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The Impact of Self-Efficacy and Professional Development on Implementation of Web 2.0 Tools in Elementary Classrooms

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The Impact of Self-Efficacy and Professional Development on Implementation of Web 2.0 Tools in Elementary Classrooms

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Approval Page

This dissertation was submitted by Stephen Ward under the direction of the persons listed below. It was submitted to the Gardner-Webb University School of Education and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Gardner-Webb University.

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Abstract

The Impact of Self-Efficacy and Professional Development on Implementation of Web 2.0 Tools in Elementary Classrooms. Ward, Stephen, 2015: Dissertation, Gardner-Webb University, Self-Efficacy/Web 2.0/Professional Development/Technology Implementation

This study sought to understand the impact of self-efficacy and professional development on the implementation of specific Web 2.0 tools in the elementary classroom. There were three research questions addressed in this QUAN-Qual study. Quantitative data were collected through three surveys with 48 total participants: the Web 2.0 tools Utilization Instrument (Pan & Franklin, 2011), the Web 2.0 Utilization Self-Efficacy Instrument (Pan & Franklin, 2011), and the Standards Assessment Inventory 2 (Learning Forward, 2011). Qualitative data were collected through Sadaf's (2013) Interview Protocol with two focus groups.

The first research question answered to what degree do elementary teachers report utilization of specific Web 2.0 tools. The WTII found that the majority of teachers were implementing Web 2.0 tools. Of those implementing Web 2.0 tools, the majority were doing so on a monthly basis. Through Spearman's Correlation, the relationship between self-efficacy, and the utilization of specific Web 2.0 tools, a strong positive correlation was established (Research Question 2). There was a weak positive correlation between self-efficacy and professional development through the computation of Spearman's correlation (Research Question 3). In post hoc research and Spearman's Correlation, there was a weak negative correlation between the number of years teaching and self-efficacy. There was also a weak negative correlation between the number of years teaching and the utilization of specific Web 2.0 tools. Self-efficacy had the strongest relationship to the utilization of specific Web 2.0 tools.

Therefore, a two-fold approach to professional development would be most effective for increasing Web 2.0 utilization. Professional development opportunities would be most effective attempting to increase a teacher's technology self-efficacy while increasing their skills and knowledge on specific Web 2.0 tools.

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Chapter 1: Introduction

The idea that technology has forever changed our lives has become universal (Bennett & Maton, 2010). Computers have evolved through six key periods throughout the 20th and 21st centuries: the transformation to a commercial product in the late 1940s, the emergence of small systems in the late 1960s, the beginning of personal computing in the 1970s, the rise of networking after 1985, the beginning of the open source software movement in the late 1990s, and the rise of "smart" hand-held computing devices and Web 2.0 tools in mid-2000 (Ceruzzi, 2003).

Open source software gave freedom to availability of products to the average consumer (Fogel, 2009). To truly be open source, there must be an unrestricted allowance for modifications and changes. Fogel (2009) said common examples of open-source software are Mozilla Firefox, an internet browser, and the Android operating system for small hand-held devices. The rise and growth of Web 2.0 tools occurred after the dot.com crash in 2001. Grabowicz (2013) found CEOs of major corporations were forced to analyze and scrutinize companies still excelling and those that failed. He said this led to the Web 2.0 Summit which marked a shift away from companies producing technologies on the internet for static, passive consumers. Web 2.0 was defined by a shift to internet-based technologies that allowed for collaboration, interaction, and content that could be altered by individual users (Grabowicz, 2013). Web 2.0 tools included, but were not limited to, blogs, wikis, social networking, social bookmarking, and video conferencing (Sharp, 2008).

Technology has evolved from the mid-20th century through the 21st century into today's Web 2.0 tools format through open-face software. Web 2.0 tools give users the opportunity to interact and communicate with unrestricted access. In education, Web 2.0

tools allow students to collaborate and use higher order thinking skills. Today's students also desire this format as opposed to lecture (Prensky, 2010). O'Bannon and Britt (2012) found that Web 2.0 tools increased student achievement levels because of the innovation, creativity, and the use of higher order thinking skills implored.

However, Web 2.0 tools are not being implemented by the majority of teachers and to their fullest capabilities (Project Tomorrow, 2013). Opportunities to increase student achievement are being lost. Pan and Franklin (2011) identified in a quantitative study the two most important factors influencing Web 2.0 tools utilization were self-efficacy and professional development. Most studies on Web 2.0 tools were secondary only or ranged from kindergarten through 12th grade. This study expands on Pan and Franklin's study by adding qualitative data through focus groups and professional development data. This will help deepen the understanding of self-efficacy and professional development's relationship on Web 2.0 tools implementation in the elementary classroom.

Web 2.0 Tools and Education

Today's 21st century learners have definite ideas and needs regarding the pedagogical approach used by teachers. According to Prensky (2010), students want to create using today's tools while following their own interests and passions. He said they want to work with their peers on group work and hold everyone accountable while cooperating, connecting, and competing with each other. It is clear that students do not want to be lectured and desire content that is not just relevant but real (Prensky, 2010). Due to the rise and evolution of technology, the aforementioned needs of students can be met through a single platform, Web 2.0 tools.

Web 2.0 tools have been shown to significantly increase student achievement on

pre and posttests (O'Bannon & Britt, 2012). Students also perceive wikis to be a more effective teaching tool and provide more opportunities for hands-on learning experiences (O'Bannon & Britt, 2012). One contributing factor to increased pre and posttest scores was the changed role of the student. Web 2.0 tools in projects allowed students to read, write, and edit content (O'Bannon & Britt, 2012). These tasks envelope the highest level skills of evaluating and creating in the Revised Bloom's Taxonomy (Anderson & Krathwohl, 2001).

Web 2.0 tools allow for creativity and innovation to occur (O'Bannon & Britt, 2012). Eighty-four percent of business executives identified these skills as extremely or very important to their companies' growth strategies (McKinsey, 2010). However, in many educational settings, students are consuming information through lectures as opposed to creating, according to Wagner (2012). He said classrooms defined by innovation and creativity focus on developing a particular skill set that includes problem solving, creating a product, and generating a new understanding. Wagner also studied individuals in an age range of 21-32 employed in innovative jobs in STEM fields or who were social innovators and entrepreneurs. A common theme stated by their parents was time allowed for unstructured exploration. Wagner concluded the United States educational system has traditionally attempted to conserve a knowledge base and convey a cultural identity. The transferring of knowledge typically takes place through lecture, but Wagner said the problem with this philosophy is the abundance of information that is readily available. Lecture only covers a microscopic amount of information. Instead, students must learn to create and explore on their own to be able to process this abundance of information. Wagner stated that Web 2.0 tools allow for students to be creators rather than consumers.

The number of teachers integrating interactive technology with Web 2.0 tools has increased the last 2 years by 25% based on a study by Project Tomorrow (2013). However, the same study found the majority of teachers, 55%, are not integrating interactive technology with Web 2.0 tools. Access to computers and tablets is limiting teachers' abilities to integrate Web 2.0 tools. According to this Project Tomorrow (2013) study, 55% of teachers said they did not have enough computers and tablets to use.

Nature of the Problem

Project Tomorrow (2013) is an annual research project to identify national trends on the digital conversion in education from a macro perspective. Almost 40,000 parents and 102,000 educators representing 2,400 districts were involved in Project Tomorrow. The goal of the 2013 project was to provide evidence of what a digital conversion looks like and what must be done to sustain it. They found that Web 2.0 tools are not being utilized or being utilized to the fullest of their capabilities. O'Bannon and Britt (2012) found the significance is that Web 2.0 tools have the potential, when implemented correctly, to increase student achievement. Pan and Franklin's (2011) study sought to identify the factors predicting educators' use of Web 2.0 tools to increase student achievement and found self-efficacy and professional development as the most important factors predicting use of Web 2.0 tools. Therefore, this study examined the impact of self-efficacy and professional development on educators' use of Web 2.0 tools to deepen understanding.

Deficiencies in the Evidence

Educational technology has evolved from the stand-alone computer to interactive whiteboards, interactive projectors, wireless slates, student response systems, and more (Dell, 2015). In the rapidly changing field of educational technology, research results

may change with the technology (Education Week, 2011). Therefore, the need to conduct additional research on educational technology was critical. Compared to the history of education, technology is a new introduction into the field. Many aspects of implementing and assessing technology are undiscovered (Education Week, 2011). It should be noted that this study did not assess technology but focused on examining its implementation.

New advances have been made even in the last few years with the introduction of Web 2.0 tool capabilities, according to Baumbach (2009). Before Web 2.0 tools, the general internet user was a consumer. Information was read and consumed by the learner. Baumbach noted the web pages themselves were created by someone who knew Hyper Text Mark-up Language, abbreviated as HTML. The only method to display content before Web 2.0 tools was HTML, and knowledge of it was required by someone who wanted to make information public on the internet. With Web 2.0 tools, computer software has been made that allows web applications to communicate directly with the server. Baumbach said this allows anyone without knowledge of HTML to create and post information to the internet with the proper applications. The educational tools of Web 2.0 tools, as previously mentioned, include the use of blogs, wikis, social networking, social bookmarking, and video conferencing. The educational implication of these tools is that they allow students to collaborate within or outside of the classroom with classmates or students around the world to enhance learning (Baumbach, 2009).

Pan and Franklin's (2011) study was strictly quantitative. The Web 2.0 tools Implementation Instrument (WTII) and the Web 2.0 tools Implementation Self-Efficacy Instrument (WTISEI) survey instruments were used to collect the data. Pan and Franklin's study could be strengthened through a mixed-methods study. This study

incorporated the WTII and WTISEI as the source of quantitative data but also included collected qualitative data through the use of focus groups, observations, interviews, and open-ended questions added to the WTII and WTISEI. Also, Pan and Franklin's study was conducted in Grades K-12. This study also differed due to conducting it with teachers in Grades K-5.

Purpose of the Study

The purpose of this study was to examine the relationship between teacher technology self-efficacy and professional development on Web 2.0 tools implementation in an elementary school classroom.

Audience

Understanding the impact of self-efficacy and professional development on Web 2.0 tools implementation may be important to multiple groups. Creswell (2012) defined the audience as any individuals or groups who will read and potentially benefit from the information provided in a study. In this study, the target audience was teachers, school administrators, and professional development leaders.

Teachers may benefit from knowing the impact of self-efficacy and professional development because data collected could help teachers implement Web 2.0 tools more effectively and frequently in the classroom. Identifying themes that have the most impact on Web 2.0 tools implementation could help teachers have a focus area for improvement. School administrators may benefit from this study because it may potentially identify professional development topics that produce the best results. For example, this study could find professional development has a significant impact on Web 2.0 tools implementation and knowledge of Web 2.0 tools may be the most influential topic. School administrators may also benefit from knowing the impact of self-efficacy and how

to assist in overcoming low self-efficacy. Professional development leaders, as with school administrators, may benefit from knowing the most effective professional development content. The inverse could potentially be true for professional development leaders.

Web 2.0 Tools in Elementary Schools

This study focused on elementary school classrooms. The majority of studies involving Web 2.0 tools have focused on secondary classrooms only or spanned a range of Kindergarten through 12th grade. Hossain and Weist (2013); Moreira, Aurora, and Pereira (2011); and Niederhauser and Perkmen (2008) are examples of studies that focused on secondary classrooms. Hew and Brush (2006); Hew and Cheung (2013); Jamieson-Proctor and Larkin (2012); and Reich, Murnane, and Willett (2012) are all examples of studies ranging from kindergarten through 12th grade. Pan and Franklin's (2011) study on self-efficacy and professional development's effect on Web 2.0 tools implementation was comprised of teachers in Grades K-12. This study added to limited research on Web 2.0 tools implementation in the elementary classroom.

