughes, 2013).

The role of mentor teachers can influence the teaching practices of pre-service educators in reference to exposure to ICT in preparation courses and implementation of ICT during student teaching. Researchers investigated the use of Web 2.0 technologies through preparation courses and the beliefs and practices of participants during their placement with mentor teachers (Gowdy, 2015; Hsu, 2013). Participants were provided with opportunities to incorporate technologies and revealed a change in their decision to integrate technology due to the influence of mentor teachers (Gowdy, 2015; Hsu, 2013). Support and involvement from teacher educators are important to the experiences and practice of pre-service teachers (Basal, 2015; Gowdy, 2015) as well as revealing the decision making process for integrating technology (Hsu, 2013).

Several studies on TPP were designed to focus on TPACK (Chai, Koh, Ho & Tsai, 2012; Donna & Miller, 2013; Hofer & Grandgenett, 2012; Hughes, 2013; Lux & Lux, 2015; Sancar-Tokmak, Hikmet, & Ozgelen, 2014) and researchers collected data through participant reflections (Donna & Miller, 2013; Hsu, 2013; Lux& Lux, 2015; Uzum et al., 2014), participant use of wikis or blogs (Craig et al., 2012; Lux & Lux, 2015), as well as interviews and observations (Hsu, 2013; Sancar-Tokmak et al., 2014). Donna and Miller (2013) were interested in technologies that pre-service science teachers used to support inquiry-based pedagogies while considering potential barriers and TPACK. Participants freely explored Google Drive tools, extended their knowledge of Google Drive tools by engaging in discussions, then reflected on their use of Google Drive for future practice. Participants revealed setbacks they experienced with using Google Drive included communication and formatting (Donna & Miller, 2013).

A similar concept was explored through the examination of the use of language-based classroom wikis and blogs (Craig, 2013) and technology-based enrichment activities that were content specific (Lux & Lux, 2015). Classroom wikis and blogs were created by participants enrolled in an ESL preparation program who engaged in online discussions about the design and integration of their wiki (Craig, 2013). Participants who were enrolled in an educational technology teacher preparation course planned, developed, and delivered technology-based activities that they reflected on through blog postings and multimedia-based presentations (Lux & Lux, 2015). A similar approach by researchers was to investigate the impact of a technology course on the technology knowledge of pre-service teachers (Kovalik, Kuo, & Karpinski, 2013). The researchers were interested in understanding the perceptions of pre-service teachers toward technology, teaching, and learning and found that the experience was a positive impact on their perceptions and a growth in technological knowledge (Kovalik, Kuo, & Karpinski, 2013; Lux & Lux, 2015). With regard to TPACK, the researchers explored Web 2.0 technologies and found several barriers to Web 2.0 integration included lack of alignment between education reform and beliefs held by pre-service science teachers, access in school and outside of school, management online and face-to-face, (Donna & Miller, 2013), time, and content (Craig, 2013; Donna & Miller, 2013). Researchers also found that field experience influenced awareness of the different ways to implement technologies for content-related activities in the classroom (Craig, 2013; Lux & Lux, 2015).

The TPACK of pre-service teachers was investigated and compared before and after participants engaged with technology tools for content-related activities as part of their TPP (Chai et al., 2012; Hofer & Grandgenett, 2012; Sancar-Tokmak et al., 2014). Hofer and Grandgenett (2012) focused on tracing the development of TPACK over time through a three-semester program, while Sancar-Tokmak et al. (2014) and Chai et al. (2012) investigated TPACK during one course. Through questionnaires (Chai et al., 2012; Hofer & Grandgenett, 2012; Sancar-Tokmak et al., 2014), experimentation with technologies such as digital stories (Sancar-Tokmak et al., 2014), digitized materials and websites (Chai et al., 2012), as well as lesson plans and reflections (Hofer & Grandgenett, 2012), the researchers found differences in the development of TPACK and the components of TPACK. The common finding among the studies was that throughout the individual TPP courses or throughout the duration of a complete program, pre-service teachers developed their TPACK and revealed positive perceptions (Chai et al., 2012; Hofer & Grandgenett, 2012; Sancar-Tokmak et al., 2014). In-service programs have also aimed to enhance teacher skills in technology integration.

In-service Professional Development and Integrating Technology

Researchers have employed qualitative and mixed methods research to gain an understanding regarding professional development for integrating technology in the classroom. Studies on professional development have incorporated mentoring components for integrating technology (Duran, Brunvard, Ellsworthm Sendağ, 2012; Liu, Tsai, & Huang, 2014), placed teachers in the role of students while they learned about technology tools (Bruce & Chiu, 2015; Ciampa & Gallagher, 2013) and focused on

implementing specific technology tools or digital materials across the curriculum (Banister, Reinhart & Ross, 2013; Bruce & Chiu, 2015; Butcher, Leary, Foster & Devaul, 2014; Ciampa & Gallagher, 2013; Duran et al., 2012; Liu et al., 2014). Qualitative and mixed methods research with in-service educators included interviews, observations, focus groups, pre and post surveys and follow-up questionnaires. Quantitative methods were not employed solitarily in the studies reviewed as the researchers gathered descriptive data that would shed light on understanding the experiences of participants involved in professional development for technology integration. The overall findings from the studies were that in-service teachers benefitted from professional development for technology integration that involved experimenting with specific technologies while receiving support, and as a result in-service teachers agreed technology was beneficial to student learning as well (Bruce & Chiu, 2015; Ciampa & Gallagher, 2013; Duran et al., 2012; Liu et al., 2014).

Several studies were designed to focus on opportunities for in-service teachers to experiment with specific educational technology during professional development such as a wiki (Duran et al., 2012), iPad2 (Ohlson et al., 20104), iPad Touch (Ciampa & Gallagher, 2013), and digital video (Bruce & Chiu, 2015), as well as other digital tools for identifying and developing e-learning resources (Banister et al., 2013; Dalal et al., 2016). The collaborative approach of the professional development sessions on integrating technology involved preservice and in-service teachers placing participants in the role of a learner (Bruce & Chiu, 2015; Liu et al., 2014) and as a mentor (Liu et al., 2014). Results of the studies indicated that participants understood how to implement the

technology they experimented with through the professional development (Bruce & Chiu, 2015; Liu et al., 2014) and improved their skills and integration strategies with technology (Banister et al., 2013; Ciampa & Gallagher, 2013; Duran et al., 2012; Liu et al., 2014).

Different approaches have been used to examine the problem of teachers' lack of the knowledge and skills to incorporate technology related applications into the curriculum as part of teaching (Duran et al., 2012) including focus groups, collaborations, interviews, and observations. Several studies were designed to focus on opportunities for participants to experiment with specific educational technology such as a wiki (Duran et al., 2012), iPad2 (Ohlson et al., 20104), iPad Touch (Ciampa & Gallagher, 2013), and digital video (Bruce & Chiu, 2015), as well as other digital tools (Banister et al., 2013; Dalal et al., 2016). Banister et al. (2013) provided digital tools for identifying and developing e-learning resources that enabled participants to practice with differentiating instruction and assessment tools. Ciampa and Gallagher (2013) focused on using the iPod Touch, while Duran et al. (2012) focused on using a wiki. Results of the studies indicated that participants understood how to implement the technology they experimented with through the professional development (Bruce & Chiu, 2015; Liu et al., 2014) and improved their skills and integration strategies with technology (Banister et al., 2013; Ciampa & Gallagher, 2013; Duran et al., 2012; Liu et al., 2014).

The TPACK of teachers across various grade levels and content areas such as science (Butcher, Leary, Foster, & Devaul, 2014; Dawson, Ritzhaupt, Liu, Rodriguez, & Frey, 2013), literacy (Ohlson, Wehry, Monroe-Ossi, McLemore, Maki, & Fountain,

2014), and math (Dawson et al., 2013) has been explored by researchers in relation to professional development opportunities. Researchers have also reported on the TPACK of teachers and the relationship with teaching and learning practices (Dalal, Archambault, & Shelton, 2016; Dawson et al., 2013; Koehler & Mishra, 2009; Ohlson et al., 2014) geared towards determining changes to instructional planning (Butcher et al., 2014; Ciampa & Gallagher, 2013; Dalal et al., 2016; Dawson et al., 2013).

Professional development for an extended time of nine months or one year, respectively (Dawson et al., 2013; Ohlson et al., 2014) provided participants with opportunities to experiment with technology and apply experiences to classroom practices. Dawson et al. (2013) were interested in examining the ways that K-12 teachers apply TPACK through analysis of teacher-created lesson plans for science and math using an online template that were submitted during the beginning and at the end of the school year. A more specific focus on technology integration was employed with the use of an iPad2 tablet equipped with literacy applications for students and were used with educators of prekindergarten through second grade students in a large urban district (Ohlson et al., 2014). The researchers found that instructional planning by participants included a range of technology indicating an improvement with planning for technology integration (Butcher et al., 2014; Dawson et al., 2013). In contrast, researchers found that the TPACK of in-service teachers for integrating Web 2.0 technologies was limited (Dawson et al., 2013; Ohlson et al., 2014).

An overall strength evident in the in-service studies reviewed was a focus on providing opportunities for participants to use the technology while being paced through

the process with a form of mentoring or guidance (Bruce & Chiu, 2015; Ciampa & Gallagher, 2013; Duran et al., 2012; Liu et al., 2014). Collaboration was a common theme among the studies but could potentially become challenging when adjusting to group dynamics (Bruce & Chiu, 2015). The opportunities for participants to reflect on their experiences during and after professional development was another strength associated with the studies (Bruce & Chiu, 2015; Duran et al., 2012; Liu et al., 2014). The fruition of professional development should be reflected in classroom practices as seen with some of the studies (Ciampa & Gallagher, 2013; Liu et al., 2014). Data gathered from the experiences led to a deeper understanding of participants involved with professional development for technology integration.

The expectation for teachers to integrate technology must be supported with on-going training and assistance. Participants appreciated follow up sessions and were willing to learn more about technology and its applicability on different platforms as well as across curriculum (Bruce & Chiu, 2015; Ciampa & Gallagher, 2013; Duran et al., 2012; Liu et al., 2014). Potential issues with determining the time frame of professional development were the retention of participants and training teams, especially if the program extended beyond an academic school year, and there was not enough time to apply strategies with multiple Web 2.0 tools or in multiple content areas (Bruce & Chiu, 2015; Duran et al., 2012).

Researchers have been able to draw attention to different elements of professional development designed to support technology integration. However, there is still much to learn. A few of the studies employed a qualitative approach, which limited the sample

size to a small number. It was suggested by Ciampa and Gallagher (2013) that more mixed methods studies are needed to incorporate control groups and larger sample sizes to represent the population. To gain further insight on teachers integrating technology with the curriculum, it will be necessary to provide opportunities to explore with multiple technologies, use follow-up procedures that reflect application to classroom practice, and examine the impact on student learning (Bruce & Chiu, 2015; Ciampa & Gallagher, 2013). Examining the dynamics of mentoring such as long-term or a school-based team and the impact of integrating mentoring could also yield valuable information about professional development for teaching with technology (Duran et al., 2012; Liu et al., 2014). The majority of participants represented in studies were white, monolingual, native English speakers who were also female, all characteristics of what researchers determined to be the dominant population in the teaching workforce in the United States (Casey et al., 2011). However, studies focused on learning projects that involved partnerships with school districts and universities were conducted in urban, suburban, and rural areas where it was common to find a high population of bilingual or multilingual individuals (Berg and Huang, 2015; Elfers & Stritikus, 2014). It is necessary for individuals who make up the teacher workforce to be properly equipped to educate the linguistically diverse student population.

According to the framework of P21 stated on the website, meeting the requirements of 21st century teaching and learning means teachers need to implement technology use in their lessons across content areas. The multitude of Web 2.0 tools offers many options from which to choose. School districts and administrators may

dictate the Web 2.0 tools expected to be implemented by teachers (Bruce & Chiu, 2015; Ciampa & Gallagher, 2013; Duran et al., 2012) or teachers might have a choice about the tools they use with their students (Liu et al., 2014). Professional development becomes a necessity for providing teachers with guidance and resources. Researchers have shown that when teachers participate in long-term professional development for integrating technology, their knowledge is increased and is reflected through their classroom practices (Butcher et al., 2014; Ciampa & Gallagher, 2013; Dawson et al., 2013; Duran et al., 2012; Liu et al., 2014; Ohlson et al., 2014).

Technology Integration to Support Classroom Instruction

Rosen and Nelson (2008) reported in an article about the emergence of Web 2.0 and the differences between Web 1.0 and Web 2.0. Web 1.0 was considered the platform just for reading (Rosen & Nelson, 2008), also noted by Andersson and Räisänen (2014) as a method for gathering static information from the Internet where the focus is on presentation of information. The Web 2.0 platform was described as a place to collaborate with ease and for social sharing (Rosen & Nelson, 2008). Collaborative technologies, as described by Rosen and Nelson (2008) enable users to create communities with people who share an interest to publicly discuss content such as movies, text, and pictures. Web 2.0 tools enable users to not only access information but also participate in creating and sharing the information.

In a study on the use of class blogs for one-to-one programs in Swedish schools, the researchers focused on how blogs were used and could be used in order to develop a framework for educators, and reported increasing use of Web 2.0 technologies

(Andersson & Räisänen, 2014). Examples of Web 2.0 tools include LibraryThing and Flickr (Rosen & Nelson, 2008). Other examples of Web 2.0 technologies identified by researchers included wikis (Cabiness, Donovan, & Green, 2013; Craig, 2013; Ertmer et al., 2012; Ishtaiwa, 2012; Lee, 2012; Rosen & Nelson, 2008) Google Drive (Donna & Miller, 2013), class websites (Chai et al., 2012; Ertmer et al., 2012), podcasts and videos (Ertmer et al., 2012; Shankar-Brown & Brown, 2014; Lowman, 2014), and blogs (Allaire, Thériault, Gagnon, & Lalancette, 2013; Andersson & Räisänen, 2014; Ertmer et al., 2012; Gowdy, 2015; Ishtaiwa, 2012; Karsak, Fer, & Orhan, 2014; Lux & Lux, 2015; O'Byrne & Murrell, 2014; Rosen & Nelson, 2008). Over the years, researchers have expanded the understanding of the benefits associated with using Web 2.0 technologies. Technology integration of Web 2.0 tools with school instruction, can offer students and teachers a variety of strategies for teaching and learning such as for literacy (Alhashen & Al-jafar, 2015; Allaire et al., 2013; Batsila & Tsihouridis, 2016; Karsak, Fer, & Orhan, 2014; Lowman, 2014; Shankar-Brown & Brown, 2014), science (Alhashen & Al-jafar, 2015; Hechter & Vermette, 2014), mathematics (Cicconi, 2014) and history (Cabiness et al., 2013; Peterson & Portier, 2014).

Online communities can be created to illustrate the characteristics of Web 2.0 technologies that support classroom instruction such as for reading (Liu, Wu, & Ko, 2014b) and writing (Zheng, Warschauer, & Farkas, 2013). Through a quantitative approach, Liu et al. (2014b) compared the effects of combined and individual reading strategies for comprehension based on an online reading system. Over the course of one month, Liu et al. (2014b) found that the learning performance of fifth grade students who

were part of a single strategy group for prediction or discussion, was enhanced more than the prediction-discussion group. Zheng et al. (2013) aimed to investigate the effects of writing processes and outcomes of fourth and fifth grade students in California and Colorado who were part of a one-to-one laptop program focused on writing. Learning communities were created online for district-wide access by teachers and students to contribute and share through different mediums (Zheng et al., 2013). The researchers found that enthusiasm, confidence, and quality of writing by the students were improved and students wrote, revised, and edited more (Zheng et al., 2013).

The creative and collaborative features of Web 2.0 technologies were explored and reported on in classrooms through student use of digital storytelling (Batsila, 2016), podcast (Lowman, 2014), and vodcast (Cicconi, 2014; Lowman, 2014; Shankar-Brown & Brown, 2014), Voki and Voicethread (Cicconi, 2014). The researchers focused on group activities among the students while they engaged in the use of different Web 2.0 technology (Batsila, 2016; Cicconi, 2014; Lowman, 2014; Shankar-Brown & Brown, 2014). Batsila (2016) led a mixed-method research study with randomly selected junior high students and three teachers who instructed the students over two months, to create digital storytelling for a given theme. Fourth and sixth-grade students were participants of a different study where they were instructed to create podcasts or vodcasts based on vocabulary instruction (Lowman, 2014), while in a separate qualitative case study ninth-grade students created individual vodcasts as an alternative to a traditional book report (Shankar-Brown & Brown, 2014). Cicconi (2014) reported in an article on the changes in mathematics learning opportunities by early childhood students due to various Web 2.0

technologies such as Voki, vodcasts, and VoiceThread. Similarities in the results of the studies among the native English speaking students were that student learning was improved in the areas of reading and writing skills (Batsila et al., 2016) and vocabulary acquisition (Lowman, 2014). Implementation of Web 2.0 technology promotes collaboration and differentiated learning opportunities (Batsila, 2016; Cicconi, 2014; Lowman, 2014; Shankar-Brown & Brown, 2014).

Other approaches to investigate Web 2.0 technology integration included the use of wikis (Cabiness et al., 2013; Lee, 2012; Peterson & Portier, 2014). Cabiness et al. (2013) focused on integrating a wiki into the social studies curriculum with middle school students and found that the collaborative learning associated with using a wiki prompted students to interact with peers while demonstrating a higher level of inquiry and thinking skills. A study on wiki implementation for social studies that was conducted over two consecutive years with fifth and sixth-grade students, was designed to investigate how students represented meaning of global issues through collaborative writing (Peterson & Portier, 2014). Participants researched and discussed topics before contributing to their group wiki and demonstrated the least consistency with representing meaning accurately or correctly than they did with telling and transforming knowledge through their writing (Peterson & Portier, 2014). Through e-mail interviews, Lee (2012) investigated how elementary teachers across the United States implemented wikis in multiple content areas. Participants shared their reasons, methods, and thoughts about using wikis as a student-centered technology and revealed that their strategies varied by grade level (Lee, 2012). Lee (2012) found that lower elementary students focused on

editing, posting, and uploading to the wiki, while students in grades four through six developed peer collaboration skills and took more ownership of their learning in regard to writing. Results evident throughout the studies indicate opportunities for informal and formal scaffolding during the processes that students encounter while engaging with a wiki (Cabiness et al., 2013; Lee, 2012; Peterson & Portier, 2014).

Similar to wikis, blogs are another common Web 2.0 technology that has been investigated for supporting classroom instruction. (Allaire et al., 2013; Karsak, Fer, & Orhan, 2014; O'Bryne & Murrel, 2014). Individual and cooperative student use of blogs for writing (Karsak et al., 2014) were examined through a mixed-method approach with fifth graders and resulted in student preference by a majority, of an individual blog environment as being more effective on their writing. Karsak et al. (2014) found that the individual blog environment supported flexibility and creativity in generating ideas and content, while organization, fluency, and rules did not differ in either environment. Allaire, Thériault, Gagnon, and Lalancette (2013) explored the use of blogs for free writing with sixth-grade students during an academic year, as the classroom teachers aimed to establish a network for learners that extended beyond the classroom. Allaire et al. (2013) used pre- and post-measures to document blog use by students, who were given the option to participate or use a personal journal for free writing. The researchers found that student choice of the topic to write about was important and as students engaged in the blog activity their motivation increased (Allaire et al., 2013).

Beyond the elementary level, O'Byrne and Murrell (2014) targeted high school students for their research on the integration of blogs. O'Byrne and Murrell (2014)

investigated literacy practices through blogging with 51 eleventh-grade students from three advanced placement English classes who were tasked with organizing and sharing the developing stages of an individual student-created multimedia video on a selected topic. The researchers found that when the instructor guided students with prompts, there were positive results for completion of postings, and participants went beyond the text-based assignment to communicate, participate, and construct meaning by incorporating multiple forms of media and concepts of literacy (O'Byrne & Murrell, 2014).