Definition of Terms

For the purpose of this study, the following terms are operationally defined as specified below.

Frequency of use for Web 2.0 tools. Defined by a 5-point Likert scale. The labels for the Likert scale are (5) daily, (4) at least once a week, (3) at least once a month, (2) at least once a year, and (1) never (Pan & Franklin, 2011).

Web 2.0 tools. The internet viewed as a medium in which interactive experience in the form of blogs, wikis, forums, etc., plays a more important role than simply accessing information (Collins, 2012).

Technology self-efficacy. "Teachers' beliefs in their capacity to work effectively with technology" (Wang, Ertmer, & Newby, 2004, p. 231).

Research Questions

For this study, the following research questions were used to guide research and data collection.

1. To what degree do elementary teachers report utilization of specific Web 2.0 tools?
2. What is the relationship between teacher technology self-efficacy and utilization of specific Web 2.0 tools in the elementary classroom?
3. What is the relationship between professional development and utilization of specific Web 2.0 tools in the elementary classroom?

Summary

Technology has evolved from the mid-20th century through the 21st century into today's web 2.0 format through open-face software. Web 2.0 tools give users the opportunity to interact and communicate with unrestricted access. In education, Web 2.0 tools allow students to collaborate and use higher order thinking skills. Today's students also desire this format as opposed to lecture (Prensky, 2010). O'Bannon and Britt (2012) found that Web 2.0 tools increase student achievement because of the innovation, creativity, and the use of higher order thinking skills employed.

However, Web 2.0 tools are not being implemented by the majority of teachers and to their fullest capabilities (Project Tomorrow, 2013). Opportunities to increase student achievement are being lost. Pan and Franklin (2011) identified in a quantitative study the two most important factors influencing Web 2.0 tools utilization were self-efficacy and professional development. Most studies on Web 2.0 tools were secondary

only or ranged from kindergarten through 12th grade. This study expanded on Pan and Franklin's study by adding qualitative data through focus groups and professional development data in order to deepen the understanding of self-efficacy and professional development's relationship on Web 2.0 tools implementation in the elementary classroom.

Chapter 2: Literature Review

Overview

The two most important factors in implementing Web 2.0 tools in the classroom were a teacher's self-efficacy and the professional development received (Pan & Franklin, 2011). However, technology continuously evolves and Pan and Franklin (2011) only used quantitative measures. This study added to Pan and Franklin's study by using qualitative measures along with conducting the study in an elementary school. Pan and Franklin's study was conducted with all school teachers. To further understand the issue of implementing Web 2.0 tools to their furthest extent and utilizing their capabilities, this chapter examines topics that were beneficial to this study. First, Web 2.0 tools were examined in depth, particularly Web 2.0 tools and how they related to education. Second, Bandura's (1977) term of self-efficacy which was grounded in the social cognitive theory was the focus, as well as self-efficacy as it relates to teachers. The International Society for Technology in Education's (ISTE) standards for teachers and students were reviewed. Finally, professional development standards and effective professional development were discussed.

Web 2.0 Tools and Education

Web 2.0 tools implementation in today's elementary classrooms could occur in multiple forms using a variety of Web 2.0 tools. Each Web 2.0 tool could have been used to enhance instruction in any content area. This enables a Web 2.0 tool to be used at any level provided students are taught the functionality of the tool (Reich et al., 2012). Therefore, the functionality of Web 2.0 tools was examined along with an example of how a teacher could implement the tool. Each tool had multiple methods for implementation. The example, if discussed regarding a particular content area, was only

one example of the content area in which the tool can be utilized. The Web 2.0 tools Instrument by Pan and Franklin (2011), to be described later, measured the frequency of a particular tool's use. How the Web 2.0 tool was used was not measured quantitatively. However, in the focus group, teachers discussed specific methods of implementation for Web 2.0 tools. Light and Polin (2010) also found Web 2.0 tools typically fall into one of four categories:

1. Tools that create or support a virtual learning environment,
2. Tools that support communication and cultivating relationships,
3. Research to support teaching and learning, or
4. Tools enabling students to create artifacts demonstrating what they are learning.

Light and Polin's categories were beneficial in analyzing qualitative data from Sadaf's (2013) focus group interview protocol through driving the coding process. The protocol and analyzing data were discussed in more detail in Chapter 3.

Two of the factors Pan and Franklin (2011) found to affect Web 2.0 tools implementation were teacher self-efficacy and professional development. A teacher's self-efficacy affects Web 2.0 tools implementation because a higher self-efficacy has been shown to provide more attempts and continued effect regardless of initial failure (Bandura, 1977). Pan and Franklin's survey, the WTISEI, measured teacher technological self-efficacy in this study. Pan and Franklin also found professional development to be a factor in implementing technology in the classroom. In this study, the Standards Assessment Inventory 2, discussed in Chapter 3, measured professional development's effect on implementation. The SAI2 was created by Learning Forward (2011). As mentioned, this study enhances Pan and Franklin's quantitative study with the

addition of qualitative data collection through focus groups.

Web 2.0 Tools in the Elementary Classroom

Kist, Doyle, Hayes, Horwitz, and Kuzior (2010) described the task of accepting and implementing Web 2.0 tools in the elementary classroom as an extremely difficult one that takes courage. Understandably, they said parents want to protect their children. According to Kist et al., Web 2.0 tools were generally accompanied with fear from parents when Web 2.0 tools were discussed with elementary school parents. However, they said properly informing parents alleviated many fears by describing safety measures and the benefits of Web 2.0 tools. There was also social pressure from other teachers to conform to a 20th century "more serious" pedagogical model (Kist et al., 2010, p. 62). Kist et al. said it was almost "militaristic" in nature (p. 63). However, the benefits of higher student achievement using Web 2.0 tools were not attained through this pedagogical style. Therefore, identifying the relationship between two of the most important factors in Web 2.0 tools implementation was essential for higher student achievement (Pan & Franklin, 2011).

However, the courage to use Web 2.0 tools was necessary, according to Kist et al. (2010). Students' literacy practices were greatly affected by social media. They said students spend more time on social media than anything else during the hours they were awake. Therefore, Facebook, Twitter, and other social media sites can be used to improve literacy skills (Norman, 2009). According to MacLeod (2008), almost half of students (49%) found writing to be boring, but when writing was related to social media, students have a more positive outlook towards writing. Web 2.0 tools, according to Norman (2009), helped student achievement because writing on social media helped students gain confidence which increased their self-efficacy when attempting more

formal writing tasks. Elementary students could benefit through a structured environment to collaborate with peers with Web 2.0 tools. The WTII and WTISEI helped provide data on social media implementation in the elementary classroom.

Kist et al. (2010) described and highlighted effective Web 2.0 tools in the elementary classroom. For example, first-grade students benefitted from having a classroom message board where ideas, feelings, and stories could be shared. Parents were provided login information so the message board could be accessed at home. Kist et al. said another effective method involved older elementary students using Twitter to create dialogues with parents. Before the method was implemented, parents and students were able to attend a training session to learn the benefits of Twitter. Both students and parents created Twitter accounts. Students Tweeted their tasks and learning activities throughout the day. Parents were able to follow students throughout the school day related to learning tasks. Kist et al. said it completely changed dialogue between students and parents. The questions changed from "How was your day?" to "How did your writing assignment turn out?" The benefits of Web 2.0 tools in elementary classrooms were numerous, but the most essential benefit was creating or making conversations easier which otherwise may not have occurred on classroom content (Kist et al., 2010). The more conversations parents and students engage in related to classroom content, the more successful students were going to be. Therefore, understanding the relationship self-efficacy and professional development play in the implementation of Web 2.0 tools was important to increasing its implementation for higher student achievement (O'Bannon & Britt, 2012).

ISTE Standards

ISTE (2008) created standards for creating, implementing, and assessing

technology in the classroom. There were two sets of standards: one for teachers and the other for students. The five teacher standards were (1) facilitate and inspire student learning and creativity, (2) design and develop digital age learning experiences and assessments, (3) model digital age work and learning, (4) promote and model digital citizenship and responsibility, and (5) engage in professional growth and leadership. The standards for teachers were important because ISTE has found that teachers who are effectively implementing them create a more effective learning environment. The six ISTE standards for students were (1) demonstrating creativity and innovation; (2) communicating and collaborating digitally; (3) applying digital tools for research and information fluency; (4) critically thinking, problem solving, and decision making; (5) demonstrating digital citizenship; and (6) demonstrating sound technological operations and concepts. Most importantly, ISTE stated that student learning increased when the standards were implemented effectively. The ISTE teacher standards aligned with other research regarding higher student achievement (O'Bannon & Britt, 2012) by increasing student engagement, accessing higher order thinking skills, and meeting students' needs (Wagner, 2012).

Web 2.0 Tools and 21st Century Learning

Twenty-first century learning, which includes Web 2.0 tools, provided a framework for creating and developing learning environments which emphasized higher order thinking skills (Reich et al., 2012). Engaging students and developing higher order thinking skills through Web 2.0 tools created authentic learning environments which were similar to a technology-driven workforce (Reich et al., 2012). It has been a drastic evolution from the internet's initial stages (Web 1.0). Web 1.0 was controlled by a limited number of people and characterized by the average user consuming information.

Web 2.0 tools, as previously discussed, allowed for a "read & write" format which was inherently collaborative and participatory (Greenhow, Robelia, & Hughes, 2009, p. 250). This collaborative and participatory environment provided opportunities to utilize higher order thinking skills (Greenhow et al., 2009). This was critical to education because Web 2.0 tools, higher order thinking skills, collaboration, and active participation were all known strategies for increases in student achievement.

Web 2.0 tools have expanded the typical thought of a classroom consisting of four walls within a school building. Access to a technological device and the internet created a learning environment void of the brick and mortar building (Greenhow et al., 2009). Since the mid-1990s, the percentage of public schools with internet access has exploded from 35% to 100% (Greenhow et al., 2009). This has created the capabilities of using blogs, wikis, social networking, social bookmarking, and video conferencing in the classroom. Tunks (2012) described taking advantage of Voicethreads capabilities. Voicethreads were best used for learning outside of a traditional classroom (Tunks, 2012). For example, the leader or any student could leave a comment or topic. Others in the class could listen to the comment from any location and respond by leaving a Voicethread response. In a survey, students responded that they like the ease of use and clicking on others profile pictures while listening to their comments (Tunks, 2012).

Reich (2012) said that wikis were emblematic of Web 2.0 tools due to their collaborative nature, and any group member had the ability to edit a multimedia page at any time. Wiki content could be modified across multiple areas and not limited to one (Reich, 2012). Reich also found the most common uses for wikis were to publish homework assignments, maintain portfolios, peer review writing, and posting artwork. Wikis were also used, albeit less commonly, in athletics to post plays and drills and in

music to download rehearsal music (Reich, 2012). Data that Reich found suggested wikis were used more for short-term projects than long-terms supports. The average lifespan for all wikis in public schools was only 13 days. This lended itself more towards publishing homework assignments and peer review writing than portfolios (Reich, 2012). The data collection instruments measured wikis, blogs, podcasts, social networking, image/photo sharing, and course management systems use along with teacher's self-efficacy in using these tools along with many other Web 2.0 tools.

Self-Efficacy

One of the constructs for this study was self-efficacy. Self-efficacy refers to one's perceived ability to complete a specific task (Bandura, 2001). It is grounded in Bandura's (1977) social cognitive theory. In the social cognitive theory, humans were their own agents of change (Bandura, 2001). People were not only products of their environment but can change and create their own outcomes by pursuing these outcomes (Bandura, 2006). Bandura (1977) stated, "Outcomes people anticipate depend largely on their judgments of how well they will be able to perform in given situations" (p. 21). Self-efficacy was used as a reliable measurement by Pan and Franklin (2011) for determining the factors predicting Web 2.0 tools implementation in the classroom and was a construct used in this study. However, Pan and Franklin's study was quantitative only, and this study added to and validated their findings through the addition of qualitative measures and by conducting the study at the elementary level only. Additional data were collected on self-efficacy through the use of focus groups.

Bandura (1997) identified four factors that influence and determine one's self-efficacy. The most important of the four factors was one's experiences or enactive attainment. In enactive attainment, success raised self-efficacy while failure lowers it.

Modeling or vicarious experience was the second factor. If one sees the task modeled successfully, one's self-efficacy on the task increased. If it was modeled unsuccessfully, the inverse was true (Bandura, 1997). Third, social persuasion affected self-efficacy. This generally was exhibited through encouraging or discouraging communication. Finally, self-efficacy was affected by psychological factors. Stress was an example of this. If one became stressed and nervous before performing a task with a low self-efficacy, the individual may start believing the nervousness is due to their perceived inability to complete the task. However, a nervous feeling in an individual with high self-efficacy may be dismissed as a normal response unrelated to their ability to complete the task (Bandura, 1997).

Bandura's (1982) research found enactive attainment was the most influential source and factor of self-efficacy because it is based on previous personal experiences. Successful or unsuccessful situations that were previously experienced all play a role in forming one's self-efficacy for future tasks (Zimmerman, 2000). Bandura (1982) said failures early and often in the process can be devastating, particularly if the failures are not due to a lack of effort or poor uncontrollable circumstances. Successful tasks that have been learned were often called mastery experiences (Bandura, 1982).

Enactive attainment was not the only experience that plays a part in creating one's self-efficacy. Vicarious experiences also factored into one's self-efficacy, according to Bandura (1997). One's self-efficacy was affected by observing the tasked performed by someone else. Bandura (1982) said that particularly if the observer watches someone else successfully exhibit mastery of a task, self-efficacy was positively influenced. He said one can believe they too have the capabilities of accomplishing the task. The opposite was also true. If one sees a person with comparable capabilities fail, the observer's self-

efficacy for the task was lowered (Bandura, 1982).

Bandura (1997) identified social persuasion as a factor in one's self-efficacy. He found social persuasion may be the best short-term solution for creating self-efficacy. With social persuasion, one was given the confidence through verbal instruction and cues to accomplish the task. Bandura (1982) found social persuasion can be effective long-term if the person already possesses and believes he/she has the skills necessary to complete the task. In this case, the social persuasion took the form of motivation. In an almost cyclical effect, motivation increased one's effort which increased the chances of being successful. As aforementioned, Bandura (1997) found enactive attainment to be one of the most important factors of self-efficacy.

Lastly, Bandura (1997) found psychological factors to affect self-efficacy. In highly stressful and challenging situations, self-efficacy was negatively affected and debilitated performance. Therefore, Bandura (1982) found people with a moderate level of stress can expect to perform better than compared to being tense, agitated, and/or stressed. People rely partly on the information obtained and judged depending on their psychological state which affected one's self-efficacy. He found the higher the stress, the less information was obtained and processed. Bandura's (1982) four categories of self-efficacy were relative to this study because the findings of this study could help teachers and school leaders determine the area to focus on for improvement. For example, if data indicated that social persuasion was a strong factor, this could be an area of focus for school leaders. If teachers were lacking the knowledge of particular tools, vicarious experiences or modeling strategies for implementation might be needed.

Teacher's Technology Self-Efficacy

Pan and Franklin (2011) found teacher self-efficacy as a factor in integrating Web

2.0 tools. Teacher's technology self-efficacy relates to a teacher's own perceived capabilities of obtaining a certain task within certain parameters of implementing technology and Web 2.0 tools. A teacher's self-efficacy teaching a particular objective via lecture may be high compared to a low technology self-efficacy teaching the same objective while incorporating Web 2.0 tools. It affects the learning environment and processes the teacher and students take to achieve a learning objective (Tschannen-Moran & Woodfolk-Hoy, 2001). A teacher's technology self-efficacy affects student learning patterns and emotions. A teacher with a high technology self-efficacy believes he/she can help students attain objectives regardless of their motivation or willingness (Tschannen-Moran & Woodfolk-Hoy, 2001). Students are also aware of a teacher with a higher self-efficacy and this translates into a higher student self-efficacy (Muretta, 2004). Huitt (2000) identified eight characteristics that affect a teacher's self-efficacy:

1. a sense of personal accomplishment,
2. positive expectations for student behavior and achievement,
3. personal responsibility for student learning,
4. strategies for achieving objectives,
5. positive affect,
6. sense of control,
7. sense of common teacher/student goals, and
8. democratic decision making.

The three factors with the most statistical significance affecting the utilization of technology and Web 2.0 tools in Huittt's (2000) study were how the teacher feels about teaching, their self-efficacy and opinions about students, and the impact they have on student learning. Teachers must have confidence in their ability to implement Web 2.0

tools in order to have the most success. If a teacher was not confident in his/her abilities, he/she was more likely to be unsuccessful or not even attempt to implement Web 2.0 tools (Huitt, 2000).

Chen (2012) found a teacher's technology self-efficacy related to technology affects the accessibility of technology. Chen referred to accessibility as access to hardware, software, and the internet. Teachers with a higher technology self-efficacy were more likely to have accessibility to technology (Chen, 2012). A higher technology self-efficacy made it more likely to volunteer or pursue a limited number of technological devices and support instruction with personal devices (Chen, 2012). Chen found social persuasion to be a statistically significant factor. Encouragement was very effective in the beginning stages of assisting someone with low self-efficacy to initially attempt to implement technology (Chen, 2012). Having a deeper understanding between self-efficacy and professional development to Web 2.0 tools utilization may help identify areas of need.

The rate of Web 2.0 tools implementation could possibly be increased through self-efficacy. School and technology leaders who understand how critical self-efficacy is to student learning and implementing change could use that knowledge to increase student achievement (Tschannen-Moran & Woodfolk-Hoy, 2001). The aforementioned self-efficacy guidelines could be used to increase a teacher's overall self-efficacy and their self-efficacy related to the implementation of Web 2.0 tools. Because Web 2.0 tools increased student achievement (O'Bannon & Britt, 2012), increasing a teacher's technology self-efficacy affects how often teachers implement Web 2.0 tools which, in turn, increases student achievement.

Effective Professional Development

Pan and Franklin (2011) also identified professional development as a factor influencing the implementation of Web 2.0 tools. Quality professional development was important because it could increase student achievement when utilized and implemented correctly (Biancarosa, Bryk, & Dexter, 2010; Saunders, Goldenberg, & Gallimore, 2009). Learning Forward (2011), a leading organization on professional learning, developed seven research-based standards outlining the characteristics that lead to effective teaching practices, supportive leadership, and higher student achievement. The seven standards for effective professional learning included learning communities, leadership, resources, data, learning designs, implementation, and outcomes.

The first standard for professional learning involved learning communities. Learning communities created an environment to engage in continuous improvement, develop collective responsibility, and allow for the alignment of the school's goals. In a cycle of continuous improvement, learning communities focus on data, identifying the needs of students, selecting evidence-based teaching strategies, and evaluating the results of these strategies. Collective and shared responsibility in learning communities was a key to the advancement of the organization. Decisions were shared between all stakeholders. Shared decisions allowed for peer-to-peer support and increased informal accountability. The goals of the learning community should be aligned to the school and school district's vision and mission (Learning Forward, 2011).

Web 2.0 tools allowed for a transformation of professional development through online learning communities (Huber, 2010). Teachers were able to share information, methods, and strategies via a Web 2.0 tools platform as opposed to simply being consumers. This enabled teachers to gain hands-on experience with the Web 2.0 tools

that potentially could be implemented in their classroom (Huber, 2010). The more experience and skills one received increased his or her self-efficacy (Bandura, 2001). In turn, this increased the likelihood of the Web 2.0 tools being implemented in the teacher's classroom (Huber, 2010).

Leadership was the second standard for professional learning, and was a critical part of professional development. Skilled leadership could increase educator effectiveness and student achievement through developing capacity, advocating, and creating support systems for professional learning. Skillful leaders understand the importance of student learning and high expectations for all stakeholders. These should be one of their highest priorities. The most important factors that affect technology leaders when implementing Web 2.0 tools were having a vision, plan, and ability to manage the implementation (Chang, 2012). The leader must maintain the vision of technology, and Web 2.0 tools reformed the classroom to increase student achievement (Chang, 2012). Professional learning provided an avenue for improvement and developing capacities through keeping these high expectations (Learning Forward, 2011).

Skillful leaders also advocated for professional learning in two ways. One, skillful leaders continued in their personal professional development to establish its importance by making it a personal priority (Learning Forward, 2011). Therefore, technology leaders must continuously learn the emerging technologies and how to successfully operate Web 2.0 tools (Chang, 2012). Second, skillful leaders advocated through articulating to all stakeholders the link between professional learning and educator effectiveness (Learning Forward, 2011). Chang (2012) found technology leaders' interpersonal skills were more important than their technology skills. This could manifest itself through advocating for the need to fund technology.

The third standard for professional learning that increased educator effectiveness and results for all students described generalizations about how resources should be allocated. Allocating resources effectively included the prioritization, monitoring, and coordinating of resources in a manner that was most beneficial to all students (Learning Forward, 2011). Funding for technology professional learning must be distributed equitably and not equally based on the needs of the students (Lynch, 2011). The term "resource," however, was not limited to monetary means only. It also included human capacities, time, and materials. However, there was not a prescribed method or percentage to allocate resources. More importantly, professional learning on technology must address the needs of each individual staff and district to effectively meet the district's goals (Lynch, 2011). Effectively allocating resources required one to be attuned to the needs of the staff and students. One clear guideline given was to ensure equity in the allocation of resources to ensure fairness for all students (Learning Forward, 2011). This can be evaluated by using multiple data sources, i.e., the number of existing technological devices, student achievement data, a staff's self-efficacy on the devices, and their existing technological skills (Lynch, 2011). Monitoring technological resources, at times, could be challenging. However, a comprehensive and consistent technology development plan to monitor the allocation of resources must be in place. If a comprehensive technology plan was not in place, one does not know how appropriate or effective the allocation of resources has been (Learning Forward, 2011).

The fourth standard for professional learning which increased educator effectiveness and student achievement called for the use of data from a variety of sources. These sources included student, educator, and system data to plan, assess, and evaluate student learning and teachers (Learning Forward, 2011). Evaluating a teacher's

knowledge and skills related to Web 2.0 tools drives the professional learning content (Jimerson & Wayman, 2011). The goals of the professional learning opportunity could then be set based on the analysis of data compared to the assessed needs and what the organization is attempting to achieve with technology and Web 2.0 tools. Once the technology plan and goals have been established, the multiple data sources must be used to monitor and evaluate progress toward the curriculum standards and technology goals (Jimerson & Wayman, 2011). The data collected at the classroom and school level must be collected formatively. Finally, data must be collected and used to evaluate the professional learning. Typical questions that drive the assessment of professional learning on technology and Web 2.0 tools included those that seek to find its merit, effect, and worth (Learning Forward, 2011).