From the studies reviewed on technology integration to support classroom instruction, blogs and wikis are common Web 2.0 technologies that have been used to support classroom instruction, in addition to other mediums such as podcasts, vodcasts, and digital storytelling. The overall theme of the studies reviewed is that integration of Web 2.0 technologies provides students with the chance to interact on digital platforms that involve opportunities to collaborate, share, engage in discussions, develop literacy practices, and demonstrate their understanding. Diversity of the classroom populations were not defined by the researchers of the studies and therefore did not highlight encounters with ELLs or the influence of Web 2.0 technologies on learning by ELLs.

This section has focused on teachers' preparedness to integrate technology in the classroom in general. The next section explores what is known specifically about technology integration with ELLs to support language acquisition.

Technology Integration with ELLs

Researchers have explored various ways that educators have implemented technology with curriculum, in an effort to reduce the academic achievement gap

between ELLs and non-ELLs in the K-12 setting. Technology integration has been examined through qualitative methods to gain insight on perceptions and experiences, and through quantitative methods to measure impact. In recent studies, researchers have explored the use of technology for supporting literacy instruction among students. Larabee, Burns, and McComas (2014) aimed to measure the effects of an iPad application for phonics intervention in comparison to standard intervention materials. Results indicated improvements among the students engaged with technology (Larabee et al., 2014). Larabee et al. (2014) revealed the need for further research on the effects of mobile technologies due to some of the limitations of their study such as minimal data due to the sample size.

The common theme of Web 2.0 was explored in studies where researchers examined effective ways to integrate Web 2.0 technologies to support ELLs' language development (Green, Inan, & Maushak, 2014; Gustad, 2014; Hur & Suh, 2012; Leacox & Jackson, 2014). Researchers focused on the linguistic development of students through a technology-based vocabulary bridging program and collaboration with small groups to create a vidcast based on a reading lesson, respectively (Green et al., 2014; Leacox & Jackson, 2014). The researchers found that ELLs who used technology experienced significant gains in their language development (Green et al., 2014; Leacox & Jackson, 2014). Gustad (2014) investigated the impact of podcasting on students' literacy motivation. Yoon (2012) and Hur and Suh (2012) focused on students using digital storytelling. Hur and Suh (2012) further extended the study by including podcasts and an interactive whiteboard. Results of the studies revealed that as ELLs experimented with

Web 2.0 technologies, their motivation to read improved (Gustad, 2014) and students were more engaged in their learning (Gustad, 2014; Hur and Suh, 2012; Yoon, 2012). Most of the studies were conducted outside of a general education classroom setting, during an intensive summer program with eleven 3rd and 4th grade students (Hur & Suh, 2012), in an English as a second language (ESL) classroom with 16 students (Green et al., 2014), and in an afterschool English class with 32 5th grade ELLs (Yoon, 2012). ELLs have demonstrated improvement in their language learning when engaged in activities involving Web 2.0 technologies.

Unlike Green et al. (2014) and Hur and Suh (2012), Gustad's (2014) study incorporated the push-in and pullout models. However, the podcasting project occurred during pullout sessions. Results of the studies indicated that when ELLs used Web 2.0 technologies and worked in small groups, students improved their language skills.

In contrast, Keengwe and Hussein (2012) conducted a study over the course of two years in two charter schools with ELL populations that were mainly Somalian. The researchers focused on the influence of technology on ELLs' language development. One school used computer-assisted instruction to supplement the curriculum, while the other school relied only on traditional instruction. Similar to other studies (Green et al., 2014, Hur & Suh, 2012) the researchers found that students who received CAI performed better academically. Collectively, the studies illustrated technology integration was effective with diverse populations such as Korean (Hur & Suh, 2012), Somalian (Keengwe & Hussein, 2012), and Mexican (Green et al., 2014). However, most did not involve general education classroom teachers or general education settings.

The effectiveness of student collaboration is dependent upon participants in the groups and requires the teachers' ability to facilitate cooperative groups. Potential issues identified by these researchers that may arise with integrating Web 2.0 tools with ELL populations include having enough time for preparation and implementation (Hur & Suh, 2012; Keengwe & Hussein, 2012), and communicating language expectations of the end product (Green et al., 2014; Hur & Suh, 2012). Green et al. (2014) identified behavior management and a lack of human resources to provide language support to students as potential issues. In addition, appropriate selection of the technology to be used and training for teachers (Hur & Suh, 2012; Keengwe & Hussein 2012) are other potential issues with integrating Web 2.0 tools with ELLs.

Many studies have focused on technology integration for supporting ELLs in language learning classrooms (for example, Ertmer et al., 2012; Green et al., 2014; Hur & Suh, 2012; Keengwe & Hussein, 2012; Leacox & Jackson, 2014). Some practices involved computer-assisted-instruction (Keengwe & Hussein 2012), the iPad for phonics intervention (Larabee et al., 2014), Spanish-bridging vocabulary with an electronic book (Leacox & Jackson, 2014) and digital storytelling, podcasts, and interactive whiteboards for vocabulary development (Hur & Suh, 2012; Yoon, 2012). However, from the literature reviewed for this study, a clear distinction cannot be made between technology integration in general education classrooms and isolated language learning environments. Studies on Web 2.0 integration such as with blogs, wikis, and virtual manipulatives revealed teacher preferences, integration strategies, as well as barriers for integration (Ishtaiwa, 2012) but were not specific to use with ELLs.

Administrators may also have an influence on the attitudes that teachers possess towards technology and technology integration (Cakir, 2012; Golshan & Tafazoli, 2014). A mixed-methods research study was employed with 32 inservice language teachers in Iran to examine their attitudes towards the use of technology to enhance language learning (Golshan & Tafazoli, 2014). Data collection consisted of a questionnaire for all participants and semi-structured interviews with 10 teachers. The researchers found that language teachers valued the use of technology tools to teach English and to help students learn English (Golshan & Tafazoli, 2014). Some participants reported that administrators lacked concern about how and why the technology tools were used for language learning, and restricted the use of some devices (Golshan & Tafazoli, 2014). Although many of the teachers had experience with technology including the use of a video projector or computer, less than 4% had experience with Web 2.0 technology (Golshan & Tafazoli, 2014).

Summary

The academic achievement gap between ELLs and non-ELLs can potentially increase due to the growing ELL population across the United States (National Center for Education Statistics, 2015). Technology is one method for supporting ELLs' academic growth, which may be beneficial to their success in a technology-advancing world. The cultural and linguistic diversity of ELLs requires careful consideration, preparation, and selection of technology by teachers if the expectation is for ELLs to experience academic achievement (Berg & Huang, 2015; Bruce & Chiu, 2015; Casey et al., 2011; Ciampa &

Gallagher, 2013; Duran et al., 2012; Elfers & Stritikus, 2014; Greenfield, 2013; Liu et al., 2014).

There is a need for further research on the connection between technology and literacy achievement, specifically English language learning (Gustad, 2014) and on the use of mobile applications for teaching early literacy (Larabee et al., 2014). Technology integration of Web 2.0 tools that support ELLs is relevant to the proposed research questions regarding the experiences of general education teachers with such technologies applied in a general education setting. Thoughtful selection and investment in technology tools can lead to a decrease in the achievement gap (Keengwe & Hussein, 2012). Teachers' pedagogical beliefs influence effective use of Web 2.0 tools in classrooms, which makes the TPACK model relevant to this study.

In New York, ELLs' academic deficits are reflected through their underperformance on standardized ELA and Mathematics assessments (EngageNY, 2014). As the topic of technology integration is emerging in the education field, researchers still have unanswered questions. In the studies reviewed, researchers identified several gaps in the literature related to technology integration and working with linguistically diverse learners. Literacy education is related to ELLs ability to attain academic achievement that can be supported with the integration of Web 2.0 technologies (Baecher, Schieble, & Rosalia, 2013; Gowdy, 2015; Liu, Ko & Wu, 2014a; Lux & Lux, 2015; Paugh, 2015; Safar, 2015). Larabee et al. (2014) pointed out that guidance for technology integration is scarce due to the lack of evidence in the field. Greenfield (2013)

stated that an understanding of teachers' perceptions, attitudes, and encounters working with linguistically diverse students is lacking.

Web 2.0 technologies offer a variety of mediums for collaboration, engagement, creativity, and social interaction that all promote language learning. Researchers have explored the integration of Web 2.0 technologies with ELLs such as iPod Touch (Ciampa & Gallagher, 2013), wiki (Cabiness, 2013; Duran et al., 2012), vidcast (Green et al., 2014), iPad (Larabee et al., 2014), digital video (Bruce & Chiu, 2015), podcast (Gustad, 2014), and blog (Ertmer et al., 2012; Eteokleous-Grigoriou & Nisiforou, 2013; Shin, 2014) and reported results that reflected improved student achievement. However, a majority of the studies were conducted outside of the general education classroom, in a language learning environment with an English language specialist.

ELLs' academic day is spent mostly in mainstream classrooms and it is imperative that general education classroom teachers are prepared to meet the needs of the language learners. The goal of this study is to contribute to the knowledge base of what can be offered as support to ELLs and educators in the general education setting through the use of Web 2.0 technologies. Understanding general education teachers' experiences may generate strategies to compensate for what teacher preparation programs lack, may inform TPPs about possible strategies to integrate in their programs, may inform in-service opportunities, and advance the knowledge base regarding implementation of various Web 2.0 technologies with ELL populations. The research method most applicable for gathering information to reduce the gap in literature is discussed in chapter 3.

Chapter 3: Research Method

Introduction

Technology is used in a multitude of ways that allow people to communicate, learn, and connect within local and global communities, which involves the education arena. The purpose of this qualitative interview study was to better understand the experiences of general education classroom teachers who integrated Web 2.0 technologies such as blogs, digital storytelling, wikis, or videos in support of English proficiency and academic language acquisition of ELLs in New York City.

In this chapter, the rationale for the research design, role of the researcher, methodology, and data collection instruments are described. Procedures for selecting participants, data collection, data analysis, strategies to ensure trustworthiness, and ethical procedures are also addressed.

Research Questions

The following questions were explored to understand the experiences of general education classroom teachers with integrating Web 2.0 technologies for ELLs.

RQ1: What are general education classroom teachers' perceptions of the effectiveness of integrating Web 2.0 technologies to support the academic language acquisition of ELLs?

RQ2: What successes do general education teachers experience in integrating Web 2.0 technology to support language acquisition among ELLs?

RQ3: What challenges do general education teachers experience in integrating Web 2.0 technology to support language acquisition among ELLs?

RQ4: What do general education classroom teachers believe they need in order to integrate technology to support ELLs' academic language acquisition?

Rationale for Research Design

While ELL populations are increasing in schools nationwide, New York is one of the states on the East Coast that experienced over a 3% increase of ELLs in the public schools for the 2012-2013 school year (NCES, 2015). The public education system in New York State has undergone changes in different areas in an effort to improve teaching and learning, but there is still a need for reform. Student achievement in grades three through eight is measured by standardized tests in Math and English Language Arts (ELA), where students are expected to demonstrate proficiency. According to a report on failing schools in New York, in 2014, (New York State, 2015) 35.8% of students demonstrated Math proficiency and 31.4% demonstrated ELA proficiency, placing the state in a national ranking of 32nd in 4th and 8th grade math, and 20th in 4th and 8th grade ELA. Only 38% of high school graduates in 2014 were considered college ready (New York State, 2015).

The central concept of the study was to better understand Web 2.0 technology integration with ELLs in mainstream classrooms as supports for language acquisition. Web 2.0 technologies provide platforms such as blogs, wikis, and podcasts for ELLs to engage in interactive and collaborative learning opportunities. Through a myriad of Web 2.0 features such as video recording, audio recording, avatars, praise for accuracy, drag and drop, immediate feedback, and translation, ELLs can practice English language skills. The findings were viewed through the lens of TPACK.

According to Yin (2016), qualitative research focuses on exploring a problem or issue, and involves interpretations of people in their natural settings. A main characteristic of qualitative research is understanding the perspectives of people on a topic. Qualitative research methods provide researchers with opportunities to study participants in-depth in order to gain insight into the context of their experiences and explore how they make meaning of those experiences (Yin, 2016). Moustakas (1990) explained that a derivative of phenomenology research is heuristic research that is focused on self-discovery while investigating experiences of human participants. The process to become informed is a shared experience between the researcher and participants, who are viewed as co-researchers (Moustakas, 1990). A qualitative interview approach will be applied to the study along with a heuristic approach that supports my self-awareness of technology integration and working with ELLs while investigating the experiences of participants (Moustakas, 1990). Yin (2016)explained that a qualitative interview differs from a quantitative survey in that the researcher has opportunities to adjust the questioning during the interview process to fit the context. This approach helped investigate Web 2.0 technology integration as a support for ELLs in general education classrooms in an urban setting. The method of conducting qualitative interviews with participants enabled them to provide in-depth insight into their experiences of Web 2.0 technology integration with ELLs in general education classrooms.

Quantitative research approaches were not considered because the study was not based on identifying and analyzing quantified relationships between variables. Other

traditional research methodologies such as ethnography, phenomenology, narrative, grounded theory, and case study were considered but not selected due to the characteristics of each research approach. An ethnographic study focuses on a culture-sharing group with over 20 individuals, while phenomenology would focus on common lived experiences of individuals. Participants of the study did not necessarily share the same culture or lived experiences. A narrative would require a chronicle of the experiences and stories of an individual, which did not align with the goal of gathering data from a wide range of participants. The grounded theory approach would not have been appropriate because the purpose of the study did not aim to derive a new theory. Data collection for a case study requires a combination of documents, observations, and interviews that were not necessary or appropriate for the research questions.

Role of the Researcher

During the time of the study, my professional role was as an adjunct lecturer at one of the 24 institutions of higher education in a large metropolitan city in the northeastern United States. As an adjunct lecturer, I conducted seminars and classroom observations for graduate students in their practicum semester, who worked in public, independent, or charter schools.

The participants in this study were active educators who were not enrolled in the School of Education at my work site, and were employed by an independent, public, or charter school in an urban area in the northeast United States. I was not affiliated with the participants outside of my role as the researcher. In addition, I did not have an

administrative role or prior relationship with the intended participants for the study that might have been an influence on their participation status.

The experiences that I brought to this study helped to interpret the information I gathered from participants. Through this study, I hoped to gain insight into general education teachers' experiences associated with integrating Web 2.0 technologies with ELLs in the mainstream classroom. However, my beliefs related to the benefits of using technology to support ELLs opened the possibility of bias. To address researcher bias, I included member checks, peer review of codes and analysis, and a researcher journal where I recorded and reflected on my decisions regarding the processes of this study.

My role as the researcher was to serve as an instrument for data collection. Participants of the study did not have a personal or professional relationship with me prior to the study. During the interviews, I ensured that participants felt comfortable with the interview process and that a professional stance was maintained between the researcher and participants. As recommended by Yin (2016), the commencement and closure of interviews were considered carefully by extending courtesy with participants to establish an appropriate tone for the duration and completion of conversations. Before the interviews, I reminded participants that their input was voluntary, confidential, and would be recorded. During the semi-structured interviews, I asked open-ended questions and follow-up questions when appropriate to promote the two-way interactions (Yin, 2016, p. 142), while also allowing participants to have a final word as closure to the conversation.

Methodology

The methodology for the elements of this qualitative interview study included the following: participant selection and engagement, instrumentation, the procedure for data collection, and data analysis. The participants for the qualitative interview study consisted of third through fifth grade general education classroom teachers from urban settings in a large metropolitan area in the northeast United States, with a broad range of classroom experience.

According to Miles, Huberman, and Saldana (2014) and Maxwell (2013), it is typical to deliberately employ a small, purposeful sampling strategy for in-depth studies in an effort to gather relevant data that address the research questions. Miles et al. (2014) indicated that similarities and differences may still emerge among predetermined participants throughout the study. Patton (2002) further elaborated that although specific rules for determining sample size do not exist for qualitative studies, larger samples would usually lead to less in-depth data. While considering the problem, purpose, and research questions of this study, a sample size of six participants was appropriate for reaching a saturation point for the first round of interviews. After the data analysis of the first set of interviews, two participants were chosen for a second interview, which gave me the opportunity to explore new insights that emerged during data collection (Yin, 2016), thus enabled me to obtain richer, in-depth details to address the research questions. Another set of interviews was not needed for any further clarification with participants.

A purposeful sampling approach allowed me to select volunteers who met the criteria and were available to participate. Elementary schools in urban communities

within the northeast United States were target locations for potential recruitment. The criterion that were used for selecting participants were: (a) experience as a general education classroom teacher for at least one year in grades three through five, (b) experience using Web 2.0 technologies in the classroom to support ELLs, and (c) experience teaching English language learners within the elementary classroom environment.

A recruitment flyer (see Appendix A) containing brief information about the study, criteria for selection, request to forward the flyer, my phone number and e-mail, was used to solicit potential participants from elementary schools in the metropolitan northeast area. The flyer was distributed to potential participants at one elementary school in an urban community. After the wait time of two weeks, I was not contacted by any potential participants. I distributed the flyer to a second elementary school in an urban community, and waited an additional two weeks for responses. After not receiving any responses from either school, the flyer was distributed simultaneously to several potential participants at multiple elementary schools in urban communities. I further expanded the pool of potential participants to include public elementary schools, which required that I complete an IRB application with the public-school system. After IRB approval from the Department of Education, administrators recommended that I return to schools with my request after the holiday season. I distributed the flyers after the holidays and received my first respondents. Those who responded to the flyer with interest in participating were asked to pass on the recruitment flyer to other teachers they knew who met the criteria and might be interested in participating.

Considering the characteristics of qualitative research, the goal was to gather in-depth information from individuals. By recruiting from a broad range of experiences, I was able to focus on a small number of participants (Patton, 2002). Teachers who responded to the flyer received a letter of invitation and consent form explaining the study and time commitment (see Appendix B) via e-mail. Teachers who were interested in participating in the study responded by telephone and e-mail. Once they agreed to participate, a convenient time and location for in-person interviews and telephone interviews were scheduled verbally. Participants signed and returned the consent form before the first face-to-face or telephone interview began.

Instrumentation

Data collection consisted of a semi-structured interview protocol (see Appendix C) and a follow-up protocol (see Appendix D) that I created. The interview protocol included open-ended interview questions to avoid restricting the responses of the participants. This enabled participants to share in-depth about their experiences with integrating Web 2.0 technologies with ELLs. The semi-structured nature of the interviews also allowed me to generate additional questions that arose from the initial responses provided by participants and to probe for richer responses.

The data from the first set of interviews were coded and a new set of follow-up questions were created for a sub-sample of participants who demonstrated a higher level of expertise in understanding and experience with Web 2.0 integration. A second round of interviews was conducted with two of the participants in order to identify deeper and richer information about their experiences. Participants were given the option of a

member check after each interview, as I emailed a transcript of their interviews. A third round of interviews was not needed for clarification or reflections from participants.

Data Collection

After IRB approval (see Appendix B), I began the recruitment procedures with an on-site visit to one school in an urban community to distribute a flyer to potential participants. Those who responded to the flyer were asked to pass on the recruitment flyer to other teachers they knew who met the criteria and might be interested in participating. Recruitment of teachers was based on their interest in the study and responses to the flyer. The flyer included my phone number and e-mail. When no responses were received after several attempts at distribution in private schools, IRB approval was sought from the public-school system Department of Education (DOE) and once approved (Appendix F) additional schools were contacted and flyers distributed.

Teachers indicated interest in participating by contacting me by phone or email. During the wait time for IRB approval from DOE, two teachers from different private schools contacted me to express interest in volunteering for the study. Following the contacts from two private school teachers, four teachers from different public schools contacted me to express interest in volunteering for the study. No other teachers from private or public schools contacted me. Once teachers made contact with me, they received a letter of invitation and consent form (see Appendix B) via e-mail. They were asked to review the materials, and respond via e-mail or phone if they wished to participate. I then scheduled interviews at times and locations that were convenient to the participants and they signed the consent form before I began the first interview.

Through this qualitative interview approach, data was collected through interviews with general education teachers in grades three through five. Interviews were conducted with six participants with follow up interviews with a subgroup of two participants. A third interview was not needed for additional data or clarification. Interviewing for data collection involved preparing a research protocol that aided in the convergence of data that promoted fluidity (Yin, 2016).

As data are collected during interviews, there will be a point in the process when participants reveal no new data and that will be considered the saturation point (Mason, 2010). Flexibility with the number of participants was a precaution to prepare for participants who may later decide to withdraw from the study, and to reach a saturation point of the data. Although it is typical to have a small sample size for qualitative studies, definitive rules for sample size are not associated with qualitative studies (Patton, 2002). Focusing on a small sample enabled me to explore the depth of Web 2.0 technology integration as opposed to a large sample that would have limited the depth of data collection.

An appropriate range for the number of participants needed for this qualitative interview study was initially planned for 10 to 15 for the initial interview. However, the final number of participants after multiple recruitment attempts was six. All volunteers were asked to participate in an initial interview. After the initial interview, analysis of the data led to identifying a sub-sample of participants who demonstrated through their responses a more extensive level of experience with integrating Web 2.0 technologies, in comparison to all participants. This sub-sample consisted of two participants who were

invited to a second follow-up interview. Questions for the second interview were customized to fit the situation with each participant, as recommended by Yin (2016) congruent to the analysis of the initial interview data. After the analysis of the first and second sets of interviews it was determined that a third round of interviews was not needed for further clarification.

The interviews were audio recorded using a digital recorder and Audacity software on my computer, and transcribed by me before analysis. Participants were provided with a transcript of the initial interview via e-mail from a secured network for voluntary member check. During the follow-up interview, questions were structured to provide participants with the opportunity to contribute additional information for the study.

Data were coded manually and analyzed for emerging themes. My decision to hand-code the data provided the ability to more fully engage with tangible data and yielded to my learning style. Additional teachers did not contact me after the initial sample of six was identified.

Data Analysis

Miles, Huberman ,and Saldaña (2014) advised that data collection and analysis should occur simultaneously. Benefits of employing this strategy are the opportunity to engage in ongoing analysis and modification of data collection strategies. Multiple steps for coding were applied to the data. A combination of key variables identified by me based on the conceptual framework and research questions, allowed me to generate a

priori codes before I collected data, with the understanding that inductive codes may also emerge during data collection (Miles et al., 2014).

When preparing to analyze data, codes were used as prompts to reflect deeply on meanings of the data (Miles et al., 2014). Researchers can apply multiple approaches for coding data such as, provisional coding, in vivo coding, and descriptive coding (Miles et al., 2014) and all were used for this study. Provisional coding was employed to sort through the data and prepare for meaningful analysis. Another approach that I used for coding was the selection of participants' language used as short phrases or words, a strategy Miles et al. (2014) referred to as in vivo coding. In vivo coding is the practice of assigning a label to a section of data, such as an interview transcript, using a word or short phrase taken from that section of the data. Descriptive coding is a strategy that I used to condense patterns in the data. Miles et al. (2014) explained that this strategy is a foundation approach to coding that involves summarizing passages of the data in short phrases or a word to label the basic topic.

The alignment of research questions with analysis strategies was ensured by referring to the conceptual framework, the research problem, and the purpose of the study. For this study, interview questions led to responses for all of the research questions. A software program was not used for data analysis; text was hand-coded so that I would have tangible data to manipulate. After the coding process was completed, I employed a systematic approach of data analysis and interpretation. The systematic approach involved arrangement of codes into categories, followed by identification of themes that may emerged from the categories. Themes were interpreted and discussed to

address the research questions. There were no discrepant cases to be reported in the discussion of findings.

Trustworthiness

To ensure the quality of this study, issues of trustworthiness were addressed through various strategies, some of which overlapped. The overall credibility of the study was enhanced by addressing several key elements. As recommended by Patton (2002), issues of trustworthiness such as credibility, transferability, dependability, and confirmability were addressed through rigorous field procedures along with thick descriptions for reporting results. Participants were identified by meeting the criteria to be included in the study. The initial interview with all participants served as the primary set of data to answer the research questions. After member checking and analysis of the responses to interview questions, a sub-sample of participants from the initial interviews were identified as "experts" based on the extensiveness of their use of technology with ELLs compared to others in the initial group of respondents. A second interview with the sub-sample served as the second set of data. While the initial interviews served as the primary source for addressing the main research questions, the second set of interviews with those identified as "experts" provided deeper levels of information and enriched the data. Analysis of the data was measured against TPACK as the conceptual framework of the study in order to generate a more meaningful report on the experiences of general education teachers integrating Web 2.0 technologies with ELLs. When the three main domains of the technological, pedagogical, content knowledge of teachers (TPACK)

model are integrated educators are better able to demonstrate effective teaching that involves technology (Harris et al., 2009).

Miles et al., 2014) suggested several confirmability practices to consider in order to be explicit about biases associated with the study that include a description of the methods and procedures employed for the study, as well as the sequence for data collection, analysis, and reporting. Confirmability of this study involved the design of a traditional qualitative method with an interview approach. Strategies to establish confirmability of this study included explicitly detailed descriptions of methods and procedures that clearly identified the processes for data collection, data analysis, reporting of the conclusions, and retention of the data for reanalysis, if needed (Miles et al., 2014). Member checking occurred with participants after each interview in which respondents participated. In addition, previous studies included in the literature review section also added to confirmability.

The study was described in full detail to convey the context, which may be audited, if needed. Through thick, rich descriptions of the context and sample, enough information was provided to address transferability of the methods and strategies used for this study. Reflexivity served to assist in addressing bias throughout the study. Denzin (as cited in Glesne, 2006), described reflexivity as concerns the researcher has about the actual research process, similar to the way in which the researcher is concerned about data collection. Reflexivity is a strategy that allowed me to discuss my role in the study regarding my background, the influence it may have on interpreting the data, and personal gain. Journaling was my first step in practicing reflexivity where I recorded my

thoughts and concerns with different aspects of the study such as issues with recruiting participants and the need to modify the expectation of face-to-face interviews. The second step was to consult with my committee members regarding my thoughts and concerns before I made necessary adjustments.

Consistency with the process of the study relates to what has been identified as reliability, dependability, or auditability (Miles et al., 2014). Dependability was established through clear research questions that aligned with the design of the study including the conceptual framework, the data collection process with a range of respondents that included a process of coding and recoding, detailed descriptions of the data collection and analysis processes, explicitly defined researcher role, and reflective journaling. Through thick, rich descriptions of the context and sample, the necessary information for transferability was included to enable other researchers to determine appropriate settings and context for comparison or to emulate strategies from this study.

Ethical Procedures

To be cognizant of the protection of human rights, I completed a web-based training course titled “Protecting Human Research Participants” by the National Institutes of Health (NIH) and received a certificate of completion. Before I began the study, I submitted an application to Walden University’s Institutional Review Board (IRB) for approval and once approved, I requested permission from the principal of the school to gain access to teachers. Adjustments were made to the proposal in order to receive approval from the IRB before I began the study. After I received approval from the IRB (see Appendix B), I notified the principal of approval and distributed recruitment flyers in

the school asking for volunteers. Volunteers were provided with a consent form via e-mail for their review, with explanations of their rights included. The consent form (see Appendix B) included information regarding: (a) a description of the study and their voluntary participation, (b) participants' right to remove themselves from the study at any time without any consequences, (c) protection of confidentiality, (d) the risks and benefits, and (e) contact information for myself and a Walden University representative.

An invitation to join the study was e-mailed to teachers who were interested and met the criteria. At the time of the first interview, I obtained a signed consent form from the teachers once they made a decision to participate. At the commencement of data collection activities, participants were reminded of their consent to voluntary participation without any personal gains, and the right to remove themselves from the study at any time without consequences. A minimal risk involved with participation in this study was the potential for participants to become upset due to the process of recalling past experiences from memory. The minimal risk did not occur with any of the participants.

Confidentiality was exercised for the treatment of data by: (a) the use of pseudonyms in the interview transcripts and report of the study, (b) securing hand written data, audiotapes, and transcripts under lock and key when not being used, (c) using a password protected e-mail address on a secured network, and (d) storing computerized documents under password protection and on an external hard drive that is kept in a locked compartment when not being used. I was the only one who had access to all of the data. Participants had access to transcripts of their interview for member check that was

sent to them via a password protected e-mail. Participants did not exit the study before completion. All data was secured and will be protected for at least five years, as required by the university, before being destroyed.

Summary

In this chapter, I presented the research questions along with the rationale for the research design of a qualitative interview study approach to better understand the experiences of general education classroom teachers integrating Web 2.0 technologies in support of ELLs. I described my role as the researcher and the methodology of the study. Instrumentation, data collection, data analysis, trustworthiness and ethical procedures were also discussed.

Chapter 4: Results

The purpose of this qualitative interview study was to better understand the experiences of general education classroom teachers as they integrated Web 2.0 tools in support of English proficiency and academic language acquisition for ELLs. The study was based on the following research questions:

RQ1: What are general education classroom teachers' perceptions of the effectiveness of integrating Web 2.0 technologies to support the academic language acquisition of ELLs?

RQ2: What successes do general education teachers experience in integrating Web 2.0 technology to support language acquisition among ELLs?

RQ3: What challenges do general education teachers experience in integrating Web 2.0 technology to support language acquisition among ELLs?

RQ4: What do general education classroom teachers believe they need in order to integrate technology to support ELLs' academic language acquisition?

This chapter consists of descriptions of the setting, participant demographics, data collection and data analysis procedures, and evidence of trustworthiness. Results of the study are categorized by themes that emerged from the interviews with participants, followed by a summary of the chapter.

Setting

Through qualitative research methods, researchers have opportunities to study participants in-depth to gain insight into the context of their experiences, discover how they make meaning of those experiences, and explore interpretations of people in their

natural settings (Yin, 2016). All participants were members of general education elementary classrooms in grades three through five and were given pseudonyms for the purposes of this study. The classroom sizes ranged from 22 to 30 students with populations of non-native English speaking students and native English-speaking students. Dana and Daisy taught in a private school where each of them was the only teacher in the class. Sylvia taught in a public school and was the only teacher in the class. Beth and Zaria were the lead instructional teachers in different public schools working alongside co-teachers. The co-teachers were not willing to participate in the study. Virginia was a co-teacher in a public school. The focus of the research was on the perceptions of general education classroom teachers rather than the act of integrating Web 2.0 technologies in real time. Responses from participants influenced the identification of themes that emerged.

The first round of interviews for this research varied based on the availability and preference of participants and were conducted via a reserved room in a public library, the lobby of a restaurant, and the telephone. The second round of interviews occurred via telephone. All interviews were audio recorded.

Demographics

All participants lived in New York City and taught in elementary schools located in urban communities. For confidential purposes, I referred to each participant by pseudonyms that are included in Table 1 with the demographic information for each participant. All six participants were female with a range of 8-30 years teaching experience in either public settings, private settings, or both public and private settings.

Dana and Daisy had experiences in private schools, Virginia had experiences in a Catholic school, and all participants had experiences in public schools. At the time of data collection, Dana and Daisy were teaching in a private school while Beth, Sylvia, Zaria, and Virginia were teaching in public schools. Of the six participants, one taught third grade, two participants taught fourth grade, and three taught fifth grade. All participants had a diverse classroom population with native and non-native English speaking students.

Table 1

Demographics: Participating General Education Classroom Teachers

	Pseudonym	Gender	Years of Teaching	School Setting
Participant 1	Dana	F	25	Private & Public
Participant 2	Beth	F	30	Public
Participant 3	Sylvia	F	17	Public
Participant 4	Daisy	F	12	Private &
Participant 5	Zaria	F	8	Public
Participant 6	Virginia	F	12	Public Catholic & Public

Data Collection

Recruitment of participants was a longer process than anticipated, taking approximately 2½ months. In addition, the number of participants was less than anticipated. Once I obtained IRB approval from Walden University (see Appendix B), I distributed the recruitment flyer (see Appendix A) to potential participants at one elementary school in an urban community. After a wait time of 1 week, I did not receive an indication of interest from potential participants. I distributed the flyer to a second elementary school in the community, and waited 2 weeks for responses. When I did not receive responses after a total of 3 weeks, I distributed the flyer simultaneously to several potential elementary schools in urban communities. I further expanded the pool of potential participants to include public elementary schools, which required that I completed an IRB application with the public school system. During the wait time for IRB approval from NYCDOE, only two individuals from private schools contacted me to express interest in participating and they met the criteria. I did not receive any other responses from individuals wishing to participate. After IRB approval #1507 from the NYCDOE (see Appendix F), approximately 4 weeks later, administrators recommended that I return to them with my request after the holiday season, which I did.

I reestablished communication with schools after the holidays and contacted additional schools to distribute the recruitment flyer. I secured one participant to begin the interview process and confirmed that she met the criteria. Dana signed the Letter of Invitation and Consent Form (see Appendix B) prior to the first interview that occurred in a reserved room in a public library. I recorded the audio with Audacity software on my

computer and a digital audio recorder as backup. The semi-structured interview protocol (see Appendix C) for round one consisted of 18 open-ended questions. The interview lasted about 1 hour. At the close of the interview, I informed Dana I would email a transcript of the interview for member checking. I asked Dana to pass on the recruitment flyer to other teachers who met the criteria and might be interested in participating. I provided a paper copy of the recruitment flyer. When sent the transcript, Dana did not communicate any changes or additional information to her responses, at which point I proceeded to hand-code the data with a priori codes, in vivo codes, and descriptive codes.

Four interviews were conducted face-to-face and I conducted two interviews via telephone at the request of two participants. As I secured five other participants for the study through e-mail or telephone, the locations for the first round of interviews varied based on the availability and preference of participants. I interviewed two other participants in a reserved room in a public library, one participant in the lobby of a restaurant, and two participants via telephone. All participants confirmed that they met the criteria and they signed the Letter of Invitation and Consent Form (see Appendix B) prior to the first interview. The two participants that I interviewed via telephone sent an electronic signature on the consent form via e-mail, through a secured network before the interview began. I recorded all interviews using Audacity software and a digital audio recorder. At the end of each interview, I informed participants that I would e-mail a transcript of the interview for member check and asked them to pass on the recruitment flyer to other teachers who met the criteria and might be interested in participating. I provided each participant with a paper copy of the recruitment flyer. When sent the

transcripts, participants did not communicate any changes or additional information to their responses so I proceeded to hand-code the data in between interviews. My decision to hand-code the data provided the ability to fully engage with tangible data and yielded to my learning style.

After completing all the round one interviews with six participants, I identified a sub-sample of "experts" (2 participants). "Experts" were those participants who described more experiences in using Web 2.0 technology with ELLs. I prepared 17 additional open-ended questions (see Appendix D) to interview the "experts" a second time to get a more in-depth understanding of how they used these technologies. I contacted two sub-sample participants via telephone to schedule the second round of interviews to gather richer data about their experiences with integrating Web 2.0 technologies with ELLs. To meet the availability and convenience of the participants, I conducted the second round of interviews via telephone. Each interview lasted less than one hour and I recorded with Audacity software and a digital recorder. I informed participants that I would e-mail the transcript for member check. After receipt, participants did not communicate any discrepancies in the transcripts so I proceeded to hand-code the data. I gained sufficient information from the "experts" and did not require a follow up interview for additional data. I completed data collection over the course of 2 months.

Data Analysis

Data collection and data analysis occurred simultaneously for the benefit of engaging in ongoing analysis and modifying data collection strategies, as recommended by Miles et al. (2014). I applied multiple steps for coding that included a priori,

provisional, in vivo, and descriptive codes, while I prepared to analyze data. I used the codes as prompts to reflect deeply on meanings of the data (Miles et al., 2014). The strategy for data analysis is described in this section.

Based on the conceptual framework and research questions, I created a list of a priori codes for each interview question before I initiated data collection. I designed a table using Microsoft Word where I grouped interview questions by relevance to each of the four research questions. Four questions were related to participant demographics. The text of each participant's responses was color coded and grouped under each interview question. Once I began coding, the process was not linear.

While I listened to recordings of the interviews, I followed along on the Word document of the transcripts line by line, typed a priori codes when possible, and generated provisional coding if the a priori codes did not accurately capture the responses. I highlighted the provisional codes line by line or by long phrases. As I transcribed other interviews, I repeated the process of categorizing the responses to interview questions on the table I created in Microsoft Word and applied a priori and provisional coding.

After I completed the interviews from round one, I printed a paper copy of the table I created in Microsoft Word with all the responses from all the participants on one document. I highlighted the codes and transferred each code for each research question onto index cards. The index cards were grouped in the same manner as the table I created. This strategy allowed me to visualize patterns in the data, as I was able to physically lay out the data. I quantified the codes that were applied to the responses for each interview

question and considered how to revise codes that were used less frequent by referring to the complete response for which the code was applied.

When I listened to the recordings of the interviews again, I used the paper copy of the Word document and I applied in vivo coding when possible by highlighting short phrases or words directly from participants' language. I selected words or phrases that stood out among other responses and codes. I considered how in vivo coding would be applicable to the codes that I used less frequently for each question. As I recognized patterns in the data, I used descriptive codes to condense the patterns. The coding process enabled me to create categories in preparation of analysis that led to identification of themes. Codes, categories, and themes are presented in Appendix E. Overall themes that emerged from the data provided responses to the research questions and analyses were grouped by research questions. I arranged the categories and themes that emerged by research questions depicted in Figure 2.

Evidence of Trustworthiness

To ensure the quality of this study, I addressed issues of trustworthiness such as credibility, transferability, dependability, and confirmability through various strategies that overlapped. Acknowledgement of researcher bias prompted me to take precautions to limit bias that could have influenced the outcomes of the study. Throughout the research process, I kept a journal as a way of practicing reflexivity, where I documented my thoughts about different challenges and decisions regarding recruitment, interviews, and working with the data. I shared concerns with my committee member and adjusted

different processes when necessary. In addition, I described my role in the study and my background in relation to what may influence my interpretation of the data.

Credibility

Maxwell (2013) stated that the accuracy of explanations, interpretations, descriptions, and conclusions are the different aspects of a study related to credibility. Credibility of the study was enhanced through opportunities for participants to engage in member checking of transcripts, the use of audio recordings for each interview that I used to crosscheck the transcripts and a second round of interviews with "experts." I also engaged in simultaneous data collection and data analysis that allowed me to anticipate follow-up questions for successive interviews and to generate questions for round two interviews with "experts." Simultaneous data collection and data analysis from the interviews and member checking allowed me to triangulate the data, thus added to the credibility of the study.

Transferability

Thick descriptions for reporting results and rigorous field procedures are strategies recommended by Patton (2002) that I employed. I provided sufficient information through thick, rich descriptions of the methods, strategies, context, and participants that added to the transferability of this research. Based on the information provided such as the demographics of participants, location, and context, other researchers can determine how to emulate strategies from this study or determine the criteria for designing a study for comparison. Transferability was enhanced through thick,

rich descriptions of the context and sample for the purpose of comparing the sample to known demographic data.

Dependability

Dependability was addressed with several strategies that involved the alignment of clear research questions with the conceptual framework of TPACK and the design of the study. I frequently referenced the IRB application and remained close within the parameters of the approved procedures. The data collection and coding processes were addressed in a rigorous manner that I repeated with each interview. I applied a code-recode strategy and included checks for bias through peer review. Consistency with addressing the various issues of trustworthiness increased the dependability of the study (Miles et al., 2004). Triangulation of data from multiple respondents also increased dependability.

Confirmability

As planned, I addressed confirmability through the design of a traditional qualitative method based on interviews and explicitly described the methods and procedures of the research. I invited participants to engage in member checks of the interview transcripts and followed a rigorous process in preparation for data analysis and reporting results. Confirmability also was established through thick, rich descriptions of the methods and procedures and of the findings,

Bias

Reflexivity was a strategy that allowed me to address bias by discussing my role in the study regarding my background, the influence it had on interpreting the data, and

personal gain. This was established by maintaining a researcher journal for recording my thoughts and concerns about the study. Consulting with committee members to actively participate in debriefing sessions and following through with necessary adjustments, as well as maintaining open communication with participants to provide complete answers to their questions, also addressed reflexivity. Bias was addressed through peer review of transcripts and coding for data analysis.