The fifth standard for professional learning had learning designs that integrated theory, research, and models of human learning to achieve the intended outcomes. Similar to creating the goals of the professional learning, the learning design of the professional learning had several factors that should be taken into consideration. The goals of the professional learning, the characteristics of the participants, the comfort level as a group, and the work environment were factors for consideration. Multiple learning designs exist; but the best learning designs included characteristics such as active engagement, modeling, reflection, metacognition, feedback, ongoing support, and formative/summative assessments. Technology could contribute to the learning design by creating opportunities for personalization and differentiation. The teaching practice could be enhanced through technology due to its ability to provide evaluating, critiquing, and collaborating opportunities with peers outside of the immediate area with ease. The most critical factor in selecting a learning design was ensuring it contains active

engagement. Active engagement promoted change in an educator's practice and in student learning. A strong, positive outcome occurred when participants were collaborating and talking actively about the content. Active participation also created a personal commitment and more motivation to implement the professional learning objectives (Learning Forward, 2011).

The sixth standard of professional learning (implementation) incorporated change research to ensure long-term sustainability. Change research included the latest information on transforming individuals, organizations, technical change, and creating change that has long-term sustainability (Learning Forward, 2011). The most important factor in the long-term sustainability of Web 2.0 tools and professional learning for Web 2.0 tools was access and funding (Oates, 2011). The cost of sustaining technology that supported Web 2.0 tools and professional learning for Web 2.0 tools was significant (Oates, 2011). Long-term sustainability was also driven by ongoing support at the implementation site of Web 2.0 tools. This could occur through multiple strategies and forms. It could occur individually, in small groups, or as whole groups. Ongoing Web 2.0 tools support may be more formal, and the entire group had secondary meetings for a deeper understanding. It may take place within learning communities with coaching. Support during learning communities allowed teachers with similar content to prepare lesson plans, analyze student work, assess progress, and reflect. Professional learning standard 4 was an integral part of standard 6. The type of support provided was determined by the data collected (Learning Forward, 2011). Providing support that aligned with the needs of teachers created an environment for long-term sustainability along with adequate funding (Oates, 2011).

The seventh standard of professional learning (outcomes) aligned educator

performance and student curriculum standards to the intended outcomes. If student content standards and performance standards for teachers were integrated into the professional learning, the correlation between educator learning and student learning became significant. This correlation increased the likelihood of higher student achievement (Learning Forward, 2011). In the location of this study, teachers were held accountable and evaluated on integrating technology into the classroom (McKinney, 2009). Therefore, professional learning on technology immediately became more effective if professional learning facilitators align it directly back to the state's teacher evaluation system. The outcomes of the Web 2.0 tools goals for educators and educational leaders were based on research. This research guided educator standards because it was based on the knowledge, skills, practices, and dispositions of highly effective educators and leaders in technology. Teachers also had standards of learning for students related to technology (McKinney, 2009). These research-based standards guided student technological literacy in several areas: sources of information, informational text, technology as a tool, research process, and safety/ethical issues (McKinney, 2009). Student learning outcomes define high-level expectations for all students and guides instruction. Research has indicated that instruction and student learning that is aligned to a set of standards or outcomes increases student achievement (Learning Forward, 2011). In the state in which this study occurred, the technology standards for teachers and students were clearly defined. This created the needed alignment between professional learning, outcomes, and classroom practices.

The professional development standards and applications related to Web 2.0 tools provided a guideline and a framework to providing Web 2.0 tools professional development opportunities. Following the framework provided by Learning Forward

(2011), professional development on Web 2.0 tools could create experiences which enable teachers to become skilled and knowledgeable on Web 2.0 tools. Becoming more skilled and knowledgeable at Web 2.0 tools could create a higher self-efficacy on Web 2.0 tools implementation (Bandura, 2001).

A second major study that directly affected teachers in this study occurred 15 years ago. A company out of Colorado developed a study guide for effective professional development. By using research conducted by the National Staff Development Council (1994), Schiff et al. (1997, p. 4) reported that quality professional development was influenced by a variety of factors. Three of those factors that had a direct influence were context characteristics (the "when," "where," and "why"); process variables (the "how"); and content characteristics (the "what"). Schiff et al. described quality professional development as a "dynamic and fluid process" (p. 2). If appropriate structures were in place (context), best practices were used (process and the seven Learning Forward Standards), and appropriate knowledge and skill acquisitions were provided (content), student achievement would be positively impacted (Schiff et al., 1997). Today, the goals and components of effective professional development programs have not changed, but the way professional development was conducted has (North Carolina Department of Public Instruction [NCDPI], 2007). This means professional development for Web 2.0 tools would be more effective meeting each teacher according to their skill level rather than a one size fits all whole group instruction. This might look like professional development on Web 2.0 tools occurring in a computer lab rather than a lecture, stand-alone presenter. A computer lab would allow each teacher to work at an individualized pace. It would also allow for content variation for each teacher's current skill level.

The goal of providing quality professional development is to help educators develop the knowledge, skills, and behaviors needed to create effective learning experiences for all students (NCDPI, 2007). The days of thinking professional development was for teachers only and "one size fits all" are gone. Professional development leaders should model the effective strategies, as aforementioned, as well. The North Carolina Professional Development Standards (like Colorado) were "organized according to the context/process/content schema first introduced by George M. Sparks in 1983 and grounded in the work of the NSDC" (NCDPI, 2007, p. 3). By using the three components (context, process, content) along with the five essential professional development characteristics (credibility, support, motivated participants, time management, personality of facilitator) for professional development, professional development programs responded effectively to the learning needs of both educators and students at an individual level.

Summary

Despite the many challenges that face Web 2.0 tools implementation in the elementary classroom, it is a necessary task to help foster 21st century skills (Kist et al., 2010). Web 2.0 tools could be used at any grade level and enhance content instruction which, in turn, increases student achievement (Wright, 2012). Web 2.0 tools foster collaboration and allow conversations about learning and content to occur that otherwise might not have taken place, according to Kist et al. (2010). However, Protect Tomorrow (2013) found Web 2.0 tools are not currently being used to their fullest potential. Therefore, it would be beneficial to identify the factors that affect classroom teachers' Web 2.0 tools implementation (Pan & Franklin, 2011). Pan and Franklin (2011) conducted a K-12, quantitative study on the factors effecting Web 2.0 tools

implementation. They found the two factors that most effected Web 2.0 tools implementation were self-efficacy and professional development.

Self-efficacy was a term coined by Bandura (1977). It was grounded in the social cognitive theory which states humans were their own agents of change, according to Bandura (2001). There were four factors affecting one's self-efficacy: enactive attainment, vicarious experiences, social persuasion, and psychological factors. He found enactive attainment to be the most influential factor. Teacher self-efficacy related to a teacher's own perceived capabilities of obtaining a certain task within certain parameters, such as implementing technology and Web 2.0 tools. A teacher's self-efficacy teaching a particular objective via lecture may be high compared to the same objective while incorporating Web 2.0 tools. It affected the learning environment and processes the teacher and students take to achieve a learning objective (Tschannen-Moran & Woodfolk-Hoy, 2001). A teacher's self-efficacy affects student learning patterns and emotions. A teacher with a high self-efficacy believed he/she can help students attain objectives regardless of their motivation or willingness (Tschannen-Moran & Woodfolk-Hoy, 2001).

The goal of providing quality professional development was to help educators develop the knowledge, skills, and behaviors needed to create effective learning experiences for all students (NCDPI, 2007). Pan and Franklin (2011) found professional development to be a factor affecting a teachers' Web 2.0 tools implementation. Quality professional development is important because it can increase student achievement when utilized and implemented correctly (Biancarosa et al., 2010). Therefore, standards like the ones developed by Learning Forward (2011) and NCDPI (2007) for effective professional development must be followed to ensure teachers retain and utilize the

knowledge and skills received; in particular, the knowledge and skills they receive during professional development on Web 2.0 tools skills and strategies for implementation.

Determining the effect of self-efficacy and professional development on Web 2.0 tools implementation in elementary classrooms would be beneficial to facilitate its use. After district consent to conduct research was granted and an informative letter to faculties was provided (Appendices A and B), research progressed through quantitative and qualitative measures. Pan and Franklin's (2011) surveys were used as a quantitative measure (Appendices C and D). Pan and Franklin's study differed from this study in two ways: their study was conducted K-12 compared to K-5, and their surveys were the only administered instruments. This study expanded their research by including a survey on professional development (Appendix E) and teacher interviews (Appendix F). The teacher focus groups added qualitative data to inform quantitative results. The study was mixed-methods to help answer the following research questions.

1. To what degree do elementary teachers report utilization of specific Web 2.0 tools?
2. What is the relationship between teacher technology self-efficacy and utilization of Web 2.0 tools in the elementary classroom?
3. What is the relationship between professional development and utilization of Web 2.0 tools in the elementary classroom?

Chapter 3: Methodology

Introduction

The purpose of this study was to determine the relationship between teacher self-efficacy and professional development on Web 2.0 tools implementation in multiple elementary classrooms. To investigate and build on Pan and Franklin's (2011) quantitative study, this study was a mixed-methods study. Permission was granted to study in a specific school district (Appendix A), and a letter to elementary faculties was provided within the district (Appendix B). Permission to use Pan and Franklin's WTII (Appendix C) and WTISEI (Appendix D) was granted and comprised the quantitative portion of this study. Also, Denmark and Weaver (2012) created a professional development survey (Appendix E) which was used in this study that aligns with the seven aforementioned standards for professional development created by Learning Forward. A qualitative measure was implemented in this study to add to Pan and Franklin's findings. The qualitative measure was teacher focus groups measure through Sadaf's interview protocol (Appendix F). Permission was granted by focus group participants through a consent form (Appendix G). This study's goal was to answer the following research questions.

1. To what degree do elementary teachers report utilization of specific Web 2.0 tools?
2. What is the relationship between teacher technology self-efficacy and utilization of specific Web 2.0 tools in the elementary classroom?
3. What is the relationship between professional development and utilization of specific Web 2.0 tools in the elementary classroom?

Mixed-Methods Study

Creswell (2012) stated that a mixed-methods study combines qualitative and quantitative data. Using both types of data allows the researcher to provide a better description of the problem. Qualitative and quantitative strategies both have strengths. In a mixed-methods study, the strengths are used to increase the validity of findings. Quantitative research describes what is happening and qualitative investigates the how or why of the quantitative results (Creswell, 2012).

The explanatory sequential design best fits the previous statement. In an explanatory sequential design, quantitative data were collected first. The results of the quantitative data were analyzed to describe what is happening. To further explain and refine the quantitative results, qualitative data were collected. Therefore, the mixed-methods study was QUAN-qual (Creswell, 2012).

Participants

The participants in this study's teacher survey were classroom teachers at five elementary schools. Teachers were invited to participate via an email invitation. Each teacher's right to not participate was protected by sending the invitation via email. In the email format, one could have chosen to participate or not based on their own choice without any potential pressure from peers or the researcher. This pressure may have been inadvertently created in a paper and pencil format during a faculty meeting which was avoided in this study. Teachers were informed that participation was strictly voluntary, and the survey was administered via Google Docs. Google Docs did not collect participants' and respondents' information to identify who respondents were. There was no way to tell those who responded and those who did not. The email containing the link to the survey had instructions to reply to the email if interested in participating in a

teacher focus group. Teacher confidentiality was guaranteed in the study if one chose to participate in a focus group. Teachers who responded and showed interest in participating in a focus group were sent information to coordinate times. A consent form to participate in the focus group was provided at the beginning of the focus group (Appendix G). The consent forms were not published to further protect the identity of the teachers.

Instruments

Pan and Franklin (2011) created both quantitative instruments that were used in this study to measure the impact of self-efficacy on Web 2.0 tools implementation. The WTII was used to measure the frequency of Web 2.0 tools such as blogs, wikis, podcasts, social networking, image/photo sharing, and course management systems. The second instrument used, WTISEI, measured teacher confidence in integrating various Web 2.0 tools. Pan and Franklin gave the researcher written permission to conduct this study using the WTII and the WTISEI.