Results

As discussed in Chapter 2, the academic achievement gap between ELLs and non-ELLs can potentially increase due to the growing population across the United States (National Center for Education Statistics, 2015). In New York, ELLs' academic deficits are reflected through their underperformance on standardized ELA and Mathematics assessments (EngageNY, 2014). Researchers determined that literacy education is related to ELLs ability to attain academic achievement that can be supported with the integration of Web 2.0 technologies (Baecher et al., 2013; Gowdy, 2015; Liu et al.,2014a; Lux & Lux, 2015; Paugh, 2015; Safar, 2015). Technology integration of Web 2.0 technologies that support ELLs was relevant to the research questions regarding the experiences of general education teachers with such technologies applied in a general education setting. I aligned interview questions with each research question and the data analysis led to responses to each research question. Results of the study directly relate to the four research questions outlined in Chapters 1 and 3. I used the research questions to organize and discuss the findings of the study in this section. Research questions and themes were captured (see Figure 2).

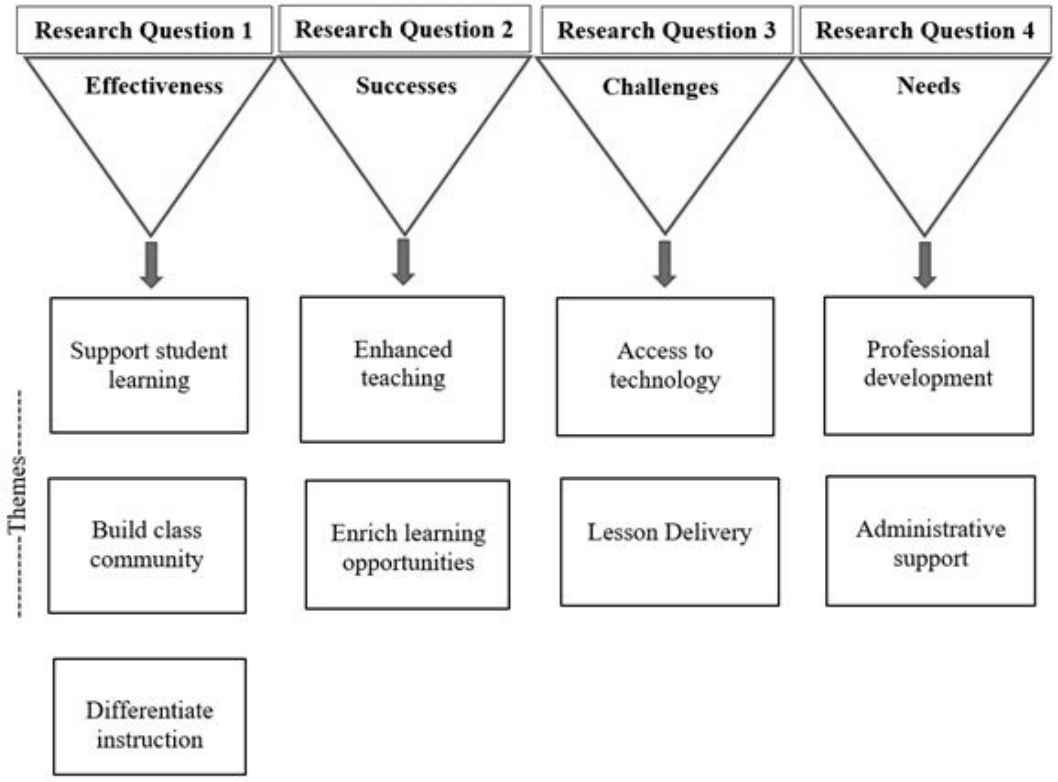

Figure 2. Research questions and themes. This is a representation of the themes that emerged from the data for each research question regarding Web 2.0 technology integration with ELLs.

Research Question 1: Effectiveness

The first research question was framed as follows: *What are general education classroom teachers' perceptions of the effectiveness of integrating Web 2.0 technologies to support the academic language acquisition of English language learners?* The question explored teachers' perceptions of the effectiveness of integrating Web 2.0 technologies and results revealed that participants perceived Web 2.0 technologies were effective for supporting student learning, building class community, and differentiating instruction. Several categories emerged from the data that led to identification of each

theme. Participants shared strategies they believed were more or less effective in helping ELLs acquire academic language, and the evidence they considered when they determined the success of integrating strategies. Their overall perceptions were based on the use of strategies, looking at evidence, and taking action by using technology. The following excerpts emphasize the themes that emerged to answer the first research question.

Theme 1: Support Student Learning

Participants shared that integrating Web 2.0 technologies was effective for supporting student learning. Categories that led to identification of the first theme, supporting student learning, were: (a) build background knowledge, (b) multimedia use, and (c) pacing. Student learning was supported through the integration of Web 2.0 technologies by building background knowledge of ELLs that focused on vocabulary. One participant, Beth, emphasized the need to focus on background knowledge, not only because of the language but also because of the possible lack of exposure due to students' ages. Beth stated:

> So, because I know that they are learning the English language, I tend to use a lot of pictures with them. I do a lot of background knowledge and background building with them because, not only just for them but for the whole entire class, because they are only what 8, 9, 10 years old. So, they don't really have a lot of background knowledge.

Zaria spoke about addressing vocabulary that builds background knowledge at the beginning of her lessons. She frequently used the Smartboard as a method for providing the necessary background knowledge to students. Zaria stated:

> We also do a lot of picture support on the doc [document] cam [camera]. The frame of the motivation, which is how we start our content lesson, is often a video clip or some sort of tour of a museum or an image. A lot of stuff is presented on the board as a vehicle to get the vocabulary and the images across.

All participants further discussed building background knowledge that included vocabulary in conjunction with the use of multimedia. Multimedia use contributed to strategies for supporting student learning. Beth was one of the experts on technology integration with ELLs and was in her 30th year of teaching. She explained the influence technology had on language acquisition for ELLs and how multimedia supported student learning. Beth acknowledged the relationship between using multimedia to provide audio and visual models and students' use of language. She also pointed out the lack of visual supports as students move into higher grade levels. Beth stated:

> A lot of positive things. Visuals are there, a lot are visual learners. In kindergarten and lower grades, they have a lot of picture books. As they get older, visuals get diminished. With technology, it's a big plus. It's a good thing, really does help, and the sound too. When they actually hear how things are read like with a shared reading, they can hear, internalize how it should actually sound and helps with intonation.

Zaria, who has taught for 8 years, discussed the benefits of using Google Drive as multimedia with her students during instruction to support student learning. As a way of diverting from the traditional method of reading to the class, Zaria shared that it was better to present the information electronically. She stated:

> I think that any way that they can have it in front of them and follow along as the teacher is reading keeps them more focused. So, even with putting it in the PowerPoint on Google Drive, I've seen a tremendous increase in the last couple weeks alone.

Daisy discussed her use of the Smartboard for supporting student learning. Her description related to vocabulary building with multimedia as a routine instructional practice. She said, "During our weekly lessons, I usually show the vocabulary words on the Smartboard and insert images from online to associate with the vocabulary word."

Similar to Zaria, Dana also elaborated on using Google Drive as multimedia to support language development by ELLs. Students could gather information that would increase their background knowledge on a topic. The benefits of using multimedia were a time saver and offered convenience to the students. Dana explained that she provided multiple links to various websites as specific resources for students that targeted the learning task. She stated:

> Instead of students having to start from scratch, we're able to share the documents and it included the links they would need to get right to the explanation that they needed. So, there wasn't the need to sift through lots of information, quite frankly, language that would be difficult for many of the students. So, it was another way

> to share information to all students and at the same time we used quite a few different websites.

The use of multimedia enabled participants to build background knowledge and pace lessons accordingly for timing and understanding. Pacing lessons was a strategy participants discussed was necessary to support student learning and help ELLs stay on task with their learning. Sylvia, who had 17 years of teaching behind her, expressed the necessity of being able to monitor and pace student use of the technology so she could support their learning almost instantly. While some students could be given a multi-step task, Sylvia shared that it was better to break down a task for ELLs into single steps. She stated:

> I monitor where you can see what everyone is doing and you can kind of see well, Charlie's over here. You're a little off course. If they need step by step by step process you can't give them a broad task, make a brochure. You've got to say go to the start menu, go to all programs, and they have to have a step by step by step. That way whenever something that they didn't get, you go back and you tell them look back and see where you were. What did you do? What didn't you do? And then you'll see where you made your error.

Daisy, who had been teaching for almost 12 years, talked about using Web 2.0 technologies to pace student learning. She mentioned interactive games from various websites, a class blog, and the Smartboard to pace student learning outside of the classroom as well. Daisy stated, "I think modeling and pacing the students really helped.

Then, giving them some time to try on their own or with someone else's help when they were home."

Zaria discussed her use of multimedia to pace lessons as a way of promoting understanding. She explained her daily routine for supporting student learning with PowerPoint presentations on individual iPads. Zaria stated:

> When I pull groups usually to the back of the room, I have a couple of iPads at my disposal. So, I put the whole lesson on there so they can click along on the PowerPoint with me and that way they have the questions and tools in front of them.

Zaria shared another example of using technology to pace ELLs during reading lessons with the use of a tablet. She said, "So they're holding the tablet and they could just slide through the slides. It's easier for them to hold on to than me reading an article to them."

Dana, a 25-year veteran teacher, stressed the importance of pacing students and that when an appropriate pace was established, student learning was supported. Similar to Sylvia's thoughts about pacing, Dana also discussed breaking down multi-step directions to make the language and task clear to ELLs, especially when they used Google Suite. She stated:

> But we found that slowing down the pace for everyone is beneficial to everyone. So, for example, if there's something that has multi step directions, instead of just handing everything all at once and going through all the directions, I might scaffold that, unroll it one level at a time. What's the first thing we're all going to do? Even in just giving the initial directions, even before giving out materials.

> Often, so that they're not distracted giving that instruction and making sure that everyone is on the same page and then just revealing one step at a time. We do a lot with using the Google Suite.

Participants reported different strategies that were related to building background knowledge, the use of multimedia for providing images and audio, and pacing lessons. Data revealed that student learning was further supported through efforts of a class community.

Theme 2: Build Class Community

Participants reported that incorporating Web 2.0 technologies to support language acquisition by ELLs was effective for building a class community. Categories that led to identification of the second theme, build class community, were engagement and peer support.

Participants reported engagement as an essential component for building class community. The use of Web 2.0 technologies was effective for engaging students in their learning as reported by participants.

When referring to the effectiveness of integrating Web 2.0, Zaria who has taught for 8 years stated that, "It's just a really easy way to engage more kids, especially with the department of education; engagement is such a big focus."

Beth discussed the differences between the types of technology she used with her students when she considered ways to keep students engaged in the class community. She also shared her perception of students when given a technology-based task using the Smartboard. Beth stated:

> The ones that are more effective are the interactive. Those interactive where whatever the website is, as long as it's interactive because they like to touch. Call them up to move something from one place. You really get their attention and they really get engaged in that way. So, the more interactive ones. If it's not as interactive it can be a little challenging because I think they probably get bored just sitting there looking at something not moving.

Sylvia explained about a time when she incorporated Web 2.0 technology to engage students in the class community. Students were placed on teams as they prepared to play an interactive math game online against each other. Sylvia expressed the sense of community she witnessed among the students. Sylvia stated:

> I had the kids have the laptops and type in interactive gallon games, interactive measurement games. We played it as a class. First, they went on with the laptops and then we put it up on the Smartboard and gave them each the opportunity to go up and choose how many pints were in a gallon and it was timed. They would go on and they were crazy about it, trying to get it finished. We had teams so they wanted to beat the other team. How many minutes can you do it quicker than the other team? So that made them excited. What it does is that it carried over and the next day they came and the kids were like can we play it can we play can we play?

Dana shared about a strategy she used to engage her students in the class community that has been effective with the use of Web 2.0 technology. She revealed that students have

one-to-one Mac laptops in her class and talked about using laptops and iPads to promote engagement during lessons. Dana said:

> When we're doing our interactive lessons using iPads and laptops with our airplay, and we also have the interactive software, the students can come up and simply touch on the board or write on the board. We actually combine sometimes dry erase white boards; every student has one. With one student going up and using the interactive software, all are still benefiting because at their seat with their whiteboard, they're working through the same problems and maybe changing some of their thinking, or they're settling with what they're seeing the student who's at the board doing.

The examples shared by participants revealed that student engagement promoted active learners who played an essential role in peer support while building class community. The use of Web 2.0 technologies was effective for promoting peer support that participants expressed was as a component of building a class community. Beth shared her strategy of partnering students to provide peer support to ELLs while engaging in class discussions. She stated:

> I also put them together with children who are stronger in the language. So, when we have classroom discussions, we don't do any Spanish speaking so to speak, and so they talk with children who are really strong in English.

Dana, one of the experts who was interviewed a second time, stressed the importance of building a class community. She discussed multiple examples of how and why integration of Web 2.0 technologies was effective for promoting peer support. She

emphasized strategic seat assignments for peer support when she prepared to integrate Web 2.0 technologies to boost academic language acquisition by ELLs. Dana stated:

> It is an environment where it's not necessary to always ask the teacher. Your first step is to check in with the person next to you. So, seating is really important. Partnering is really important. We are very careful to seat students in a way that there's a student with the patience and maturity to support the person next to them without giving them answers. They're just making sure they're on the right screen or following the directions carefully.

Dana further reported the influences of technology integration on the language acquisition by ELLs who she strategically seated with peers to provide assistance when needed. She explained the benefits of partnering students when they used Google Suite because they had opportunities to teach and learn. Dana said:

> They rely on their strength while learning from the other students. If it's something that's a little more challenging for them, the students are actually understanding who needs what type of support because they've been together for a few months now and it's a safe space. Google Suite, because there's more to learn in terms of streamlining the process of getting to things. It's more interesting and engaging. That student has to explain at a level that proves a higher level of understanding. Everybody wins, it's a win-win situation.

Sylvia discussed strategies she employed to prepare students for peer support. She discussed surveying students to establish their knowledge base and partnering students based on abilities. Sylvia stated:

> Find out where they are as far as technology. Maybe you could do a survey to find out exactly what it is that they know. You can also group them. Some students are a little bit more advanced than others. The ones that are more advanced, once you can give them an assignment you would be able to have a student that's a little bit more knowledgeable to help other students because you are getting around the classroom is a lot.

Dana, who has stressed the benefits of creating a supportive class community, shared an example of the benefits of peer partners. Her overall goal for establishing peer support was for students to learn from each other and develop confidence in their learning. Dana stated:

> One of the main goals of collaboration for students in general is that students can benefit from the strength of others and have the opportunity to help assert themselves when they are feeling that it is an area of strength for them. I would say that the goal is that it would be learning for all students, because while there's a student who's struggling with one thing and another student who is strong across the board, there are always opportunities for learning when you partner children and when you put them in small groups.

Participants reported different strategies that were related to engagement and peer support. Data revealed that student engagement promoted active learners who played an essential role in peer support while building a class community. Evidence of the abilities of the learners in the class community led participants to discuss differentiated instruction.

Theme 3: Differentiate Instruction

Participants reported that integrating Web 2.0 technologies was effective for differentiating instruction. Information shared by participants was categorized as monitoring. The evidence that participants claimed determined the success or lack of success were based on assessments, tracking features embedded in programs, and student achievement. Two participants, Virginia and Beth, mentioned referring specifically to the standards as evidence of the effectiveness of integrating Web 2.0 to support ELLs and determining the need to differentiate instruction.

Virginia discussed the Go Math program that has a technology component that she incorporated with her students. The features of Go Math tracks student progress that is measured against the Common Core Standards, and enables teachers to move students to different levels to receive appropriate practice. Virginia explained the following:

> We can go in there and we change it according to the child's level. Based on the Go Math level, it's based on the common core and if the child is not working on grade level then, you have to assign them a level like fourth grade, from fifth grade to fourth grade. This cannot give you the good measurement of that child's success at the grade 5 level, but it will give you the success of the child on fourth grade level.

Beth shared about the information she gained from using myOn, i-Ready, and the interactive features of the Smartboard with her students as a way of integrating Web 2.0 technologies. She elaborated on the ability to monitor and recognize student achievement

with the aid of Web 2.0 technologies. The use of Web 2.0 technologies with students influenced Beth's decisions for differentiated instruction that supported ELLs. She stated:

> myOn and i-Ready are usually at their level, very child friendly so they're able to manage. For myOn and i-Ready, you can go on and see what they've done and the length of time they've spent. I see because of the improvement. They're able to master certain standards, certain skills. Look at where they began, how, and the way they participate. It helps me in my reflection to either take it to the next level or remain in that same specific skill longer to support. It affects my planning process.

Dana discussed the features of one Web 2.0 technology, the IXL Learning platform, that enabled her to monitor student progress. She discussed the benefits of being able to track student progress, isolate the challenges, and prepare further instruction. Dana said:

> On my screen, I can see specific questions that have been missed by each student. So, I can say huh I wonder why this student missed this question. Is it the skill? Was it understanding? And being able to go back and specifically target those areas, reinforce those skills for a second and to see where the breakdown occurred. So, being able to pluck that out whether it's creating a mini lesson, give some one-on-one support, create another activity to reinforce learning.

Sylvia expressed a main point about using Web 2.0 technologies with ELLs to differentiate instruction. Sylvia used the Edmodo platform with her students and discussed the flexibility in ways students were able to demonstrate their knowledge with documents or videos. She stated:

Everybody's project is not going to look the same. But if you can give them the tools, or give them the instructions on which to do a project, and if they do it they're excited. When they're finished, and say here's my end product, since they've done it they're excited.

Virginia shared additional ideas of ways integration of Web 2.0 technologies are effective for differentiating instruction. She discussed the added support provided through differentiated opportunities and said:

> You could use that as a supplement lesson or as an interactive lesson where the child sometimes has difficulty learning or understand the steps of what you're modeling for them. They need to go back to the computer and they'd be able to revisit the steps independently and then come back to work in the small groups.

Data pertaining to the first research question were categorized into three themes: (1) support student learning, (2) build class community, and (3) differentiate instruction. Examples of the categories that led to each theme were provided through the strategies and evidence participants shared. Participants revealed that integration of Web 2.0 technologies with ELLs was perceived as an effective strategy for accomplishing the three themes that were identified and explained. First, teachers indicated use of technology was effective in supporting student learning via building background knowledge such as vocabulary, allowing for multimedia, and providing ability to pace instruction. Second, teachers found it effective in building classroom community through engaging students in new ways and allowing peers to support one another. Third, teachers believed use of the technology was effective in supporting differentiated instruction by

providing improved means to monitor student performance. Successes with integrating Web 2.0 technologies are discussed in the following section for research question two.

Research Question 2: Successes

The second research question was framed as follows: *What successes do general education teachers experience in integrating Web 2.0 technology to support language acquisition among English language learners?* The question explored the successes that general education classroom teachers experienced with integrating Web 2.0 technologies and results revealed two overall themes: success in enhancing their teaching and success in enriching learning opportunities. Several categories emerged from the data that led to identification of each theme. All participants shared examples of when they used a collaborative platform for academic activities with their ELL students. Participants reported using a variety of technologies that included mostly the Smartboard, followed by laptops, iPads, and the least used document cameras. While a specific platform was not identified among the participants, technology was used to enhance teaching and enrich learning opportunities. The following excerpts emphasize the themes that emerged to answer the second research question.

Theme 1: Enhanced Teaching

Participants shared success stories of integrating Web 2.0 technologies to enhance teaching. Categories that led to identification of the first theme, enhanced teaching, were (a) improved pacing and scaffolding, (b) ability to model, and (c) more access to lesson materials. Participants elaborated on the ways they incorporated Web 2.0 technologies into instruction to support ELLs with language acquisition. They reported the use of

different Web 2.0 technologies in multiple content areas to better pace and scaffold lessons.

Beth discussed one strategy that enhanced her teaching by enabling her to pace and scaffold lessons was communication with the English as a Second Language (ESL) teacher and parents. She communicated with the ESL teacher on a daily basis and with parents on a weekly basis, about how technology was incorporated to scaffold lessons and pace students. Beth spoke about her daily communication with the ESL teacher and said, "We have constant dialogue. We share every day. It's an ongoing dialogue with the ESL teacher."

Seventy-five percent of the ELLs in Beth's class had access to technology at home but some parents did not always allow students to access the Internet at home. Communication with parents about how students needed to use technology at home consisted of letters and homework assignments. Beth pointed out that students' practice with technology at home influenced teaching and learning in her class that affected her pacing of lessons. She explained that she was able to determine how to move forward with lessons and students who would need more scaffolding. Beth said:

> The parents are given homework activities if the children need to continue. The parent letters or notes I send home inform the parents of what the children are working on and the extension is for whatever they need to continue over the weekend. So, the parents are given some kind of correspondence to give them an idea because a lot of parents are very cautious about having their children on the Internet at home. So, the child may have a computer at home but the parents don't

> let them get on. So, it's important for us to inform the parents that this is a homework activity and it should take a certain amount of time so they are more comfortable allowing the kids to go on and activate whatever they need. Depending on the feedback if they did it or not, affects how you move forward in your lesson.

Dana also discussed on-going communication with parents as a strategy that enabled her to pace and scaffold lessons. She communicated with parents frequently through different technology-based mediums, in addition to in-person visits. Dana mentioned a specific platform, "See Saw", that she used for communication between herself, students, and parents. She posted weekly newsletters and updates to inform parents about specific things their child should do at home, including how they are expected to use the interactive educational material on platforms such as IXL Learning. According to Dana, all of the students had technology at home but some parents limited their child's access to technology at home. Parents modified their restrictions when Dana communicated the need for student use. Students were better equipped to move forward with lessons in the classroom. Dana stated:

> My favorite for communication is See Saw, which is an application that parents, grandparents, any of the family members interested or connected to our class, have direct access to what we post specifically for their child. That's also the place where I post newsletters for the week every week. We do a weekly class newsletter, updates for what is expected that the kids should be doing at home, everything. But also in there we'll have the IXL or the technology things that are

> going on, because we did have some parents who had rules about technology, and that their kids couldn't get on during the week. But now, they are aware that it actually is supporting their homework when they're saying they need to use the computer or iPad to get on and practice. So, the parents are brought up to speed.

When posed with the question of sharing successful experiences with integrating Web 2.0 technologies with ELLs, Beth revealed that her teaching was enhanced through better pacing and scaffolding. She said:

> Students' reading levels improved and also vocabulary. There was a lot of success in vocabulary building because I do a pretest and then, based on after the teaching I saw where they have improved in vocabulary. Based on the fact that there were a lot of pictures the vocabulary definitely improved.

Dana shared her successful experiences with integrating See Saw to enhance her teaching through better pacing and scaffolding when she considered the collection of evidence. She explained that through See Saw, individual student work was uploaded either as documents or videos that were compiled as a thread, similar to an Instagram feed, and parents were notified immediately when their child's content was updated. Parents were also able to write comments to their child. Dana stated:

> It's like an Instagram feed, where if a student has done a great piece of writing, I can take a picture of the writing and upload it immediately and the parents are notified that they have something to take a look at, they can comment on it. The children make videos all the time for their parents, or if there's just great learning taking place in the classroom, we're taking pictures, we're shooting videos.

Zaria shared that her classroom population has a wide range of abilities and discussed her preparation to better pace and scaffold instruction for ELLs. She pre-assessed her students using different technology-based material that she provided through Google Drive. Based on students' academic levels and needs, Zaria then created collaborative learning opportunities with the use of the Smartboard and document camera.

> All of our learning is collaborative because we're a mixture of general education, special education, and English language learners. So, we mix them based on their academic levels not based on any other status. So, we group them in the content class where most of our ESL work is focused. There, we give an assessment and then we group them based on what they need to focus on.

The examples shared by participants revealed that enhanced teaching was achieved through the use of Web 2.0 technologies for better pacing and scaffolding lessons, that also led to modeling. While participants were able to better pace and scaffold learning for ELLs, they revealed that modeling allowed them to enhance their teaching. Daisy explained that her successes with integrating Web 2.0 technologies to support ELLs were due to her ability to use technology to model for students. She elaborated on how she used modeling as a strategy to prepare students. Daisy stated:

> I think modeling and pacing the students really helped. Then, giving them some time to try on their own. Well, you know we always say practice makes perfect. So, I think you need to spend time modeling. You can't just assume they know how to use the technology. I did a lot of modeling so the students would know

> how to get to, for example, the website for their spelling words or the class blog. I would show them step by step how to move around and access information.

Dana discussed a routine when integrating Web 2.0 technologies that involved modeling and pacing lesson activities. Similar to Daisy, she shared that students were given time to practice what was modeled through the different segments of her lessons before students were expected to work independently. Dana stated:

> We often do I do, we do, you do. So, the I do is all eyes on me, you're doing nothing, nothing in your hands. I'm demonstrating, just showing you what's happening, what it looks like. Then, the we do is you're now helping me walk through whatever the task is, and then the third round, so there's repetition of the same pattern. So, the you do is the students try to do it independently or if it's something they're doing with a partner, then they're doing it. But it's the I do, we do, you do, and then just also being available, going around and leaning in, and making sure that the students really understood what was being asked of them.

Virginia stressed the importance of preparing students for technology integration by modeling technology use and establishing a support system for students. She discussed the repetition of directions during modeling and repeated practice after modeling that led to successful implementation. She also elaborated on the support system she established to ensure that technology integration was successful.

> The first thing we do is try to show them what to do before they go on to the computer. Explain clearly what it is because when they're on the computer, they have their headphones so they are just listening independently. So, we have a

> Smartboard in the classroom. We go on the webpage and we show them how to go onto the webpage. We show them the different links. Even when they go into the computer lab, there's a big screen in there where we walk them through again, how to sign on and how to do the activity during the computer time. We remodel, yes, we teach again. We teach again when they go to the lab. We reteach to make sure that they do fully understand. They always have a partner whether or not they're working independently. If they run into some problems and don't understand something, we have someone sitting beside them who can assist them.

Modeling lesson expectations for students was attainable with the use of Web 2.0 technologies because students had access to lesson materials. Participants reported that the option to make lesson materials more accessible to colleagues and students was possible through Web 2.0 technologies. The experiences shared by participants highlighted how they enhanced their teaching through technology integration.

Zaria explained technology integration in her class that enabled her to scaffold instruction, make lesson materials accessible to students, and was structured to support language acquisition by ELLs. Zaria stated:

> All of our planning as teachers is done on Google Drive. When they're deconstructing the sentence, sometimes they do it with the teacher at their seat. But sometimes it'll be on the Smartboard and they'll go up and move the pieces of the sentences around based on whatever we're looking for, the subject or whatever part of the sentence we're needing to deconstruct. When I pull groups usually to the back of the room, I have a couple of iPads at my disposal. So, I put

> the whole lesson on there so they can click along on the PowerPoint with me and that way they have the questions and tools in front of them.

Sylvia shared the success of enhancing teaching through Edmodo, a collaborative platform she introduced to her students. Implementation of Edmodo enabled Sylvia to make lesson materials, such as assignments and assessments, accessible to students. The use of Edmodo also helped students to establish real-world connections with peers. Sylvia stated:

> One thing we have, it's called Edmodo. It's a program like Facebook. But I can go on and see everything that they say so they can talk to each other. If they say or write anything inappropriate, they know that I can see it. Whatever assignments I put, they need to upload into Edmodo so I can see it. Every now and then, I'll assign a little test and I can post it right away. They get their results so they know exactly what it is that they got right.

Zaria further elaborated on students' access to lesson materials that was made possible with technology integration. She spoke about enhanced teaching through pacing, scaffolding, and modeling that were based on student access to lesson materials for reading.

> I wanted to highlight a different sentence so I pulled a piece of the text from the article and I highlighted the sentence I wanted to talk about in yellow. So, they all clicked on the same slide that I was looking at but on the actual article it wasn't highlighted. I had the question right next to it that says, remember in writing today we talk about text features. What was the author's purpose in doing

> whatever the example was? So, they were able to look right at that specific sentence without me having to say oh it's the seventh line down the sixth word in or whatever. It's just there, highlighted.

Zaria also mentioned that her teaching was enhanced because she was able to help students make connections between the content areas of reading and writing. What she considered a challenge for students to learn was addressed with the lesson materials she made available to students. Zaria stated:

> Making connections was really hard in general so I think that once I connected, they were able to make the connection that we did text features in writing today. We added that to our writing for the topic that we're writing about. We're writing information books and connected to their work in content today which was highlighting the text feature. Then they were able to go back and do their independent work.

Participants discussed their successes with integrating Web 2.0 technologies. Data revealed that opportunities to scaffold, model, and provide lesson materials enhanced teaching by all participants. Students benefitted from enhanced teaching that influenced learning opportunities.

Theme 2: Enriched Learning Opportunities

Participants reported examples of the successes with integrating Web 2.0 technologies to enrich learning opportunities. Categories that led to identification of the second theme, enrich learning opportunities, were expanding opportunities and student engagement. Participants elaborated on the ways they incorporated Web 2.0 technologies

for learning opportunities that supported the language acquisition by ELLs. They reported the use of different Web 2.0 technologies in multiple content areas to enrich student learning opportunities. Through student experiences that involved practice, peer partners, and based on student interests, participants were able to extend learning beyond classroom lessons. Participation in such activities provided opportunities for students to take ownership of their learning and demonstrate progress.

Participants expanded opportunities through practice with Web 2.0 technologies and the ability for students to use technology outside of school. Virginia discussed a routine practice for supporting language acquisition by ELLs that expanded learning opportunities outside of the classroom and led to student success. She shared about the language support embedded in the Web 2.0 technology, i-Ready, that she implemented with students. Virginia stated:

> We use individual laptops right now. The school has individual laptops where students are able to go on the computer, see where they are at by looking at the language, both languages that they are learning. If they speak in Spanish, they have the Spanish section and they have the English section. So, they first listen to the Spanish and then the interpretation of it in English. Then the Spanish teacher will work with them with their vocabulary words in English.

Virginia continued to share about opportunities students had to use the same technology outside of school. She pointed out one benefit of using Web 2.0 technology was that students could receive support from their family at home. Virginia said, “Also, we have our Math website where they will go on and parents will be able to help and work with

them at home. So, they access that website at home where it's both in English and in Spanish."

Beth explained the daily opportunities that were provided for students to use technology in school to continue with practice. Learning was enriched through various opportunities in the computer lab and the classroom. Beth stated:

> The students that I teach, they have access to the computer lab. They actually have a computer in the computer lab where they would go on to practice whatever it is they're working on. Basically, they have a lot of access to technology, at least in my building. The administration push technology within the building too. Children have more than one opportunity. For example, we have the i-Ready where children go once per week but, they've also made available computers and different things in the classroom so they can spend more time to practice the skills that are necessary.

Opportunities to expand learning in the classroom were a result of Beth's ability to enhance her teaching through the use of Web 2.0 technologies. Beth discussed the use of the Smartboard for the interactive features and centers within the classroom that supported students' continuous practice in school. Beth stated:

> Lessons are taught using the Smartboard and there's small group instruction. Also, they have access to computers in the classroom as well. There's a listening station where they listen to stories. They're able to access technology in centers one or two times per day in each subject area.

Learning was not limited to the physical classroom environment. Implementation of Web 2.0 technologies provided students with opportunities to expand their learning outside of the classroom. Beth discussed her use of Web 2.0 technologies in the classroom that allowed students to continue their math and reading practice at home. Beth stated:

> I have used myOn with them, they go on at night. I encourage them to go on, for those who have computers and they can. So, they have their password which is the same password that they go on with iReady. They can also go on iReady at home to practice and then I use it in the classroom as a center activity too. They practice the skills, math and reading skills, on iReady. I also have an independent reading center for just myOn. So, if I have independent reading time they can go. Group one, ok you're on myOn today, that's your independent reading activity. And they go on, they have their headphones and they listen. They like that because it's computers.

Virginia spoke about the implementation of GoMath that enriched the learning opportunities for students. She explained the expectations and recognition of student achievement based on the expanded opportunities for students to practice what they learned. Virginia stated:

> The overall goal we are expected to achieve is at least one grade level. So, for the English learners who are here since kindergarten, they are expected to move at least two grade levels, but it depends on the grade they are working on. If they're working at level three grade three they should move up to grade four or the main grade five level by the time they leave fifth grade. We are real proud of this

> because this helps the child to be able to access it both at home and at school, and able to understand the language with the Spanish teacher inside the classroom.

Expanded opportunities for students to continue their learning outside of the classroom led to more opportunities for student engagement. Participants reported that student interests, peer collaboration, and a sense of ownership contributed to student engagement that promoted the enrichment of learning opportunities.

Dana consistently spoke about a class community that fostered a support system for students and encouraged increased independence and self-confidence. In her explanation of ways to promote student engagement with technology, Dana discussed examples of peer collaboration. She stated:

> While there's a student who's struggling with one thing and another student who is strong across the board, there are always opportunities for learning when you partner children and when you put them in small groups, which is why I said we often do partner work and collaboration.

Dana further discussed how she used student interest and experiences to engage learners based on the content they were learning. Students were able to help their peers with the content of technology-based activities that were part of their culture. Dana stated:

> Some of the students who were Spanish speakers or even from Guatemala were very proud to be able to speak up. The little games we were playing, they were familiar with and they would need to tell us what it meant because it was in Spanish, which I would have to imagine was very exciting for them.

Virginia also shared how the integration of Web 2.0 technologies enabled her to promote peer collaboration and a sense of ownership of learning among students. She referred to exercise students completed on GoMath or iReady. Virginia stated, “So, they will also work with other Spanish students who speak English fluently and they will interpret the language for them if there’s something there they don’t understand.”

Daisy shared about her experience with promoting student engagement with a class blog that was created for a shared research project with students. The project was based on students’ interest as they decided as a class which animal they wanted to study. In addition to enriching learning opportunities, use of the class blog also enabled Daisy to enhance her teaching. Daisy stated:

> As a grade level, we don’t usually have time to do extension lessons and we always run out of time when we teach science. We had to do shared research with the students and they decided to choose an animal. So, in our class meeting we talked about possible questions they would want answers to and made a list. I used that information and created a classroom blog where I posted our topic and questions.

Daisy further elaborated on how she used the class blog to not only promote student engagement through ownership of learning and peer collaboration, but also as a way to expand learning opportunities. She stated:

> So, as part of their homework, students were supposed to get their family to help them find out the answer to one of our questions. If they were able to go online, then they needed to go to the blog, write the answer, where they found the answer,

> and their name. I tried to pick two days out of the week when I would show the blog on the Smartboard to share what classmates were finding out.

Zaria discussed her integration of the iPad was not only convenient for enhancing her teaching but it also encouraged students to demonstrate ownership of their learning by being responsible with the technology. Zaria stated:

> It's having the information right at their fingertips instead of using black and white copies. It makes it all more engaging. They stopped arguing over the iPads. So, if you ask them they'll tell you that it's a learning tool and that they have to be respectful of them. So, they cradle them like their babies because they don't want anything to happen.

Zaria continued to explain that the use of the iPad enabled her to enrich learning opportunities with students. She claimed that technology integration with the iPad made the lesson more engaging while providing students with quality resources. Zaria stated:

> So, it's a privilege but it's also really helpful for them to have the colors. We did magnets yesterday. Printing that out in black and white really would not have been beneficial for them because they're black rocks. But seeing it with the little splints of silver was really helpful for them to see in front of them.

Dana shared an example of how she accomplished student engagement with the use of Web 2.0 technologies. She combined the use of iPads, laptops, and the Smartboard. Dana stated:

> We use Mac, so we can airplay. When we're doing our interactive lessons using iPads and laptops with our airplay, we also have the interactive software the students can come up and simply touch on the board or write on the board.

Dana discussed how she encouraged students to demonstrate ownership of their learning while using Web 2.0 technology with iPads, laptops, the Smartboard, and dry erase boards. She discussed how students modeled for peers. Dana said, "If a student is doing something that is a great example of what we're looking for, we can have that student airplay".

Dana continued to explain how the opportunity for students to airplay contributed to ownership of learning while students self-assessed based on peer demonstrations. She stated:

> They show their example and speak through their thinking, which of course helps other students. We actually combine sometimes dry erase white boards, every student has one. With one student going up and using the interactive software, all are still benefiting because at their seat with their whiteboard they're working through the same problems and maybe changing some of their thinking. Or, they're settling with what they're seeing the student who's at the board doing.

When discussing student engagement, Beth shared that the goals of student interest, peer collaboration, and a sense of ownership were accomplished with Web 2.0 technologies. She elaborated on peer influences while learning with technology and stated:

> It definitely influences the learning because the children can learn from each other because they are at the same level. Their language is basically on the same level.

> Children are able to find their own natural way of explaining things. So, I think it does help when they get together and do group activities. I find they do well with that.

Sylvia shared about the goals she accomplished while integrating the Edmodo platform with her students for engagement. She encouraged peer collaboration and students' development of a sense of ownership for their learning. Sylvia stated:

> I wanted them to be able to navigate Edmodo, to learn how to copy, paste, and to send me their work. Then, how to converse with each other, send notes to each other, and how to go on and get their assignments.

Sylvia elaborated on a different Web 2.0 technology she integrated based on student interest and supported their sense of ownership for learning. She explained a language-learning program she attempted to use with her ELLs, but extended to other students based on their request. Sylvia stated:

> I've put them on Dual Lingo which is a learning program for Spanish because a lot of the kids wanted to learn, even though some of them are Spanish speaking. But they don't know how to write, and a lot of them they don't even know what the words look like. They just know that they say them and a lot or some of them say, oh I want to learn Spanish.

Sylvia continued to explain the benefits of integrating the Dual Lingo program with students whether they were native English speakers or non-native English speakers. She stated, "It gives them the opportunity to see the words, see what they look like, visualize

the picture, and then to begin to put them in sentences. It also helps the English language learners also with the dual language.

Data pertaining to the second research question were categorized into two themes: enhance teaching and enrich learning opportunities. Examples of the categories that led to each theme were provided through the strategies and reflection on student achievement that participants shared. Participants shared success stories about technology integration with ELLs that led to successful academic outcomes for students. First, participants reported enhanced teaching occurred due to improved pacing and scaffolding, the ability of the teacher to model for students, and increased access by both students and colleagues to lesson materials. Second, they reported enriched learning for students due to expanded opportunities provided by the technology and the ability of the technology to further engage students in the learning process. Challenges with integrating Web 2.0 technologies are discussed in the following section for research question three.

Research Question 3: Challenges

The third research question was framed as follows: *What challenges do general education teachers experience in integrating Web 2.0 technology to support language acquisition among English language learners?* The question explored the challenges that general education classroom teachers experienced with integrating Web 2.0 technologies and results revealed two overall themes: access to technology and challenges encountered during lesson delivery. Several categories emerged from the data that led to identification of each theme. All participants shared examples of the challenges they encountered with integrating technology for academic activities with their ELL students. Participants

reported strategies they employed as an alternative to combat technology-related issues. The following excerpts emphasize the themes that emerged to answer the third research question.

Theme 1: Access to Technology

Participants shared stories about their challenges with integrating Web 2.0 technologies due to access to technology. Categories that led to identification of the first theme, access to technology, were lack of internet connection and insufficient equipment. Participants elaborated on the ways they attempted to incorporate Web 2.0 technologies into instruction to support ELLs with language acquisition. They reported the use of different Web 2.0 technologies in multiple content areas and the ways they altered instruction to address challenges with access to technology.

Beth, who has been the go-to person on her grade level for integrating technology, explained what she considered the nature of the school in reference to technology. She stated, “When there's no internet for it, that’s because that's the nature of the public-school system, they don't have it.” Beth continued to explain that inconsistent Internet connection was a challenge when she used the Smartboard in different ways such as for interactive videos and when she implemented iReady. She said, “When the Internet is down or they’re working on something, you don't have that.”