Reliability and validity are connected in complex ways (Creswell, 2012). At times, the two terms overlap and at other times are mutually exclusive. Validity is the development of sound evidence to demonstrate that the instrument measures its intended purpose. Reliability describes the stability and consistency of the scores from an instrument (Creswell, 2012). Pan and Franklin (2011) constructed the two instruments in this study and utilized college faculty professors in the field of computer technology and education to assist in ensuring validity and reliability. The three professors, from a Research I University in the Midwestern United States, reviewed and revised all of the items on the instruments before conducting a pilot study (Pan & Franklin, 2011). The pilot study was carried out to achieve content validity (Creswell, 2012). In the pilot

study, there were 16 valid data samples with a response rate of 84%. Teacher candidates represented the target population for the survey (Pan & Franklin, 2011). In Pan and Franklin's study, it was noted that the pilot study took place 4 months before the actual study so any confusing wording could be reported and revised.

Cronbach's Alpha was used to test the internal consistency and reliability of the instruments. The internal reliability for the WTII was .78, and the WTISEI was .98. Based on the pilot study and advice from the three professors, Pan and Franklin (2011) revised some of the items on the WTII before conducting their study. The Cronbach's Alpha from the study was .65 for the WTII and .98 for the WTISEI. In social sciences, a Cronbach's Alpha score of >.9 is excellent, >.8 good, >.7 Acceptable, >.6 Questionable, >.5 Poor, and <.5 Unacceptable (Gliem & Gliem, 2003). The WTISEI was in the excellent range and very consistent/reliable; however, the WTII was questionable according to Cronbach's Alpha. Lance, Butts, and Michels (2006) said having a Cronbach's Alpha in the questionable range does not create an invalid instrument. A higher Cronbach's Alpha value may indicate trying to measure a construct that is too specific for the instrument's intended purpose (Lance et al., 2006). The WTII was created to measure how frequently various Web 2.0 tools were utilized (Pan & Franklin, 2011). The provided answers could have been very broad and ranging from both ends of the continuum, frequently to never (Pan & Franklin, 2011).

The WTII was used to measure the frequency of use for Web 2.0 tools in the classroom. There are six items or tools that the WTII seeks to measure the frequency of use: blogs, wikis, podcasts, social networking, image/photo sharing, and course management systems. Each of the six items contained a 5-point Likert scale. The labels for the Likert scale were (5) daily, (4) at least once a week, (3) at least once a month, (2)

at least once a year, and (1) never (Pan & Franklin, 2011). The participants in this study rated the frequency of use for each tool.

Pan and Franklin (2011) also developed the WTISEI. They took into account Bandura's (2006) proposed guidelines for self-efficacy scales. Pan and Franklin also used prior research on computer technology applications with modifications (Curts, Tanguma, & Peña, 2008; Morales, Knezek, & Christensen, 2008; Niederhauser & Perkmen, 2008). The WTISEI measured teacher's self-efficacy in implementing Web 2.0 tools. The Likert scale survey had five levels for each Web 2.0 tool: (5) strongly agree, (4) agree, (3) neutral, (2) disagree, and (1) strongly disagree. This instrument asked participants to rate their level of confidence related to their implementation skills for each tool. The instrument was also highly reliable with a Cronbach alpha of .98 (Pan & Franklin, 2011).

To measure professional development, Learning Forward (2011) created the Redesigned Standard Assessment Inventory (SAI2). The SAI was redesigned in 2012 to account for the changes in the new standards for professional learning created by Learning Forward (Denmark & Weaver, 2012). The SAI2 was created to measure the seven standards for professional learning: learning communities, leadership, resources, data, learning designs, implementation, and outcomes (Learning Forward, 2011). Each standard had a set of directly related questions in which participants respond always, frequently, sometimes, seldom, never, or don't know. Each section was tested for reliability using Cronbach's Alpha and all sections were >.93. The score for the SAI2's reliability as an overall score for the test was .99 (Denmark & Weaver, 2012). By implementing the SAI2, data were collected to determine the level of professional development implementation and effectiveness, teacher perceptions of professional

learning, and determine how aligned current professional development aligns to Learning Forwards' Standards for Professional Learning (Learning Forward, 2011). The questions on the SAI2 were on a six-point Likert scale with the answer choices being A. Always, B. Frequently, C. Sometimes, D. Seldom, E. Never, F. Don't Know. Each answer was assigned a point value (i.e., Always 6, Frequently 5). After implementing the SAI2, each section of the test was analyzed by determining the mean, median, and standard deviation for each standard.

After collecting and calculating the aforementioned data, a scatter plot diagram was used to determine the type of correlation through Spearman's Correlation. To establish the scatter plot diagram for self-efficacy, the mean scores from the questions on the WTII were the x value. The frequency of use data (WTII) was the x value because time was the independent variable. The y value in the first analysis was the mean scores from the WTISEI. The correlation between self-efficacy and the frequency of Web 2.0 tools use was determined in this study. The second analysis contained the frequency of use (time) as the x value. This analysis used the mean scores from SAI2 as the y value to determine professional developments impact on the frequency of Web 2.0 tools implementation.

The interview protocol created for the teacher focus group was developed by Sadaf (2013). Sadaf conducted a study on preservice teachers and the factors that influenced their Web 2.0 tools implementation. The Web 2.0 Implementation Interview Protocol (Appendix F) was created as a postcourse telephone interview after preservice teachers completed student teaching. The objective of Sadaf's protocol was the same as this study, except this study was on in-service teachers. The wording was changed to reflect the intended audience. However, full credit and written permission was granted

by Sadaf. Sadaf was also informed of the intended audience and that the wording would be changed to reflect the aforementioned changes.

In 2010, Sadaf (2013) piloted the survey with a student teaching course. Two hundred eighty-six students participated with a response rate of 96% (n=297). Data from the pilot surveys were collected, analyzed, and used for validation of the instrument. To analyze the results, Sadaf used Miles and Huberman's (1994) constant comparative method from the open-ended interview questions. The data were first coded by segmenting and labeling interview responses (Sadaf, 2013). The codes were combined to identify themes. After each interview was coded, the interview responses were reanalyzed to determine the relationships between the codes (Sadaf, 2013). Creswell (2012) suggested the focus group leader should then provide the focus group participants information about the purpose of the study, the individuals and sources of data being collected, what would be done to protect confidentiality, and how long the interview would take (Creswell, 2012). Therefore, this information prefaced Sadaf's interview questions.

The focus group was recorded so the researcher could go back and review the conversation. Common themes were identified and coded. Coding responses, as aforementioned, enabled the researcher to identify themes. Coding responses and analyzing for themes allowed the qualitative research to be backed by data (Beoiji, 2002). At the core of the concept-indicator model, grouping answers was essential (based on the codes) to determine different perspectives on the central issues (Dye, Schatz, Rosenburg, & Coleman, 2000).

Similar responses were coded in as many categories as possible. Some categories were obvious while others had to be refined by the researcher. When this point was

achieved, coding ceased. Emerging trends stood out from the categories which may have been integrated throughout multiple categories. The result was the development of common themes backed by data. Irrelevant information was discarded, and the themes were solidified because they were evident throughout the categories. The researcher could inductively write based on the themes with confidence based on the data found (Glasser & Straus, 1967).

Each research question was answered by various data collection methods. Table 1 outlines specifically the instruments used to answer each question.

Table 1

Methodology Matrix

Data Collection Instrument	RQ 1: Frequency of Web 2.0 Tools Use	RQ 2: Self-Efficacies Impact on Web 2.0 Tools Use	RQ 3: Professional Developments Impact on Web 2.0 Tools Use
WTII	X	X	X
WTISEI		X	
PD Survey			X
Web 2.0 Tools Teacher Focus Group	X	X	X

Note. RQ=Research Question.

Table 2 describes the type of data collected and the statistical tests utilized to achieve the needed outcome of determining the impact of professional development and self-efficacy on Web 2.0 tools implementation in elementary classrooms.

Table 2

Data Matrix

Research Question	Instrument	Data Type	Method of Analysis
1. Frequency of Web 2.0 Tools Use	WTII & Teacher Focus Group	Quantitative & Qualitative	Mean, Median, Mode, SD of Time (independent variable) & Concept-Indicator Model (Teacher Focus Group)
2. Self-Efficacies Impact on Web 2.0 Tools Use	WTISEI & Teacher Focus Group	Quantitative & Qualitative	Spearman's Correlation and Concept-Indicator Model
3. Professional Developments Impact on Web 2.0 Tools Use	SAI2 & Teacher Focus Group	Quantitative & Qualitative	Spearman's Correlation and Concept-Indicator Model

Note. RQ=Research Question.

Procedures

Creswell (2012) discussed suggestions to ensure the highest quality of survey distribution. Several researchers stated that a higher response rate created a stronger claim in generalizing from the sample population. A response rate of 50% or better was the standard in many educational journals (Creswell, 2012). To help increase the response rate, certain steps were taken. One step was to prenotify participants. Therefore, to prenotify faculty, the researcher created a letter to be distributed to faculty members (Appendix B).

A second strategy for ensuring a higher response rate was to study a topic that the participants find interesting (Creswell, 2012). The district in this study was taking major strides forward toward implementing technology to increase student achievement by

increasing accessibility and providing the necessary tools for implementation. Therefore, the participants possibly found the impact of self-efficacy and professional development on Web 2.0 tools implementation a topic of interest because it directly related and aligned with the vision and mission of the district. A third strategy to ensure a higher response rate was to use a brief survey. Creswell (2012) defined a brief survey as one that takes less than 15 minutes to complete. Typically, a three-page survey takes 15 minutes to complete (Creswell, 2012). The WTII and the WTISEI combined were two and one-fourth pages and should have taken 10-15 minutes to complete. The SAI2 should have taken 5-10 minutes to complete.

After the survey distribution via email with a link to the survey on Google Docs, the WTII data determined the frequency of use with six Web 2.0 tools: blogs, wikis, podcasts, social networking sites, image/photo sharing sites, and course management systems. A mean (M) score was calculated for each along with the standard deviation (SD). Next, data were collected using the 30-item WTISEI rating their own skills and confidence levels on each item. Each item received an M score and also its SD. For both the WTII and WTISEI, the range of the M score was between 1 and 5 due to the Likert scale format (Pan & Franklin, 2011).

Spearman's correlation was used in this study. According to Laerd Statistics (2013), this type of test could be used when one has two continuous variables, two ordinal variables, or one ordinal and one continuous variable. The calculation of a coefficient, Rs or ρ, was to measure the strength and direction of the association between the variables. The WTII, WTISEI, and the SAI2 were surveys in a Likert scale format which produced ordinal data. Therefore, the Spearman's correlation assumption was met through two ordinal variables.

In order to use Spearman's correlation, two assumptions must have been true. If either of the two assumptions were not applicable, the test may not be used. Assumption one was that there were two variables that were measured on an ordinal and/or continuous scale. This study satisfied assumption one through the Likert scale surveys producing ordinal data. Assumption two required that two variables represent paired observations. In this study, paired observations took place between the frequency of Web 2.0 tools use (WTII) and self-efficacy scores (WTISEI). Also, paired observations between the frequency of Web 2.0 tools use and professional development data were used (SAI2). For the final and third assumption, there must have been a monotonic relationship. A monotonic relationship was defined as one of two relationships on a scatterplot diagram: (1) as one variable increased, the other increased; or (2) as one variable increased, the other variable decreased. Figure 1 represents these two descriptions and an example of a non-monotonic relationship.