Virginia frequently modeled lesson activities that involved Web 2.0 technologies prior to student use in the classroom and the technology lab. She expressed the challenge with access to technology when she attempted to implement GoMath and iReady.

Virginia said, “Ah, the challenge I have is when sometimes we can’t get onto the webpage.”

Daisy discussed a challenge she encountered with integrating a class blog was related to inconsistent Internet connection. Students were tasked with contributing to a shared research project that Daisy attempted to maintain during whole class discussions that were challenging at times. She explained that, “The greatest challenge is not having internet service because the lesson becomes obsolete.”

Sylvia was known among her peers for her background with integrating technology and often used Edmodo as a Web 2.0 technology to support ELLs. She discussed the challenges associated with access to technology that were due to inconsistent internet connection and lack of technology equipment that was a school-wide issue. She said, “The systems in schools go down. The biggest challenge really is having the equipment and then, you can't get online because everybody in the school is online.”

Sylvia further elaborated on the challenge of equipment as well as support staff. She expressed the challenge of not having support staff to assist her when she encountered problems with technology. Sylvia stated:

> They always tell us about this technology school. We’re using technology but yet, they don't have the equipment. They don't have enough of the equipment for the students.
>
> They don't have anyone to take from inside the schools to help with all of the different types of problems that you may have.

As Beth discussed the challenges she faced with access to technology, she also spoke about insufficient equipment as a common challenge coupled with internet connection. She mentioned that her class had limited access to the computer lab. The limited access students had to the technology lab meant that Beth had to continue technology integration in the classroom. In addition, there was a lack of resources such as laptops and desktops inside the classroom. While she discussed the implementation of iReady or interactive videos, technology equipment for students was a challenge. Beth said, “It’s lack of supplies, basically, just the fact that there's not enough computers for individual students.”

Zaria frequently used Google Drive as a Web 2.0 technology to support ELLs in her classroom. She discussed the challenge she experienced with access to technology that was based on insufficient iPads in relation to her class size. Zaria said, “I didn't get any iPads until January and I only have four. There’re 33 kids in my class and I've never been one to say oh this kid needs this because he’s different.”

Zaria also discussed that implementing Web 2.0 technologies for an entire lesson was a challenge due to the lack of resources. She referred to the lack of iPads and how it hindered full use of Web 2.0 technologies. Zaria said:

> The budget doesn’t allow for every student to have an iPad. Once they go back to do their independent work, they don’t have iPads. It’s independent work so it’s all paper and pen. So, they use it as a tool for the lesson and then they go back and they have to generalize from the lesson to the independent work.

Similar to Beth, Sylvia coupled the challenges of insufficient equipment with the lack of internet connection as she shared her experiences. Sylvia said, “The things that really hinder you is that there’s not enough laptops for students. Maybe the day that you decide you want to do a program or do something, another class has the laptops, you don’t have it.” Sylvia’s comment among other participants, led to the recognition of challenges with lesson delivery. Access to technology emerged as a challenge that participants discussed when they elaborated on the inconsistent connection to the Internet and insufficient technology equipment that also affected lesson delivery.

Theme 2: Issues during Lesson Delivery

Participants shared stories about their challenges with lesson delivery when they integrated Web 2.0 technologies. Categories that led to identification of the second theme, lesson delivery, were (a) lack of time, (b) lack of resources, and (c) classroom management. Participants elaborated on the ways they altered lesson delivery to address the challenges with access to technology.

Participants expressed that lesson delivery with Web 2.0 technologies was affected by the lack of time in their schedules for implementation and limits to the individual support they could provide to students. The challenges were not always issues that participants could control. Sylvia referred to student use of Edmodo that contributed to the support system she aimed to establish for ELLs. She discussed her concerns with time that were related to the school-wide curriculum and grade level state exams. Sylvia stated:

> If we had more time instead of trying to figure out what we're going to do about this test that's coming up, it would be much more. I think they would get more out of it. They would learn more. They would want to do more. They would really increase their learning rather than always trying to say, ok we have to put this away now and get to this because this is what's going to be on the test. The barriers are not having enough time to do it because you need to teach for this test that comes up all the time.

Sylvia further elaborated on the challenges with time to support individual students while implementing Web 2.0 technologies. She explained her struggles with ELLs and the one-on-one attention they required when she said:

> When you have the ESLs, you have to explain a little bit more to them than you do when you have the other set of the class. What I've experienced with ESL students is that they want a little bit more attention. You have to go to them.

Daisy shared a similar concern as Sylvia about her challenge with using Web 2.0 technologies for lesson delivery. She discussed the challenge of time to assist ELLs. She said, "Some of the students had a hard time following along if I was not in close proximity to help them."

Beth discussed the challenge of time that was related to scheduling and was not in her control. Although her school had the equipment, she expressed that students had limited time with Web 2.0 technologies that she chose to implement in order to support ELLs. Beth said, "We have a state of the art computer lab. But we're only assigned to go there once a week so, they don't get to go on to the Web enough and explore."

A lack of resources contributed to challenges with lesson delivery when participants implemented Web 2.0 technologies. Lesson materials are one type of resource that participants discussed. Beth mentioned the challenge of materials when she attempted lesson delivery with Web 2.0 technologies. She said, “Then we have to do other things in the classroom and the material is kind of limited in the class.”

Sylvia pointed out that having enough materials and the appropriate materials was a challenge. She spoke specifically about the lack of materials that included appropriate leveled activities for students below or on grade level. Sylvia stated:

> Being able to have the materials for the ESL students is challenging because I know we’re supposed to switch out materials and try to find materials. The material given is always on grade level, never thinking that some of the students may be on second grade, third grade, or fourth grade level. So, here you’re teaching sixth grade or teaching the fifth grade and you have third or second grade level students. One of the biggest challenge is trying to figure out how to differentiate when you have all these sets of kids in the class. So, the challenge is being able to differentiate and get the correct materials for them so that you can service them, just being able to have the correct materials.

Dana, who discussed using platforms such as Google Suite and IXL, shared about the challenge of not having resources to support the use of Web 2.0 technologies she implemented. She stated:

> If you are doing something or reading something, it would be great if you had even materials to go along with that, or the cards to go along with something. Teachers are making it, which there's nothing wrong with that but that takes time.

Dana further explained that to address the lack of resources, teachers would need to spend more time to prepare lessons when she said, "take on extra work to reproduce things when they find something that could really be great for students."

Lack of human support in the classroom as a resource to provide one-on-one assistance, contributed to the challenges participants experienced when they implemented Web 2.0 technologies. During the interview, Sylvia revealed her in-the-moment thought process for addressing the challenge of insufficient resources when using Web 2.0 technologies. Sylvia shared that relying on knowledgeable students in the class could be a possibility for improving resources to students. She stated:

> But as I'm saying this to you, I was thinking we could have another student inside the room, maybe before the lesson. This just came to me. So, maybe before the lesson if you train two to three students and show them what exactly it is they need to do, so, in the event that something goes wrong, the students can help each other.

Lack of resources for integrating Web 2.0 technologies to support ELLs led to classroom management issues that participants had to consider how to address in order to support lesson delivery. Participants discussed sharing, digital citizenship, and grouping. Zaria, who discussed a minimum number of iPads in relation to her class size, decided on a classroom management system that altered lesson delivery but supported Web 2.0

technology integration with ELLs. She said, “To make it fair for all of them, I make everybody share. But only having four is a really big challenge because inevitably someone gets shafted. They're only in fourth grade so that doesn’t usually end in smiles.”

Digital citizenship, specifically the appropriate use of Web 2.0 technologies, was a challenge Sylvia encountered. Sylvia shared that it was a challenge to ensure that students viewed appropriate sites when they had access to the Internet. She stated:

> Another real big challenge that I would include with using technology is making sure the students are where they are supposed to be, as opposed to surfing and going to many different places where they don’t belong. So that’s a challenge within itself.

Beth implemented a classroom management plan to address the challenge of lesson delivery. She discussed her use of student groups and the physical classroom space when she integrated Web 2.0 technologies. There were designated areas in the classroom where students used desktops, the smartboard, or iPads. Beth stated:

> You have to do most of whatever you're doing in a center time or something. So, the children have to go in groups. Then, we have to do other things in the classroom and the materials are limited in the class.

Relying on the students as one way to help with lesson delivery while integrating Web 2.0 technologies was one method Dana struggled with as she explained her experience. The challenge was establishing a class community in order to prepare students to help each other with the integration of Web 2.0 technologies. Dana stated:

> So, setting the tone in the classroom, setting up for the environment that it's safe Setting up an environment that is inclusive and that recognizes that not speaking English well is no indication of intelligence or lack thereof So the respect of those differences.

Data pertaining to the third research question were categorized into two themes: access to technology and lesson delivery. Examples of the categories that led to each theme were provided. A primary challenge was the lack of access to technology, including lack of stable internet connections and either insufficient equipment or insufficient access to the limited equipment available. Secondary challenges occurred during lesson delivery, including lack of time, lack of other resources such as lesson materials or human support, and challenges with classroom management. Participants discussed issues that hindered what they considered fair and successful technology integration and expressed what they believed was needed. All participants identified needs to be met to integrate technology in support of ELLs acquiring academic language that are discussed in the following section for research question four.

Research Question 4: Needs

The fourth research question was framed as follows: *What do general education classroom teachers believe they need in order to integrate technology to support English language learners' academic language acquisition?* The question explored what general education classroom teachers experienced while integrating Web 2.0 technologies with ELLs and shared what they believed was necessary to contribute to successful integration. Results revealed two overall themes: professional development and

administrative support. Several categories emerged from the data that led to identification of each theme. Participants discussed what they believed they lacked in knowledge or support to implement Web 2.0 technologies. The following excerpts emphasize the themes that emerged to answer the fourth research question.

Theme 1: Professional Development

Participants reported possible remedies that would enable them to better integrate Web 2.0 technologies with ELLs in their general education classroom settings. Categories that led to identification of the first theme, professional development, were: (a) time to learn and explore, (b) training, and (c) learning communities. A common response among all the participants was a need for time as it related to professional development either for technology integration, communicating with ELLs, or both.

Participants shared that they needed time to learn about unknown resources and time to explore the technology before implementation was expected. Rushed implementation of technology integration prevented participants from being better prepared to use the technology. Dana discussed her experiences with learning about and exploring technologies that was not provided through school-directed professional development. She expressed the independent searches that proved to be helpful for her. Dana stated:

> Oh, the very same thing that I just shared is being given something and saying here, you can use this today and not given the time to really become familiar with it on my own which is why I then go seek out webinars, even YouTube. Sometimes you could just get more information or sometimes the website or

> program, they have their own built in that you can just go through and watch videos. Or looking up teachers who have used it successfully and some of their tips. I was given user name and password and was told this is something we use, go to it. But there was no training. It was just, here are some things that we use, take advantage of this. But I had to then figure out and understand and play around with it on my own, so that I could get the most out of it and the students more importantly could get the most out of it. So, I would say the barriers might have something to do with timing and training.

Several of the participants discussed taking the time to get prepared to use technology, indicating the necessity to learn and explore, then implement. Daisy discussed that although technology integration may seem intimidating, taking the time to prepare would be an advantage. Daisy said, "It's not as scary as they think it is but you definitely have to be prepared. Always have a backup plan so you don't lose instructional time."

Sylvia elaborated further about being prepared. She explained that teachers need to have a clear understanding of the lesson they plan to teach and a clear focus on what the students are expected to do. Sylvia stated:

> You need to know the lesson, whatever it is that you're giving them. Don't just come in cold turkey and think that you're going to wing it, it's not going to happen. But to actually really just know what it is you want to do, what your outcome is, and take it step by step.

Zaria expanded on the need for time to learn and explore by sharing an example about using Google Drive. She discussed the benefit of learning and exploring Web 2.0 technologies. Zaria stated:

> I think it's putting everything in Google Drive. Not only do you have a reference of the time, when technology goes down, you can print it and that way everybody could be looking at the same thing all of the time.

Part of the training that participants explained they needed related to technological knowledge and the language necessary for communicating with ELLs. All participants shared about the need for professional development to increase their technological knowledge that would consist of time spent in training. Zaria discussed the importance of knowledge and training for technology and raised a point about changes that veteran teachers may face, emphasizing the need for training. She stated:

> But a teacher whose fifty or sixty isn't really super into learning how to use things and we don't have any training. When we got our Smartboards, we moved from an old building into a new one. They gave us like three hours of training I mean nobody even knew how to turn the smart board on. So, not knowing how to use it or like how to save yourself when it doesn't work, there's just, there needs to be training. But I think that there are specific tools out there geared for teaching ELLs. The technology, if nobody tells them how to use them or that they're out there then we don't know.

Beth discussed the need for professional development in understanding how to integrate technology. Her experiences with professional development were initially supported by

the school through organized events. She explained the need for professional development that she eventually had to search for on her own. Beth talked about training she received and said:

> We had professional development for how we integrate technology and training for how to use the Smartboard. For the past year, not very often because the school used to send us to go out for different professional development. But now we are expected, I should say, to do it on our own, to find professional development opportunities and go and attend if we see that there's something. The school supports us with that but in the past year I haven't been to any outside professional development. Most of the programs that I use in my daily lesson planning, they come with professional development videos. So, I watch those a lot. But to actually physically go out to a professional development, no, but I'm always online looking for professional development videos for how to teach this or how to teach that and how to help the ELL students with different skills. I do a lot of that online.

Similar to Daisy, Dana discussed the intimidating factor of integrating technology. She emphasized that professional development is needed in order to get the most out of the experience, not just for the teachers but for the students as well. Dana stated:

> So even if you're afraid of it, you have to do it and you can't do it at a time when you have to go over to the student. You need to get professional development. Go online, look things up, webinars, anything that will help you become more proficient in whatever you're using with the students. Make that happen. Make

> time for that so you can get the most out of anything you're using with the students.

Training for working with culturally and linguistically diverse students was identified as a separate issue from training to use technology. Beth shared about her first experience with ELLs as part of her classroom population and discussed the idea of learning on the job because she did not receive formal training. Eventually, she determined strategies to implement in support of ELLs. Beth stated:

> They had a class but they didn't have any room. So, the overflow of those students who were stronger in English, they formed a class for them and they gave me that class. So, they said oh these are the ESL. Ok, first of all what is even ESL? So, I didn't really have any formal training so I kind of learned as I went along. I did my own kind by asking questions. So, as a formal training, no, learned on the job.

Similar to Beth, Sylvia also reported she did not receive formal training or professional development for working with ELLs. Sylvia said, "I really didn't have a lot of training or even professional development, as far as how to teach English language learners. They were basically just placed in my class. I was given an ESL class, that was it."

Daisy talked about the necessary support she needed to be able to integrate technology with ELLs in the general education setting. She said, "It's difficult to give enough attention when the ELLs take up most of the time for me to circulate. We definitely need training and time before we have to implement it."

Virginia elaborated on the issue of language when it was time for her to communicate with students who had limited understanding of the English language. In

her situation, she was able to rely on individuals in the class community. Virginia said, "Sometimes the other barrier is the language. The student doesn't understand or comprehend the language clearly so, we have to use a Spanish speaking person to be sitting beside them to explain it."

Similar to Virginia, Zaria explained a language barrier situation that she has dealt with on a regular basis. She expressed the need for training to communicate with ELLs due to occurrences with transient students throughout the academic school year. Zaria stated:

> I put everything in English, which I've had children who come from Guatemala on Tuesday and then in my class on Wednesday where they speak zero English. So, me putting everything in English doesn't really help them. I guess I could probably figure out how to translate it.

To better integrate technology to support academic language acquisition by ELLs, Beth discussed the need for training that involved working with ELLs. She explained that training is needed not only for technology but also to understand how to best support the ELLs. Beth said:

> For myself as a general education teacher, I don't think I know enough. We need professional development in the teaching of the ELL student. But when it really comes to conditional form of learning and teaching, I don't think I know enough. Most of what I know is really on the job. I go online and look at the videos and put my own little spin on things. But I don't think I really know enough about how to really attack the ELL component.

Beth further elaborated about why she thinks training is needed as it relates to working with a population of culturally and linguistically diverse students, and made a point about students receiving services. She talked about her limited training that was specific to working with ELLs before she began to encounter experiences in the classroom. Her explanation highlighted the need for training that involved observations of specific strategies in use with ELLs. Beth stated:

> It would help me to better support the children because the ELL students in my class are always leaving at a certain time during the day. They get support outside of the classroom by the person who is actually trained with all the ELL strategies. Even though I was trained with the ELL strategy, but that was when I went to college. I don't really get to see up close and personal what the ELL teacher really does with the children. I would really like to see that. I'm only supporting the children in my own way because when they go and when they come back I'm aware of what they're doing but to see it in action I think it would be really helpful.

The establishment of learning communities was a need that Dana stressed would be beneficial to preparing teachers to integrate Web 2.0 technologies. Dana suggested that learning communities among the staff and other educators could address the knowledge, experience, training, and time that participants revealed they needed. She stated:

> That's something that in a pinch if I don't have the time to really explore on my own and play around with it, I have two go-to people that I could go to them and they are on a different level with technology and have had more experience with

> some of it. Partnering with other educators so you have those colleagues that you can go to and not feel like it's a burden to them.

Dana further explained that teachers need to participate in professional learning communities to give and receive the necessary support for integrating Web 2.0 technologies. Establishing a safe community, similar to what she expressed about a class community, would be an essential component of a professional learning community. Dana stated:

> Also, that you're not being judged, but that you have something to offer when they come to you, and you know that you can go to them. So, having those alliances are important. Sometimes they can become a competitive nature, a competitive spirit, with colleagues. I think it's really critical that we have professional learning communities; having people that you can go to when you don't have time to explore and you need to get the information right away, or if you're having difficulty working with something.

Participants reported the different areas for professional development that teachers would need to be better prepared to support the academic language acquisition of ELLs through integration of Web 2.0 technologies. Administrative support was expressed by participants as a necessity for success.

Theme 2: Administrative Support

Participants revealed that administrative support was necessary to meet the needs of what they lacked in knowledge or resources to implement Web 2.0 technologies to support ELLs in the general education classroom setting. Information shared by

participants as common remedies for the barriers were categorized as providing resources. Administrative support was identified by participants as issues that related to funding, working equipment, more equipment, internet access, supplemental materials, scheduling, and support staff.

Funding was identified as a primary need by participants and was viewed as a resource that possibly administrators could provide to diminish the barriers. Beth discussed the disparity in inner city schools and stated that funding is needed to meet the needs. Beth stated:

> I guess the funding and not being able to get all what you need in terms of children not having. Being in the inner city, the low-income areas that are not able to have or not allowed to, depending on their situation.

Sylvia discussed an alternative to waiting for administrators to provide funding. She shared an idea about teachers being advocates for students and relying on communities to contribute to the funds. Sylvia stated:

> So, I think that if we went out into the community maybe, or found websites or something where people donate things, instead of waiting for the admin to do anything. I think we should be a little bit more proactive.

Beth further elaborated on the idea of teachers being advocates for students, similar to Sylvia's idea. She talked about different strategies for obtaining funding to meet the technology and training needs. Beth said, "Just constant, I guess advocating for within the school setting. Talking to whoever that is responsible for getting funding or writing grants or something for these children."

Participants recommended that classroom teachers who wish to experiment with Web 2.0 technologies need technical support. Sylvia shared the following, "I guess put pressure on the administration and informing them about how important it is for the schools to be more equipped with the technology."

Daisy shared a similar thought about funding for technology. She discussed the need for funding to maintain technology integration that she implemented with her students such as the Smartboard, and to purchase enough equipment for student use. Daisy stated:

> We don't have laptops for every student and when a bulb from the smart board is blown, it takes almost the entire school year to get it replaced. It's frustrating because it limits what I'm able to do for my lessons. Maybe they could also spend money to upgrade our internet in the building.