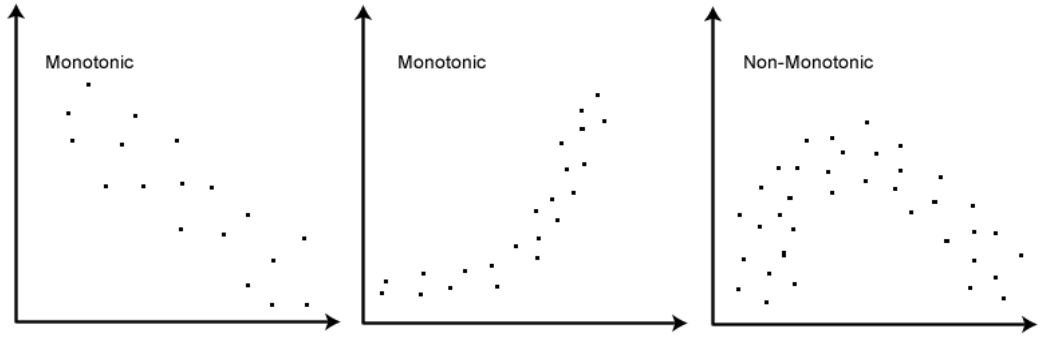

Figure 1. Monotonic v. Non-Monotonic Relationship (Laerd Statistics, 2013).

To calculate Spearman's correlation, SPSS software was used. The responses were entered and displayed in two columns with individual responses aligned in column form. When using two ordinal variables, the answers must have been assigned numerical

values, also called value labels. For the WTII, the values were as follows for each response bank for the specific Web 2.0 tools: Never=1, At least once per year=2, At least once per month=3, At least once per week=4, and Daily=5. The values for the WTSEI were Strongly Disagree=1, Disagree=2, Neutral=3, Agree=4, and Strongly Agree=5. For the professional development test, the WTII values remained the same. The values for the professional development survey were 1=Don't Know, 2=Never, 3=Seldom, 4=Sometimes, 5=Frequently, and 6=Always. Then, a scatterplot diagram was created in SPSS to determine if there was a monotonic or non-monotonic relationship. The scatterplot diagram was used to examine and analyze the relationship between the variables. As long as the relationship did not increase or decrease (regardless if it is positive or negative), it was a monotonic relationship. If there was a monotonic relationship, Spearman's Correlation was implemented in SPSS for this study producing a Spearman's rank-order correlation coefficient. The correlation was from -1 to 1. Negative 1 was a strong negative correlation, 0 was no correlation, and 1 was a strong positive correlation.

For the qualitative portion of data collection, the focus group audio was recorded, and a qualitative analysis process as defined by Straus (1988) was employed. This process consisted of coding data by categories and themes to determine impact. This was also called the concept-indicator model. The coded categories of responses were placed in distinct classes or categorized by a researcher, according to Straus. Straus also said by "making comparisons between indicators the analyst is forced to confront similarities, differences, and degrees of consistency" among indicators (p. 110). After categories were identified and coded, the second step was to compare the potential concept to the constructed indicators. Glasser and Straus (1967) described general

guidelines to follow when using the concept-indicator model but stressed guidelines were not to be viewed as rules. The following figure illustrated the concept-indicator.

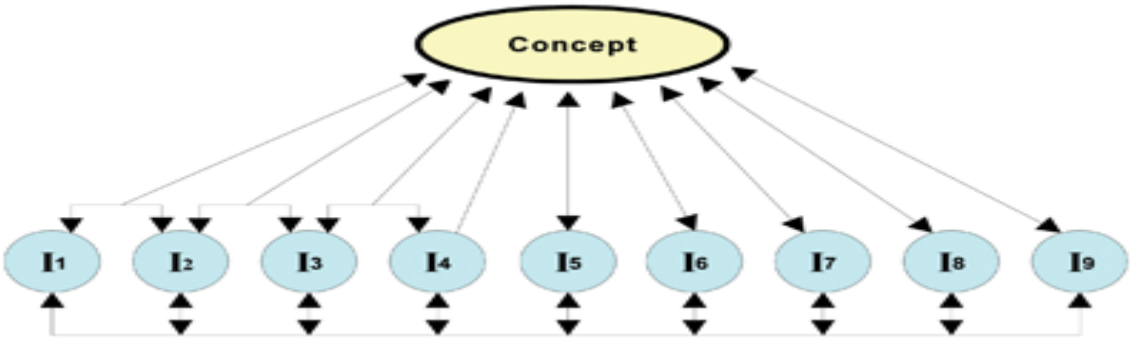

Figure 2. Concept-Indicator Model (adapted from http://press.anu.edu.au/info_systems/mobile_devices/index.html).

The qualitative data collection instrument was Sadaf's (2013) Web 2.0 Implementation Interview Protocol (Appendix F). The focus group conversations were recorded to analyze, code, and identify common themes. During coding, the categories formed must have been relevant to the central issue – in this study, the impact of self-efficacy and professional development on Web 2.0 tools implementation in elementary classrooms. Straus (1988) stated the key to coding was to follow the coding paradigm which has four functions: condition, interaction among actors, strategies and tactics, and consequences. Straus said following the coding paradigm was a solid strategy for analysts with little experience because it establishes a step-by-step format to follow. He described the four functions as follows:

> Because beginning researchers sometimes seem to experience difficulty in discovering "conditions" when inspecting their data, we shall note the following. Conditions are often easy to discover – indeed sometimes the interviewees or actors will point to them specifically – but if not, then look for cues like the use of

> words such as "because," "since," "as," or phrases like "on account of." Likewise consequences of actions can be pointed to by phrases like "as a result," "because of that," "the result was," "the consequence was," and "in consequence." Strategies and the more specific tactics associated with strategies seem to present no difficulties for inexperienced analysts. Interactions are also easy to discover: They are those interactions occurring between and among actors, other than their straightforward use of tactics and strategies. (p. 28)

The analyst must realize throughout the different categories there may have been an underlying core which would have led to drawing conclusions based on data. Light and Polin's (2010) findings helped guide the researcher through coding and the creation of core categories. Light and Polin found Web 2.0 tools typically fell into one of four categories:

1. Tools that create or support a virtual learning environment,
2. Tools that support communication and cultivating relationships,
3. Research to support teaching and learning, or
4. Tools enabling students to create artifacts demonstrating what they are learning.

The researcher listened for indicators that led to the most frequent methods of Web 2.0 tools implementation. These indicators were coded based on Light and Polin's four types or categories of Web 2.0 tools use. This allowed for the researcher to have qualitative data on how Web 2.0 tools were being implemented in elementary classrooms. The researcher used their four categories to determine if one or more categories were referenced more often regarding self-efficacy and/or professional development, as well.

Straus (1988) suggested completing theoretical sampling. In theoretical sampling,

the objective is to determine the location, groups, or subgroups to study next. For the purpose of this study, the theoretical sampling was included in the limitations section due to the finite amount of time. Similarities, differences, and degrees of consistency were confronted to drive the conclusions found by comparing the different core categories (Straus, 1988). To draw conclusions from the data, clear evidence backing it must have been present. Straus also noted there were six criteria for judging core categories: The core categories must have been (1) central to many other categories, (2) appear frequently in the data, (3) relate easily to other categories, (4) have clear implications for more general conclusions, (5) worked out as the details are analyzed, and (6) allowed for maximum variation. Maximum variation was taking a wide variety of samples, yet the tested core category remains the same (Maykut & Morehouse, 2000).

During the writing phase of research, the utilization of conclusions occurred. This was when the researcher potentially realized there was a gap in the research and explanation of the research. In order to fill this gap, the researcher reexamined the collected research in attempt to bridge it for the intended audience (Straus, 1988). The writer/researcher had to be creative and analytic. When transferring the coded memos, it was not just rewriting the memos. It also involved taking into account the substance of the research and the researcher's perception of the audience. Finally, the writer chose to write the research with the intended audience to be the "lay" person or a professional audience (Straus, 1988). For the purpose of this study, the findings were written so that anyone can read and understand the study.

Limitations

Limitations were potential weaknesses or problems with the study identified by the researcher (Creswell, 2012). One limitation of this study was the smaller sample size

of survey respondents. Due to time constraints, a large scale study with a vast number of participating schools was not plausible. A larger number of schools would have increased the number of participants and strengthened the data collected (Creswell, 2012). The participants were teachers. Schools were twice as likely to impact student achievement compared to school districts. Teachers were seven times more likely to impact student achievement than schools (Whitehurst, Chingos, & Gallaher, 2013). Therefore, increasing the number of participants instead of districts or schools would have strengthened this study.

Another limitation of this study was the lack of prior research related specifically to the impact of self-efficacy and professional development on Web 2.0 tools implementation. Bandura (1977, 1982, 1997, 2001, 2006) was the leader on the concept of self-efficacy. Numerous studies have been completed on professional development, but specifically applying their impact to Web 2.0 tools implementation was a relatively new study and concept.

Limitations also extended into qualitative data as well. Creswell (2012) identified several potential limitations to qualitative research, some of which applied to this study. The first limitation to qualitative research in this study was it may not generalize or transfer to other settings or people. The research volunteers for focus groups may not have represented a generalized idea or thought. The generalized idea or thought could be different in other regions of the country, the state, districts, or even within the same school. Another limitation was the time and size of the study. With qualitative research, Creswell said data collection and analysis was more time consuming than with quantitative research. The focus group sessions were limited due to the smaller number of participant volunteers. In Straus's (1988) theoretical sampling step of qualitative

research, the researcher identified groups, locations, or subgroups to further study. In this study, research only took place once during a set period of time. The researcher did not restudy the same group or initiate additional studies at other locations with identified groups or subgroups. Any identified locations, groups, or subgroups that may have been beneficial to study were discussed in the suggestions for further research section.

Summary

Self-efficacy and professional development's impact on Web 2.0 tools implementation in elementary classrooms was determined through quantitative and qualitative data collection instruments. To answer Research Question 1 (frequency of Web 2.0 tools implementation), the Likert scale format survey WTII was used. This provided data on how often Web 2.0 tools are being implemented in elementary classrooms along with qualitative data from the SAI2 instrument during focus groups. In the analysis of qualitative data from the focus groups, the concept-indicator model was used. This allowed for the analysis and determination of common core categories or themes.

Research Question 2 (self-efficacy's relationship to Web 2.0 tools implementation) was answered through Spearman's ranked order correlation. The frequency variables from the WTII were compared to WTISEI variables to determine the correlation coefficient using SPSS. Spearman's correlation was also used to help answer Research Question 3 (professional development's relationship). The WTII data were again used as a variable compared with data from the professional development survey to provide the second variable. Research Questions 2 and 3 were answered through qualitative data from the focus groups to provide an additional data source. These steps were taken to help determine self-efficacy and professional development's impact on

Web 2.0 tools implementation in the elementary classroom.

Chapter 4: Results

Introduction

Project Tomorrow (2013) found Web 2.0 tools were not being implemented to their fullest capabilities in the classroom. The pertinence of maximizing Web 2.0 tool capabilities was evident because of their ability to increase student achievement (O'Bannon & Britt, 2012). Pan and Franklin's (2011) study found self-efficacy and professional development were the two most important factors affecting Web 2.0 tools implementation in Grades 6-12. Therefore, examining the relationship between Web 2.0 tools implementation and self-efficacy along with professional development may be helpful to fully implementing Web 2.0 tools at the elementary level to increase student achievement.

The purpose of this study was to examine the impact of self-efficacy and professional development on specific Web 2.0 tools being implemented in elementary classrooms. This study aimed to answer the following three research questions.

1. To what degree do elementary teachers report utilization of specific Web 2.0 tools?
2. What is the relationship between teacher technology self-efficacy and utilization of Web 2.0 tools in the elementary classroom?
3. What is the relationship between professional development and utilization of Web 2.0 tools in the elementary classroom?

Quantitative data were collected through the use of Pan and Franklin's (2011) WTII, WTISEI, and Learning Forward's (2011) SAI2. Qualitative data collection occurred in the form of a focus group with conversations driven by Sadaf's (2013) Interview Protocol. Teacher focus group data were studied through the use of the concept-indicator

model (Straus, 1988) and coding guided through Light and Polin's (2010) categories of Web 2.0 tools use.

Research Question 1, the frequency of Web 2.0 tools use, was sought to be answered through the WTII and focus group data. The WTII produced ordinal data with specific categorical, time-oriented answers. Research Question 2, the relationship between self-efficacy and Web 2.0 tools implementation, was examined through the WTISEI and WTII using Spearman's Correlation. Qualitative data for this question came from the teacher focus group and the use of the concept-indicator model. Research Question 3, the relationship between professional development and Web 2.0 tools implementation, was answered through SAI2 and WTII data and Spearman's Correlation. The question results were also aided through the teacher focus group.

The chapter outline includes a brief look at data collection and the results from each instrument displayed under the coordinating research question. Quantitative data were examined first in the same order previously described. Qualitative data that are pertinent to each research question follow quantitative data. The researcher also completed post hoc research on teacher experience levels. Post hoc research looked to the relationship between teacher's experience level and the frequency of use for specific Web 2.0 tools through Spearman's correlation. The researcher also used Spearman's correlation to examine the relationship between teacher experience level and technology self-efficacy. Finally, a summary of the research data collected concludes the chapter.

Data Collection

Participants were teachers at five elementary schools within a public school district in the southeastern United States. Participation in the WTII, WTISEI, SAI2, and focus groups was limited to a one-time occurrence and was strictly voluntary.

Participants were officially invited to participate in the study via email. The email contained a copy of the invitation letter (Appendix B). The letter explained how a link to the surveys (WTII, WTISEI, and SAI2) was embedded within the email and would take participants directly to the surveys which had been entered into Google Docs. The researcher also explained there would be an invitation to participate in a teacher focus group. A response to the email would be necessary but any identifying information would not be published. However, some participants volunteered for the focus group without responding to the researcher's email and spoke directly to the researcher to express interest and volunteer. There were 48 survey respondents (see description of participants).

The time period for the surveys was 3 weeks. However, the total data collection window for the entire study was approximately two months to allow for the completion of focus groups. Focus groups had to be scheduled around participants' schedules and at a time which worked for multiple participants. Survey data were collected through Google Docs and focus groups were voice recorded and transcribed.

Description of Participants

The SAI2 asked five demographic questions to help provide a description of the survey participants. For the WTII, WTISEI, and SAI2, there were 48 responses with most or all of the questions answered. However, six responses included zero question responses and were not included data analysis. All participants were public school teachers in an elementary school setting (both demographic questions). Of the participants responding to the type of role they occupied, 27 were content area teachers; nine were special area teachers; and 10 were support teachers. Table 3 outlines the participants' years of experience in teaching.

Table 3

Participants' Years of Experience in Teaching

	Less than 1 year	1-4 years	5-10 years	11-16 years	17-25 years	More than 25
Number	2	9	9	17	5	6
Percentage	4%	19%	19%	35%	10%	13%

Note. 48 total respondents.

In Table 3, 73% of teachers had 1-16 years of experience, with the highest percentage falling in the 11-16 years range (35%). The highest combination of two categories was 5-10 and 11-16 years (54%). Therefore, the majority of teachers in this study had an experience level between 5-16 years. There was a lack of teachers with less than 1 year of experience (N = 2) and a lack of the most experienced teachers (N = 6) based on the number respondents in other experience categories. Table 4 highlights additional demographic information provided by survey respondents. It contains categorically the number of years teachers had been teaching at the school where they were currently teaching during the survey data collection period.

Table 4

Participants' Years at Current School

	0-1 years	2-4 years	5-9 years	10-20 years	21 or more years
Number	10	14	10	10	3
Percentage	21%	30%	21%	21%	7%

Note. 48 total respondents.

Table 4 displays that the highest category for respondents was 2-4 years at their current school (30%). Based on Table 4 data, 51% of respondents had been at their

current school from 0-4 years. The lowest number of respondents came from teachers who had been at their current school 21 years or more (7%).

Data Analysis

For the analysis of quantitative data, SPSS Version 22 was used to calculate Spearman's Correlation and most frequency statistics. Microsoft Excel was also used to determine some of the mean scores and standard deviations. Qualitative data were analyzed using predetermined core categories of Web 2.0 tools use by Light and Polin (2010). Davis (2015) stated that going into the coding process in qualitative data analysis without predetermined categories could make the process "a waste of time" (p. 1). Predetermined categories were needed, especially for first-time analyzers, to help make the results coherent and reflect the purpose of the study. Often, beginning coders code qualitative data in a hard to understand or incoherent format or the data collected do not reflect the general storyline of the study. The core categories were developed by Light and Polin and helped direct coding towards these categories:

1. Tools that create or support a virtual learning environment.
2. Tools that support communication and cultivating relationships.
3. Research to support teaching and learning.
4. Tools enabling students to create artifacts demonstrating what they are learning.

Light and Polin's categories were created through identifying the most common uses of Web 2.0 tools from their research.

Research Question 1 Data

The WTII was used to measure the frequency of Web 2.0 tools. Results from the WTII specifically addressed and answered Research Question 1 (to what degree do

elementary teachers report Web 2.0 tools utilization). The tools measured by the WTII were blogs, wikis, podcasts, social networking, image/photo sharing, and course management systems. Each of the six items/Web 2.0 tools contained a 5-point Likert scale answer. The labels for the Likert scale were (5) daily, (4) at least once a week, (3) at least once a month, (2) at least once a year, and (1) never (Pan & Franklin, 2011). The participants in this study rated the frequency of use for each tool. Table 5 represents a breakdown of the research participants' answers for the six-item WTII.

Table 5

WTII Results

	Blogs	Wikis	Podcasts	Social Networking Sites	Image/Photo Sharing Sites	Course Management Systems
Mean	2.19	2.06	1.58	2.21	2.02	3.94
SD	1.14	1.16	.90	1.22	1.02	1.73
Median	2	2	1	2	2	5
Mode	1	1	1	1	1	5

Table 5 data indicated the frequency of use based on the specific Web 2.0 tool. Data on blogs, wikis, social networking sites, and image/photo sharing sites were similar. The means for all four categories were within .1 or .2 of the value label 2. All of the median numbers for the four categories were at 2, and their modes were 1. Course management systems received the highest frequency of use scores. The mean was almost double all of the other five Web 2.0 tools. The median and mode for course management systems was 5; however, it is to be noted course management systems had the highest

standard deviation (SD=1.73). For blogs, wikis, podcasts, social networking sites, and image/photo sharing sites, the most common response was "never" (value label=1); however, it is imperative not make the assumption that mode equals the majority. For example, with social networking sites, the mode was 1; however, further inspection of the data revealed that 20 teachers indicated they never used social networking sites. This meant 28 teachers (58%) were using social networking. Their responses were just distributed between values 2-5. These data are found in Table 6. Table 6 displays a breakdown of the number of responses for each Web 2.0 tool based on the specific amount each tool was being implemented.

Table 6

WTII: Numerical Frequency of Use

	Blogs	Wikis	Podcasts	Social Networking Sites	Image/Photo Sharing Sites	Course Management Systems
Daily	0	1	0	2	0	34
At least once per week	7	5	2	5	4	1
At least once per month	15	12	7	14	13	0
At least once per year	6	8	8	7	11	2
Never	20	22	31	20	20	11

Note. 48 total respondents.

As previously mentioned, the mode does not equal the majority. However, the exception in this study was podcasts. The majority of teachers did not use podcasts, but

for the other five Web 2.0 tools, the majority of teachers were implementing them on some level. For teachers who were implementing blogs, wikis, social networking sites, and image/photo sharing sites, the majority were using them on a monthly basis. The outlying Web 2.0 tool was course management systems. Thirty-four teachers (71%) were using a course management system on a daily basis. This could be attributed to participants having access to a course management system that allows teachers to track attendance, calculate grades, collaborated with peers, communicate with parents, etc. This information is found in Table 7. Participants were asked to list the blogs, wikis, podcasts, social networking sites, image/photo sharing sites, and course management systems used for teaching. For example, participants were asked to list the blogs used in their classroom. Table 7 outlines and highlights the top responses in ranked order.

Table 7

WTII Open-ended Responses in Ranked Order

	Rank 1 N	Rank 2 N	Rank 3 N
Blogs	Weebly N = 13	Google Blogger N = 6	School Website N = 2
Wikis	Wikispaces N = 10	Wikinet N = 4	Weebly N = 2
Podcasts	Windows/Windows Media N = 6	iMovie N = 3	Google N = 1
Social Networking	Twitter N = 16	Facebook N = 8	Pinterest/Teachers pay Teachers N = 1
Image/Photo Sharing	Facebook N = 10	Twitter N = 9	Instagram N = 2
Course Management Systems	Power School N = 21	Homebase N = 12	Class Dojo N = 1

Note. Multiple responses remained unfilled.

The course management systems listed, PowerSchool and Homebase, were most likely intended to indicate the same system. Responses of note were Twitter being the most implemented social network and Facebook was the most used image/photo sharing site.

Research Question 2 Data

Pan and Franklin (2011) also developed the WTISEI. They took into account Bandura's (2006) proposed guidelines for self-efficacy scales. Pan and Franklin also used prior research on computer technology applications with modifications (Curts et al., 2008; Morales et al., 2008; Niederhauser & Perkmen, 2008). The WTISEI measures a teacher's self-efficacy in implementing Web 2.0 tools. The Likert-scale survey has five levels for each Web 2.0 tool: (5) strongly agree, (4) agree, (3) neutral, (2) disagree, and (1) strongly disagree. This instrument asked participants to rate their level of confidence related to their perceived implementation skills for each tool. There were 28 items on the WTISEI. A value of 5 represented strongly agree and ranged to a value of 1 which was strongly disagree. Table 8 highlights each Web 2.0 tool's mean and standard deviation.

Table 8

WTISEI Categorical Frequency Data

	Blogs	Wikis	Podcasts	Social Networking Sites	Image/Photo Sharing Sites	Course Management System
Mean	3.95	4.00	3.75	4.25	4.13	3.94
SD	1.23	1.21	1.37	1.18	.16	1.29
Median	4	4	4	5	5	4.5
Mode	5	5	5	5	5	5

Note. Questions results were placed into their corresponding Web 2.0 tool.

Table 8 results from the WTISEI show high technology self-efficacy from teachers. Value label 5 equaled strongly agree and 4 equaled agree. All categories mean scores were within 25 hundredths of 4. Teachers responded "agree" and were confident in achieving the described tasks with the specific Web 2.0 tools listed above. It should be noted the mode for all tools was 5 and the median fell at 4-5 on all categories. Figure 3 outlines a comparison between the WTII and WTISEI means for each type of Web 2.0 tool.