Dana shared her thoughts about the need for support that she believed was controlled by administrators. She discussed the handling of teacher input that administrators should consider in order to support teachers with integration of Web 2.0 technologies. Dana stated:

> If I can tell an administrator this has been proven to support learning for the children, it would just be great if they could find the resources to say well let's try it out. Let's get that in your hand, let's get you to that training. It just seems like teachers sometimes have to prove, make this grand case, even when they find the proof, the evidence, the research, and I know everyone is restricted by budgets. But I just think sometimes teachers have to go to such great lengths to get the

> financial support or the resources that they need when they have found something that could be great.

Dana further explained how administrators could provide support through budgeting decisions. She made a point about testing out a technology product before complete investment and shared a suggestion. Dana stated:

> I do understand sometimes, especially with the technology side of it, that we have to buy a site license or seats per student that that becomes costly. But if we know that it would be best for children, it would be great if we could just buy it. Even piloting it in one room, to make sure that the teachers don't always have to come out of pocket or take on extra work to reproduce things, when they find something that could really be great for students.

Technology support was expressed by participants as something that would allow them to integrate Web 2.0 technologies. Support staff in the classroom for students would break down some of the barriers and allow for more small groups and individual attention for students.

Sylvia shared about her experiences with using Edmodo and stated:

> You need to really have more than one teacher in the room when you're using this because when the computers go down, you could send one teacher over and say ok you can do it while I'm still working with the students.

Beth elaborated on the need for support staff. She expressed how her class could have benefitted from more individuals who were also technologically aware of how to provide support. She stated:

> Smaller classes would help. I think smaller classes and just more individualized attention, if it is possible. I find that the children, they function better in a small group setting, most of them. So, when you call a group of children and say let's sit and each of them has for example, a computer or some kind of technology and you're able to work with them, they're all in. I think they will learn that way too, a lot more through background building, all the pictures, just everything with technology.

Daisy discussed the need for support staff that she believed could be arranged by administrators. She shared examples of specific times when support staff would be needed to encourage a successful experience with integration of Web 2.0 technologies. Daisy stated:

> It would help to have someone in the building that can come in to trouble shoot, especially if I don't have the experience using the software, and an extra person just to help the students navigate through whatever platform we're using. It's difficult to give enough attention when the ELLs take up most of the time for me to circulate.

Virginia's experiences with integrating Web 2.0 technologies such as GoMath and iReady enabled her to share what she believed teachers would need for successful integration. She explained the need for support staff in the general education classroom setting to collaborate and assist ELLs. Virginia stated:

> We need more teachers, more computers, and more Spanish speaking people. If you have four ELL students and you have one Spanish speaking and one English

> speaking teacher, you need that with the collaboration of both teachers. They would get more independent one-to-one because sometimes some of these students need one-to-one, definitely one-to-one when they are coming in for the first time.

One participant discussed adhering to a schedule to share equipment would allow her to overcome the equipment barrier. Daisy discussed the use of technology equipment that was shared school-wide. She said, "Maybe I could sign up for class time in the media center so each student can have a computer but then, that's not even a guarantee because they're always changing up the schedule."

Data pertaining to the fourth research question were categorized into two themes: professional development and administrative support. Examples of the categories that led to each theme were provided through the expressed beliefs of participants who suggested several remedies to overcome the barriers. Participants discussed what they believed teachers would need to successfully implement Web 2.0 technologies to support academic language acquisition by ELLs in the general education classroom setting. One focus was on the need for professional development, including simply time to learn and explore the technologies and ways to integrate them, more specific training, and working in learning communities. The second focus was on administrative support. Participants explained the critical role that administrators play in providing funding for technology, adequate technical support, and necessary supplemental materials, as well as the role they play in scheduling, and allocating support staff.

Summary

The purpose of this qualitative interview study was to better understand the experiences of general education classroom teachers with integrating Web 2.0 technologies in support of English proficiency and academic language acquisition by ELLs. In Chapter 4, I provided the demographics of participants, the data collection process, and the data analysis process that included the codes, categories, and themes. Several themes emerged from the data that aligned with each research question. Data aligned with the first research question proved that technology integration with ELLs was effective for supporting student learning, building class community, and differentiating instruction. For the second research question, participants shared that their successes with technology integration enhanced teaching and enriched learning opportunities. Data aligned with the third research question proved that the main challenges with technology integration to support ELLs were access to technology and lesson delivery. Professional development and administrative support were two themes that emerged from data about the needs participants reported. I described the evidence of trustworthiness and provided the results of the study in detail. Chapter 5 consists of the interpretation of the findings, limitations of the study, recommendations for further research, and implications for positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Web 2.0 technologies are internet-based collaborative and interactive platforms that enable individuals to actively participate in sharing, editing, and making meaning of content. Integration of Web 2.0 technologies has been proven to contribute to academic achievement for ELLs outside of the general education classroom setting. The purpose of this qualitative interview study was to better understand the experiences of general education classroom teachers who integrated Web 2.0 technologies such as blogs, videos, and websites in support of English proficiency and academic language acquisition for ELLs in New York City. Participants of the study were general education teachers who had experience using Web 2.0 tools with ELLs in urban elementary schools in New York City.

The nature of the study was designed to gain in-depth insight into the context of the experiences revealed by participants. The targeted grade levels were three through five. Based on statistics of standardized assessments in math and ELA, as well as reading achievement disparities in grades four through eight, an achievement gap between ELLs and non-ELLs was evident. I targeted third through fifth grade general education teachers from private and public schools to participate in semistructured interviews. Six participants were interviewed once, and I interviewed two of the six participants a second time based on their higher levels of expertise with Web 2.0 technology integration revealed during the initial interview sessions.

Integration of Web 2.0 technologies that support ELLs was relevant to the research questions regarding the experiences of general education teachers with such

technologies applied in a general education setting. The first research question explored teachers' perceptions of the effectiveness of integrating Web 2.0 technologies. Key findings indicated that participants perceived the integration of Web 2.0 technologies to be effective for supporting student learning, building class community, and differentiating instruction. The second research question explored the successes that general education classroom teachers experienced with integrating Web 2.0 technologies. Key findings indicated that integration of Web 2.0 technologies enabled participants to successfully enhance teaching and enrich learning opportunities for ELLs.

The third research question explored the challenges that general education classroom teachers experienced with integrating Web 2.0 technologies. Key findings indicated that participants experienced challenges with access to technology and lesson delivery when they integrated Web 2.0 technologies with ELLs. The fourth research question explored what general education classroom teachers described they needed to successfully integrate Web 2.0 technologies. Key findings indicated that professional development and administrative support were necessary to overcome the barriers of technology integration. Figure 2 displays the categories and themes that emerged from the data.

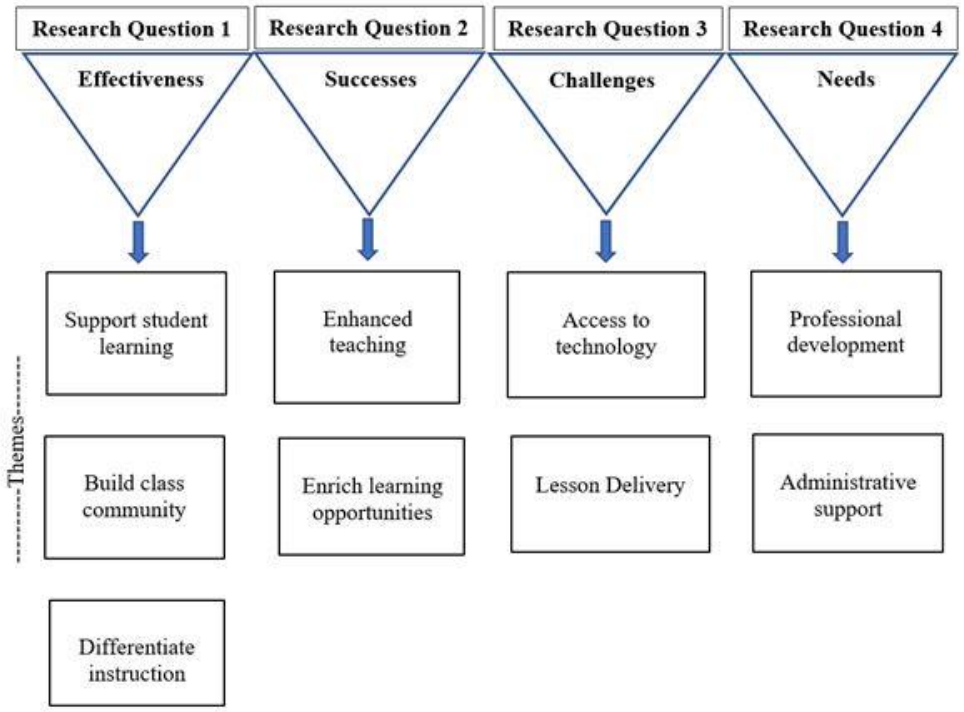

Figure 2. Research questions and themes. This is a representation of the themes that emerged from the data for each research question regarding Web 2.0 technology integration with ELLs.

Interpretation of the Findings

According to Hung et al. (2014), features of Web 2.0 tools offer a variety of tasks to support students at different academic levels. In this section, the links between the findings of this study and what exists in the extant literature is considered. First, there will be a look at the connection of findings to the TPACK framework that grounded this study, and then links to what is known about successful use of technology in the classroom and challenges teachers face with incorporating technology.

Technological Pedagogical Content Knowledge (TPACK)

The TPACK model, used as the conceptual framework for this study, was found to be an indicator of instructional decisions by classroom teachers regarding technology

integration (Harris et al., 2009). Harris et al. (2009) also stated that the intertwining and overlapping of the three main components of TPACK in a flexible way, as seen in Figure 1, could lead to effective teaching with technology.

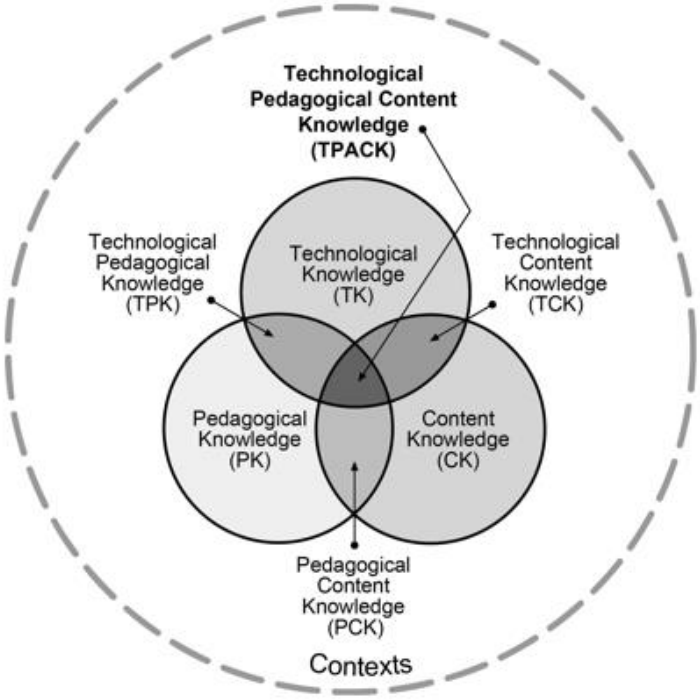

Figure 1. The TPACK Framework Reproduced by permission of the publisher, © 2012 by tpack.org Retrieved from http://tpack.org

Several themes that emerged from this study connected to the technological knowledge (TK) component of TPACK. TK was described as an understanding of the constant changes in technology and the variety of ways that technological resources and tools are used to meet goals (Koehler & Mishra, 2009). Participants discussed their use of technology to support student learning, build class community, differentiate instruction, enhance teaching, and provide enriched learning opportunities. In their responses, they discussed many different tools and the technical capabilities of the tools, thus

demonstrating their TK. At the same time, teachers expressed the need to learn more about technology and ways it could be used in instruction as well as the need for more technical support. So, while there was evidence of technical knowledge, there also was evidence of a need to continue to learn more in order to keep up with technology. Lack of TK or needs for more advanced TK could be countered with professional development to enable teachers to increase their knowledge and apply technology to classroom practices.

Koehler and Mishra (2009) described PK as knowledge about teaching models and learning models that teachers possess. Celik et al. (2014) analyzed teacher candidates' perceptions of their individual TPACK levels and found that PK was significantly related to TK and CK. Several themes that emerged from this study connected to the PK component of TPACK. While participants described how technology enabled them to support student learning, build class community, differentiate instruction, enhance teaching, and enrich learning opportunities, their comments provided many examples of how they used the technology to support specific pedagogical techniques. For example, they described using technology to support group work and team projects, peer mentoring, demonstrations of learning tasks ("I do, we do, you do"), pace and break down complex tasks, and differentiate instruction when students were at different levels. These are pedagogical approaches. In other words, the technology was used to support specific pedagogical needs, a combination of technological and pedagogical knowledge that Harris et al. (2009) identified as TPK. Celik et al. (2014) found that teachers' TK influenced more of their PK. Results of this study revealed that participants demonstrated TPK and that TPK influenced what occurred in the classroom.

Koehler and Mishra (2009) described content knowledge (CK) as the knowledge teachers possess about the subjects they teach. Participants discussed the use of technology in a variety of content areas. Many of the examples were connected to reading, writing, and vocabulary development, perhaps a result of the study's focus on ELLs and language acquisition. However, examples were also noted in mathematics and science. There was discussion of GoMath and its connection to content standards, the use of technology-based games and iReady for math and reading skills practice, the use of blogs for writing development, and Dual Lingo for learning to read and write in Spanish. Their discussion of content often overlapped with pedagogy or PCK as identified by Koehler and Mishra (2009), or to a specific technology or TCK as identified in the TPACK model. Celik et al. (2014) found that TK also influenced more CK. Results of the study revealed that PCK without technology highlighted the challenges with access to technology and lesson delivery and the need for professional development and administrative support.

As noted, the participants provided rich examples of their technological knowledge, their pedagogical knowledge and their content knowledge. The examples also demonstrated the overlapping nature of these forms of knowledge (TCK, PCK, and TPK) and in many cases exemplified the key intersection of all three, or technological pedagogical content knowledge (TPACK). These examples were particularly noticed in the themes that emerged in relationship to the first two research questions about the effectiveness of using technology tools with ELLs and examples of successes. Several of the themes found in the latter two research questions (challenges and needs) did not link

directly to the TPACK model, but perhaps reflected the environment in which teachers implement their TPACK and those factors that may support or limit their ability to demonstrate their TPACK. Perhaps the TPACK model could be refined to include contextual factors outside of the teachers' control that influence the use of TPACK.

Successes

Multiple studies were conducted about integrating Web 2.0 technologies with ELLs and researchers found that such integration contributed to improved academics and language acquisition (Ciampa & Gallagher, 2013; Larabee et al., 2014; Ertmer et al., 2012). Other researchers investigated the use of tools in language-learning settings outside of the mainstream classroom such as the iPad (Larabee et al., 2014), interactive whiteboard (Hur & Suh, 2012), and a vocabulary bridging program (Green et al., 2014), and found that ELLs demonstrated gains in their language development. This study confirmed through the experiences shared by participants that their ELL students demonstrated academic improvements when they integrated Web 2.0 technologies with the iPad, interactive whiteboard, Google Suite, iReady, myOn, Edmodo, See Saw, and a classroom blog.

In support of ELLs in the general education classroom, participants of this study integrated Web 2.0 technologies with different content areas, while they provided supportive learning communities that resulted in success for ELLs. Learning communities promoted student engagement to build background knowledge and present content via multimedia. Teaching and learning were elevated in multiple ways such as

through scaffolding, modeling, and access to lesson materials, as well as expanding opportunities outside the classroom, respectively.

Results of previous studies highlighted the benefits of integrating Web 2.0 technologies to support classroom instruction in content areas such as literacy (Lowman, 2014), math (Cicconi, 2012), writing (Zheng et al., 2013), and reading (Liu et al., 2014b). Researchers found that the features of Web 2.0 technologies provided alternatives for teaching and learning strategies (Cicconi, 2012; Liu et al., 2014b; Lowman, 2014; Zheng et al., 2013) similar to what was revealed by participants of this study. Findings from this study also confirm that teachers' TPACK influenced their implementation of Web 2.0 technologies to support ELLs in the classroom. Those participants, who had more knowledge of the Web 2.0 technologies they used, were more inclined to effectively implement such technologies on a consistent basis. Ertmer et al. (2012) aimed to understand the relationship between teachers' pedagogical beliefs and classroom practices related to technology, and found that teachers' beliefs aligned with their practices that were focused on student-centered learning. In this study, teaching practices appeared to be aligned to student-centered learning and reflected the belief these teachers had in the ability of technology to help ELLs learn.

Challenges

Avoidance of technology integration or unrelated academic use may be due to challenges teachers encounter (Aydin, 2012; Cakir, 2012; Ertmer et al., 2012). Access to technology and lesson delivery were two themes that did not connect directly with TPACK because the themes represented the infrastructure or context of the educational

settings rather than the teachers' knowledge base. For example, the issues with Internet connectivity, insufficient equipment, and technologies that were not interoperable were related to problems with access to technology, while the lack of time, resources, and classroom management challenges with sharing equipment were related to lesson delivery. This study supports the literature that challenges with access and support may lead to avoidance of technology integration or use of technology in an academic sense.

Through this study, access to technology and difficulties in lesson delivery were revealed as the main challenges when participants attempted to integrate Web 2.0 technologies to support ELLs in the general education classroom. Researchers have found that the attitudes of administrators may influence teachers' attitudes towards integrating technology (Cakir, 2012; Golshan & Tafazoli, 2014). Researchers have found that administrators may not be concerned about the effects of technology integration on language learning and place restrictions on the devices teachers are allowed to use (Fredrickson et al., 2014; Golshan & Tafazoli, 2014; Hechter & Vernette, 2014). Participants of this study shared about the unreliable Internet connection and insufficient technology equipment to use with their students that led to challenges with lesson delivery. They also discussed the need for funding and technical support, both of which are generally controlled by administration.

Participants of this study shared that challenges with lesson delivery were based on lack of time, lack of resources, and difficulties with classroom management. For example, some participants shared about scheduled time with technology equipment that was lessened due to the lack of resources that required participants to address classroom

management for student partners. The challenge with time was also related to the attention ELLs required when using Web 2.0 technologies and not enough teachers as resources. Several researchers have discussed potential issues with integrating Web 2.0 technologies with ELLs such as time (Hur & Suh, 2012), implementation (Keengwe & Hussein, 2012), and human resources (Adamson et al., 2012; Collins & Liang, 2014; Franco-Fuenmayor et al., 2015) that were confirmed with the results of this study.

Administrative support and professional development as it related to time to learn, time to explore, receiving training, and engaging in learning communities, were identified as strategies to overcome the challenges of integrating Web 2.0 technologies with ELLs in general education classrooms. The theme of professional development directly connected to TPACK because the focus was on increasing the knowledge base of educators. Teachers in this study specifically mentioned professional development and time to learn about technology, but also mentioned professional development related to working with ELLs connected with appropriate pedagogical approaches. As researchers have previously confirmed, student learning with technology was affected by the beliefs and knowledge of educators (Adamson et al., 2013; Casey et al., 2011; Ertmer et al., 2012; Greenfield, 2013; Varol, 2013; Weber & Waxman, 2015), and the interconnection of knowledge represented with TPACK (Harris et al., 2009).

Participants of this study wanted to improve their technological knowledge to some extent. Most participants had basic knowledge of using the document camera, iPads, and the Smartboard, but more limited knowledge of integrating Web 2.0 technologies. In previous studies, researchers found that when teachers were engaged in

long-term professional development while experimenting with the technologies they became more knowledgeable and able to adjust classroom practices to benefit student learning (Bruce & Chiu, 2015; Butcher et al., 2014; Ciampa & Gallagher, 2013; Duran et al., 2012; Liu et al., 2014).

In this study, participants who consistently integrated technology searched for understanding and professional development to implement such technologies with success. For example, Beth reported that she searched for professional development sessions to attend that would enhance her technological knowledge. She also searched for virtual professional development sessions. Dana discussed that she searched to enhance her technological knowledge with YouTube videos. She also searched the main website of the Web 2.0 platforms such as IXL that she was expected to implement with students. Virginia received training on how to use Web 2.0 technologies such as iReady and GoMath and reported her consistent implementation and success.

The challenges with integrating Web 2.0 technologies to support ELLs in general education settings that participants of this study expressed, led them to identify strategies that could lessen the challenges. In previous studies on technology integration of Web 2.0 tools with ELLs, researchers discussed that training for teachers was a concern (Casey et al., 2011; Elfers & Stritikus, 2014; Greenfield, 2013; Hur & Suh, 2012; Ishtaiwa, 2012; Keengwe & Hussein, 2012) and those concerns were confirmed with the results of this study. Results of this study confirmed that administrative support and professional development were necessary for teachers to be able to implement Web 2.0 technologies with success.

Limitations

One limitation of this study is the small sample size that is a characteristic of a qualitative design but does not allow results to be generalized to a larger population. A purposeful sampling strategy was deliberately employed to gather relevant in-depth data (Maxwell, 2013; Miles et al., 2014). Participants were general education elementary teachers who may or may not have held an ESL certificate or credentials. The initial plan was to interview at least ten participants about their experiences with integrating Web 2.0 technologies to support academic language acquisition by ELLs. Patton (2002) stated that definitive rules for sample size are not associated with qualitative studies. This study involved six participants who met the criteria and were willing to be interviewed. Two individuals were identified as experts to be interviewed a second time.

Other limitations related to the sample included the facts that they were all female teachers, all teaching grades three to five, all from an urban city in the Northeast. Thus, findings may not generalize to populations that do not reflect these characteristics.

Maxwell (2013) referred to credibility as the accuracy of different aspects of a study such as explanations, descriptions, interpretations, and conclusions. For this study, credibility was addressed through adherence to rigorous procedures such as simultaneous data collection and data analysis, engagement of participants during member checking of transcripts, and thick descriptions.

A third limitation was the type of Web 2.0 technologies that were revealed. This study was open to all types of Web 2.0 technologies that participants explored and limited in-depth exploration of any specific Web 2.0 technology. A few Web 2.0 tools

were common among participants such as the Smartboard and iPad, but the collaborative platforms participants experienced were all different.

Recommendations for Research

Further research should explore specific Web 2.0 technologies implemented by general education teachers in elementary classroom settings with a population of ELLs. Other qualitative approaches and mixed methods designs would add to the understanding of TPACK, the implementation of Web 2.0 technologies, and educating ELLs in general education settings. Perhaps studies on a particular Web2.0 technology that tracks the knowledge base of teachers in regard to TPACK, professional development, and actual implementation during or after professional development, may lead to a deeper understanding of student needs and teacher needs. One assumption of this study was that all participants were general education teachers who may or may not have held ESL credentials. Specifically including ESL certified or Teaching English to Speakers of Other Languages (TESOL) certified teachers who are also general education teachers would provide data from a different perspective that may widen the understanding of integrating Web 2.0 technologies to support ELLs in elementary general education classroom settings. Continued research on technology integration with ELLs in elementary general education settings should include a larger sample size that can be generalized. Multiple data points should be considered to triangulate the data.

Implications

The emerging concept of Web 2.0 technology integration by general education classroom teachers in support of ELLs attaining English proficiency and academic

language acquisition is relevant to the education field. Information gained from this study adds to the knowledge base of research on the use of Web 2.0 technologies with ELLs, specifically in general education classroom settings. Harris et al. (2009) expressed an understanding of TPACK as the integration of a teacher's knowledge of technology, pedagogy, and content that influences learning opportunities for students. Several implications have derived from the results of this study that are relevant to social change for educators, the ELL student population, and decision makers in the education arena.

One implication for social change based on the results of this study, is that general education classroom teachers will be better prepared to support ELLs when they integrate Web 2.0 technologies if they acquire the technological knowledge. Acquiring technology knowledge is not enough but rather applying the technology knowledge to what educators know about the content and pedagogy can enhance teaching and learning. Educators will benefit from professional development that includes time to learn about and explore the technologies before full implementation or while gradually implementing such technologies. Participation in learning communities where educators can dialogue with other professionals about implementation strategies for Web 2.0 technologies may foster long-term technology integration by classroom teachers. Overall, the intentional application of technological knowledge may contribute to educators' adoption of successful classroom practices with Web 2.0 technologies to support ELLs in general education settings (Bruce & Chiu, 2015; Liu et al., 2014).

A second implication for social change based on the results of this study, is that decision makers on a larger scale such as in school districts and at the policy level, can be

part of the solution to overcoming the challenges with integrating Web 2.0 technologies to support ELLs in general education settings. Decisions about professional development, access to technology, and resources should be determined in consideration of the time requirements and necessary support systems for educators to integrate Web 2.0 technologies successfully. Information gained from this study may lead to modifications to the distribution of technology equipment and possibly technology training programs for in-service educators as recommended by other authors (Cakir, 2012; Casey et al., 2013; Elfers & Stritikus, 2014).

Another implication for social change based on the results of this study, is that the ELL student population will be better supported in general education classroom settings with the integration of Web 2.0 technologies. Given the support from a class community focused on student-centered learning, with opportunities to engage in the use of Web 2.0 technologies may lead to improving grade level achievement. Addressing the language deficits of ELLs may lead to a decrease in the academic achievement gap between their non-ELL peers. Differentiated instruction with the use of Web 2.0 technologies can enable ELLs to demonstrate their academic understandings in a multitude of ways. An overall, successful academic transition through schooling is attainable with the integration of Web 2.0 technologies contingent upon implementation by general education classroom teachers (Adamson et al., 2013; Berg & Huang, 2015; Kibler, 2013).

Conclusion

General education classroom teachers are faced with the challenge of meeting the needs of a growing population of ELLs and diminishing the achievement gap between

their non-ELL peers. Web 2.0 technology integration with ELLs is increasingly being explored in elementary schools, proving to be a benefit to the different learning styles and needs of students. Web 2.0 technologies in particular, encompass features that allow teachers to differentiate instruction for various learners. When selected and implemented appropriately, Web 2.0 technologies have proven to lead to academic achievements by ELLs in a language-learning environment, outside of the general education classroom setting.

This qualitative interview study explored the experiences of general education elementary teachers' implementation of Web 2.0 technologies to support the academic language acquisition of ELLs in general education settings. Participants reported successes and challenges they experienced while integrating Web 2.0 technologies. With training and professional development for educating ELLs and integrating Web 2.0 technologies, general education teachers will be better prepared to offer meaningful student-centered learning opportunities that support ELLs. Integration of such technologies may lead to better opportunities for ELLs to demonstrate their proficiency and experience successful academic transitions through schooling.

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Appendix A: Recruitment Flyer

ATTENTION TEACHERS!!

Research participants needed!

Help the community of educators to better understand how teachers use Web 2.0 technologies to support ELLs in the general education classroom in urban settings.

- 1-3 interviews, 45 minutes - 1 hour
- Interviews will be conducted away from school property.
- Volunteers needed during the fall semester of 2016 after school hours.

podcasts

iPad

blogs

wikis

avatars

Google Drive tools

Selection Criteria:

Grades 3-5 general education classroom teachers

At least 1-year teaching experience

Have integrated Web 2.0 tools to support ELLs

ELLs in the classroom

If you are interested, please contact Marie Anglin by December 2016.
Please pass along this flyer to colleagues who meet the criteria and might be interested.

e-mail: marie.anglin@waldenu.edu, phone: 678-400-7697

NYC DOE IRB #1507

Walden University IRB approval # 10-18-16-0379534 Expires 10-17-2017

Appendix B: Letter of Invitation and Consent

Title of Research: Technology Integration by General Education Teachers of English Language Learners

You are invited to participate in a research study conducted by Marie S. Anglin, who is an Educational Technology PhD candidate at Walden University. I am an adjunct lecturer at a local university where I observe student teachers and lead seminars. This study is separate from my roles at the city university.

The purpose of this research is to better understand the experiences of general education classroom teachers with integrating interactive and collaborative tools on the Internet, often referred to as Web 2.0 technologies (e.g. blogs, Google Drive tools, avatars, wikis, iPad, podcasts, or other online interactive tools that support student collaboration, sharing of student-generated content, and social networking) in support of English proficiency and academic language acquisition by English language learners. The researcher is inviting individuals who (a) have at least one year of teaching experience in grades three through five, (b) have English language learners (ELLs) in the classroom, and (c) have integrated Web 2.0 tools to support ELLs in language acquisition to be in the study.

Background Information:

The ELL population in classrooms across the United States is increasing. Based on New York State's standardized Math and English Language Arts assessments, there is currently an academic achievement gap between ELLs and non-ELLs. Previous researchers have documented ELLs' showed improved academic outcomes with the use of Web 2.0 technology such as blogs, Google Drive tools, avatars, wikis, iPad, podcasts,

etc. in ESL settings. From the literature that has been reviewed, researchers have not indicated how general education teachers integrate Web 2.0 technology in support of ELLs in the general education classroom.

Procedures:

If you agree to be in this study, you will be asked to:

- Provide your consent by signing a consent form.
- Participate in an initial face-to-face interview with the researcher for approximately 45 minutes to one hour after school hours at a place determined by you. You may select a day and time that is convenient for you.
- Agree to an audiotape of interview sessions with the researcher.
- Review the transcription of your initial interview for member checking.
- If selected as a sub-sample, participate in a second interview.
- Review a summary of the findings that will be shared during a follow-up session for all participants, at which time your feedback will be solicited to ensure quality. A review of the findings is voluntary.

Here are a few sample questions:

- Tell me about the diversity of your current classroom population.
- What are ways you have incorporated Web 2.0 technologies such as blogs, Google Drive, avatars, wikis, iPads, podcasts, or other online interactive tools that support student collaboration, sharing of student-generated content, and social networking as part of instruction to support ELL students and their language acquisition?

Voluntary Nature of the Study:

Your participation in this research study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one will treat you differently if you decide not to be in the study. You will not be penalized in any way should you decide not to participate. If you decide to join the study now, you can still change your mind later and stop at any time. It is possible that not all volunteers will be selected to participate. The researcher will follow up with all volunteers to let them know whether or not they were selected for the study.

Risks of Being in the Study:

Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as becoming upset during the process of recalling previous experiences from memory. Potential discomfort may also be due to the use of an audio recording device as a source for verification. Participants may, however opt not to be interviewed. Being in this study would not pose risk to your safety or wellbeing.

Benefits of Being in the Study:

There are no direct benefits such as payment, gifts, or reimbursements to you as an individual for participating in the study. The benefits to the community of educators will be a better understanding of what is needed for teacher preparation programs and professional development in regards to integration strategies for Web 2.0 technologies such as blogs, Google Drive tools, avatars, wikis, iPad, podcasts, etc. in the classroom. It will also provide an opportunity for you to reflect on your own experiences as a teacher, which could lead to positive changes in your future practice.

Privacy:

Any information you provide will be kept confidential and secured during the data collection and analysis processes. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Confidentiality will be exercised by the use of pseudonyms to replace the names of participants, the names of schools, and the names of districts. Computerized documents will be stored with password protection and saved on an external hard drive that will be kept in a locked compartment with all other data when not being used. Data will be kept for a period of at least 5 years, as required by the university and then destroyed.

Contacts and Questions:

If you have questions, you may contact the researcher via telephone at ____ or via e-mail at marie.anglin@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210. Walden University's approval number for this study is 10-18-16-0379534 and it expires on October 17, 2017. The researcher will give you a copy of this form to keep.

Obtaining Your Consent:

If you feel you understand the study well enough to make a decision about it, please indicate your consent to participate by signing below.

Printed Name of Participant

_____

Date of Consent

_____

☐ Put a check in this box to indicate your consent to audio record your interview.

Participant's Signature

_____

Researcher's Signature

_____

Appendix C: Interview Protocol

General Background Questions

1. Tell me a bit about your teaching career, such as how many years you have been teaching and in what types of settings.
2. Describe your training or professional development related to teaching English language learners (ELLs).
3. Tell me about the diversity of your current classroom population.
4. How many English language learners do you have in your class?

RQ2: What successes do general education teachers experience in integrating Web 2.0 technology to support language acquisition by English language learners?

5. Tell me about a time when you used a collaborative platform for an academic activity with your ELL students.
6. Describe the overall goals you achieved while incorporating the collaborative platform.
7. What are ways you have incorporated Web 2.0 technologies into instruction to support ELL students and their academic language acquisition?
8. What strategies did you use with your language learners during these academic activities?
9. Can you describe specific successes you have had with integrating Web 2.0 technology to support ELLs? Please be as specific as possible.
10. What do you think made these specific examples successful?

RQ3: What challenges do general education teachers experience in integrating Web 2.0 technology to support language acquisition by English language learners?

11. Can you describe specific challenges you have had with integrating Web 2.0 technology to support ELLs? Please be as specific as possible.
12. What do you think made these specific examples challenging?

RQ1: What are general education classroom teachers' perceptions of the effectiveness of integrating Web 2.0 technologies to support the academic language acquisition of English language learners?

13. Are there specific Web 2.0 strategies you believe are more or less effective in helping ELLs acquire academic language?
14. What evidence do you consider in determining the success or lack of success of integrating a Web 2.0 strategy to support your ELLs?
15. What would you advise other classroom teachers who wish to experiment with Web 2.0 technologies for their language learners?

RQ4: What do general education classroom teachers believe they need to in order to integrate technology to support English language learners' academic language acquisition?

16. What are some barriers that you have encountered with integrating Web 2.0 technology to support ELLs?
17. What might help you overcome those barriers?
18. What other support do you believe teachers might need in efforts to use Web 2.0 technologies for ELLs?

Appendix D: Follow-up Protocol

1. After reviewing the transcription of your initial interview, are the responses accurate?
2. Are there any responses that you would like to clarify?
3. Do you wish to share any additional information at this time?
4. Additional questions to be determined following analysis of initial interviews

During the process of data analysis, additional questions for the Follow-up Protocol was developed based on responses to the initial interviews. The additional questions generated data that added depth to the details of initial responses. This inductive strategy enabled me to provide thicker, richer descriptions of teachers' integration of Web 2.0 technologies to support academic language acquisition by ELLs.

Appendix E: Codes, Categories, Themes

Research Question 1: What are general education classroom teachers' perceptions of the effectiveness of integrating Web 2.0 technologies to support academic language acquisition of English language learners?

Codes →	Categories →	Themes
Code 1 vocabulary development	Build background knowledge	Theme 1 Support student learning
Code 2 background knowledge		
Code 3 images	Multimedia use	
Code 4 audio		
Code 5 pace lessons	Pacing	
Code 6 engage students	Engagement	Theme 2 Build class community
Code 7 interactive		
Code 8 partners	Peer support	
Code 9 groups		
Code 10 monitor progress	Monitoring	Theme 3 Differentiate instruction
Code 11 program reports		

Research Question 2: What successes do general education teachers experience in integrating Web 2.0 technology to support language acquisition among English language learners?

Codes →	Categories →	Themes
Code 1 pace lessons	Better pace and scaffold	Theme 1 Enhanced teaching
Code 2 scaffold		
Code 3 model	Able to model	
Code 4 lesson materials	Access lesson materials	
Code 5 practice	Expanding opportunities	Theme 2 Enrich learning opportunities
Code 6 extend learning		
Code 7 ownership	Student engagement	
Code 8 student interest		
Code 9 peer partners		

Research Question 3: What challenges do general education teachers experience in integrating Web 2.0 technology to support language acquisition among English language learners?

Codes →	Categories →	Themes
Code 1 internet connection	Lack internet connection	Theme 1 Access to technology
Code 2 sharing equipment	Insufficient equipment	
Code 3 damaged equipment		
Code 4 individual student support	Lack of time	Theme 2 Challenges during lesson delivery
Code 5 time		
Code 6 groups	Lack of resources	
Code 7 student partners	Classroom management	
Code 8 pacing		

Research Question 4: What do general education classroom teachers believe they need in order to integrate technology to support English language learners' academic language acquisition?

Codes →	Categories →	Themes
Code 1 unknown resources	Time to learn	Theme 1 Professional development
Code 2 rushed implementation	Time to explore	
Code 3 technology knowledge	Training	
Code 4 communicating with ELLs		
Code 5 adopted programs	Learning communities	
Code 6 adopted platforms		
Code 7 other resources		
Code 8 funding	Providing resources	Theme 2 Administrative support
Code 9 working equipment		
Code 10 more equipment		
Code 11 internet access		
Code 12 supplemental materials		
Code 13 set schedule		
Code 14 support staff		

Appendix F: Department of Education IRB

Carmen Fariña, Chancellor
Research and Policy Support Group

52 Chambers Street
Room 310
New York, NY 10007

December 14, 2016

Dear Ms. Anglin:

I am happy to inform you that the New York City Department of Education Institutional Review Board (NYCDOE IRB) has approved your research proposal, "Technology Integration by General Education Teachers of English Language Learners." The NYCDOE IRB has assigned your study the file number of 1507. Please make certain that all correspondence regarding this project references this number. The IRB has determined that the study poses minimal risk to participants. The approval is for a period of one year:

Approval Date: December 14, 2016
Expiration Date: December 13, 2017

Responsibilities of Principal Investigators: Please find below a list of responsibilities of Principal Investigators who have DOE IRB approval to conduct research in New York City public schools.

> Approval by this office does not guarantee access to any particular school, individual or data. You are responsible for making appropriate contacts and getting the required permissions and consents before initiating the study.
> When requesting permission to conduct research, submit a letter to the school principal summarizing your research design and methodology along with this IRB Approval letter. Each principal agreeing to participate must sign the enclosed Approval to Conduct Research in Schools/Districts form. *A completed and signed form for every school included in your research must be emailed to* IRB@schools.nyc.gov . Principals may also ask you to show them the receipt issued by the NYC Department of Education at the time of your fingerprinting.
> You are responsible for ensuring that all researchers on your team conducting research in NYC public schools are fingerprinted by the NYC Department of Education. Please note: This rule applies to all research in schools conducted with students and/or staff. See the attached fingerprinting materials. For additional information click here. Fingerprinting staff will ask you for your identification and social security number and for your DOE IRB approval letter. You must be fingerprinted during the school year in which the letter is issued. Researchers who join the study team after the inception of the research must also be fingerprinted. Please provide a list of their names and social security numbers to the NYC Department of Education Research and Policy Support Group for tracking their eligibility and security clearance. The cost of fingerprinting is $135. *A copy of the fingerprinting receipt must be emailed to* IRB@schools.nyc.gov .

You are responsible for ensuring that the research is conducted in accordance with your research proposal as approved by the DOE IRB and for the actions of all co-investigators and research staff involved with the research.
You are responsible for informing all participants (e.g., administrators, teachers, parents, and students) that their participation is strictly voluntary and that there are no consequences for non-participation or withdrawal at any time during the study.
Researchers must: use the consent forms approved by the DOE IRB; provide all research subjects with copies of their signed forms; maintain signed forms in a secure place for a period of at least three years after study completion; and destroy the forms in accordance with the data disposal plan approved by the IRB.

Mandatory Reporting to the IRB: The principal investigator must report to the Research and Policy Support Group, within five business days, any serious problem, adverse effect, or outcome that occurs with frequency or degree of severity greater than that anticipated. In addition, the principal investigator must report any event or series of events that prompt the temporary or permanent suspension of a research project involving human subjects or any deviations from the approved protocol.

Amendments/Modifications: All amendments/modification of protocols involving human subjects must have prior IRB approval, except those involving the prevention of immediate harm to a subject, which must be reported within 24 hours to the NYC Department of Education IRB.

Continuation of your research: It is your responsibility to insure that an application for continuing review approval is submitted six weeks before the expiration date noted above. If you do not receive approval before the expiration date, all study activities must stop until you receive a new approval letter.

Research findings: We require a copy of the report of findings from the research. Interim reports may also be requested for multi-year studies. Your report should not include identification of the superintendency, district, any school, student, or staff member. Please send an electronic copy of the final report to: irb@schools.nyc.gov.

If you have any questions, please contact Dr. Mary Mattis at 212.374.3913.

Good luck with your research.

Sincerely,

Mary C. Mattis, PhD
Director, Institutional Review Board

cc: Barbara Dworkowitz