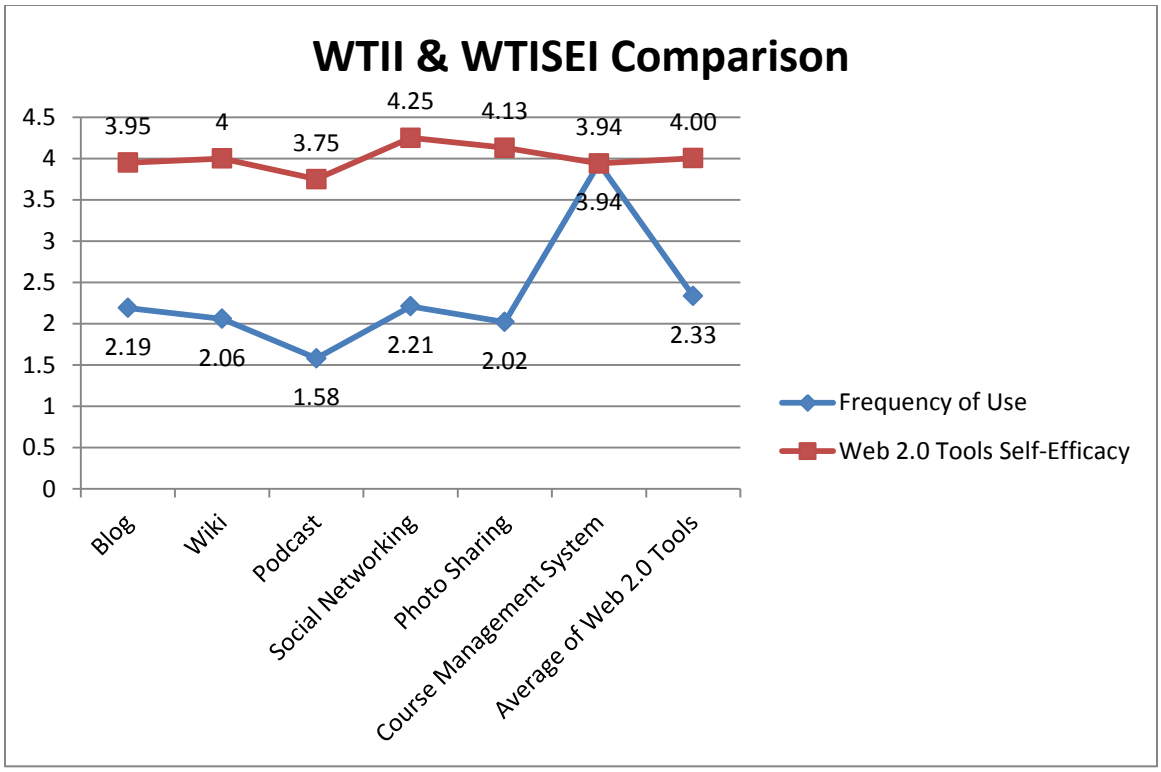

Figure 3. WTII and WTISEI Web 2.0 Tools Mean Score Comparison.

Based on the comparison of mean scores from the WTII and WTISEI, teacher technology self-efficacy on the specific Web 2.0 tools was considerably higher than reported utilization of the same tools. A higher technology self-efficacy did not translate to utilization on a daily or weekly basis. However, implementing Web 2.0 tools on a daily basis was a difficult task and may be difficult to achieve based on the multiple "hats" elementary teachers have to wear (Wepner, Bowes, & Serotkin, 2010).

Spearman's correlation was used to help determine the relationship between the frequency of Web 2.0 tools use and self-efficacy. The mean scores from the WTII represented the x values, and mean scores from the WTISEI represented the y values. In Spearman's correlation, a scatterplot diagram was created to establish a monotonic relationship. As one variable increased, the other variable also increased. In the

scatterplot diagram for the WTII and WTISEI, as one increased, the other also increased. Figure 4 shows the results from the scatterplot diagram.

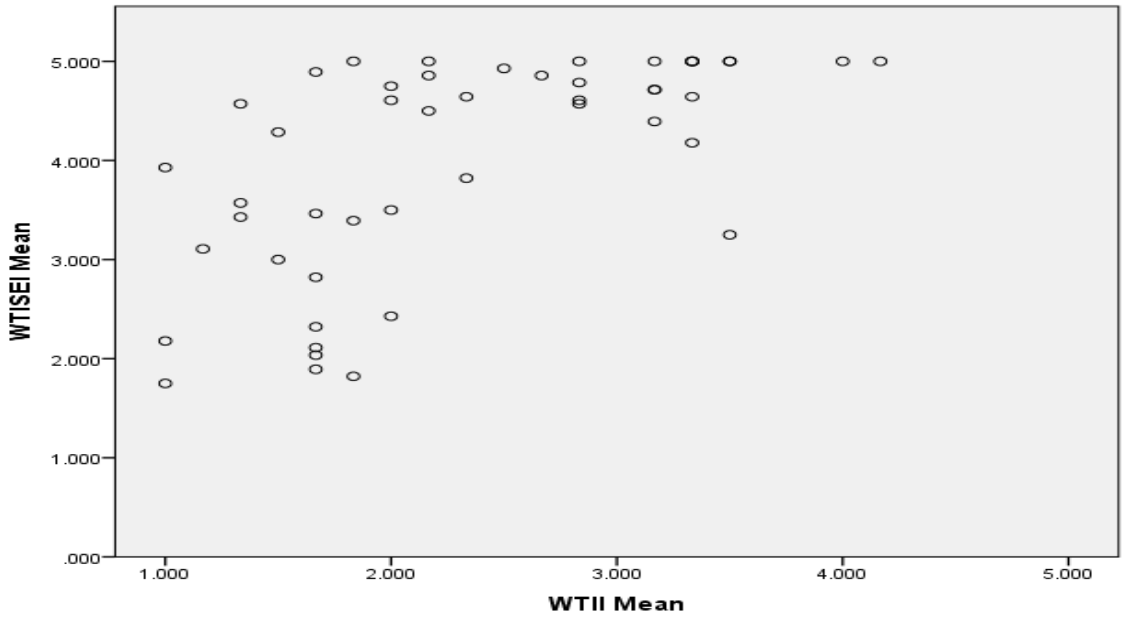

Figure 4. Scatterplot Diagram to Establish a Monotonic Relationship between the WTISEI and WTII.

After the monotonic relationship was established through the scatter plot diagram, SPSS was used to calculate the bivariate correlations among the WTII and WTISEI through the Spearman's Correlation function. Table 9 shows the results from the Spearman's correlation test.

Table 9

Bivariate Correlations among the WTII and WTISEI

		WTII Mean	WTISEI Mean
WTII Mean	Correlation Coefficient	1.000	.671*
	Sig (2-tailed)	-	.000
	N	48	48
WTISEI Mean	Correlation Coefficient	.671*	1.000
	Sig (2-tailed)	.000	-
	N	48	48

Note. * Correlation is significant at the 0.01 level (2-tailed).

Therefore, there was a strong positive correlation between the frequency of Web 2.0 tools use and Web 2.0 tools self-efficacy: r_s=.671, p<0.01. Four tenths to .69 is labeled and described as a strong positive correlation (Quinnipiac, 2015). It is important to note that the correlation indicates a relationship and not causality (Field, 2005).

Potential participants were emailed a link to the surveys along with an invitation to participate in a focus group. Those interested in participating in the focus group were asked to respond to the email. All focus group participants personally responded to researcher to volunteer and not via email. Two focus groups occurred, and all the participants were able to attend. The focus groups followed Sadaf's (2013) interview protocol. The focus group conversations were analyzed to identify common themes. Table 10 presents a ranked order for key words and themes identified by focus group participants.

Table 10

Focus Group Findings by Themes in Ranked Order

Repeating Themes	Frequency of Reference in Numerical Value
1. Made lessons and lesson planning more efficient and effective.	N = 21
2. Wikis and blogs were the most implemented Web 2.0 tools.	N = 17
3. Students retained more information after online discussions.	N = 13
4. Helped English as a Second Language students gain background knowledge.	N = 12
5. Web 2.0 tools were used to support previously discussed material.	N = 9
6. Received training on collaborative Web 2.0 tools which supported communication which helped teachers retain more information and build skills.	N = 8
7. With modeling and scaffolding, students created artifacts that supported higher order thinking skills.	N = 6
8. Administrators providing the technological resources to implement was critical.	N = 4

Note. Top 8 Themes in Ranked Order.

The increased efficiency with lesson planning was the top theme referenced followed by wikis and blogs being the most utilized Web 2.0 tools. The common themes were then categorized into Light and Polin's (2010) categories of Web 2.0 tools used found in their research. Qualitative data from focus groups found the following themes based on Light and Polin's categories of Web 2.0 tool uses in Table 11.

Table 11

Focus Group Findings in Table Format by Light and Polin's (2010) Categories of Use

Light and Polin's Category of Web 2.0 Tool Uses	Repeating Ideas or Themes
1. Tools that create or support a virtual learning environment	1. Helped English as a Second Language students gain background knowledge 2. Web 2.0 tools were used to support previously discussed material.
2. Tools that create or support communication or cultivate relationships.	1. Students retained more information after online discussions. 2. Received training on collaborative Web 2.0 tools which supported communication which helped teachers retain more information and build skills
3. Research to support teaching and learning	1. Made lessons and lesson planning more efficient and effective 2. Wikis and blogs were the most implemented Web 2.0 tools
4. Tools enabling students to create artifacts demonstrating what they are learning	1. With modeling and scaffolding, students created artifacts that supported higher order thinking skills. 2. Administrators providing the technology resources to implement was critical.

Note. Top 2 Ranked Order Themes Listed.

Light and Polin (2010) found four categories that Web 2.0 tool use typically fell into. Focus group data were coded and common themes were identified. The two highest responses in ranked order are included in Table 11. Category 1 was tools that create or support a virtual learning environment. Focus group data indicated that Web 2.0 tools helped English as a Second Language (ESL) learners gain background information. This occurred through context clues in the discussion or being able to research an unknown topic on their device. Web 2.0 tools also supported a virtual

learning environment through creating discussions online about previously discussed information in class. An example of a specific tool mentioned was classchatter.com which provided a safe environment consisting of students only.

The second category per Light and Polin (2010) was tools that create or support communication or cultivate relationships. Online discussions, like classchatter.com, facilitated student learning and students retained more information. Student formative assessments after online discussions were reported as being higher than without the implementation of Web 2.0 tools. The focus group participants also reported having received effective training on Web 2.0 tools which supported communication among teachers. Teachers were able to share and collaborate on how to effectively implement multiple classroom teaching strategies including Web 2.0 tools though sites such as pinterest.com.

The third category of usage for Web 2.0 tools was as a research tool to support teaching and learning. Teachers reported that Web 2.0 tools made lessons and lesson planning more effective and efficient. Lessons were more efficient because students were on-task and engaged in the learning objective. Lesson planning was more efficient due to the increased collaboration. Increased collaboration occurred because teachers were able to access the shared knowledge through Web 2.0 tools at their convenience.

The final category was Web 2.0 tools being used as a tool enabling students to create artifacts to demonstrate what they are learning. With modeling and scaffolding, students created artifacts that supported higher order thinking skills. Participants described example artifacts as group research projects or presentations. Participants also stated one of most important factors was having administrators who supported technology and providing access. Students would not have been able to demonstrate

what they are learning on Web 2.0 tools without the access provided by supportive administration.

The findings that related to Research Question 2 were teachers receiving training to increase skills and knowledge on Web 2.0 tools. The training increased teacher's technology self-efficacy on Web 2.0 tools and increased the likelihood of utilization. One teacher stated, "I would have probably not used Web 2.0 tools, if I hadn't received training on examples." The second theme specific to teacher technology self-efficacy and Web 2.0 tools utilization was Web 2.0 tools usage to support previously discussed material. Content that the teacher was familiar with from previous discussions could have increased teacher's technology self-efficacy. Another teacher stated, "Knowing the content through previous discussions helped build confidence because the focus was on the tool and not the tool and content."

Research Question 3 Data

Learning Forward (2011) created the Redesigned Standard Assessment Inventory (SAI2). The SAI2 was redesigned in 2011 to account for the changes in the new standards for professional learning created by Learning Forward (Denmark & Weaver, 2012). The SAI2 was created to measure the seven standards for professional learning: learning communities, leadership, resources, data, learning designs, implementation, and outcomes (Learning Forward, 2011). Each standard has a set of directly related questions in which participants respond always, frequently, sometimes, seldom, never, or don't know. Table 12 contains the mean scores and standard deviation from each section of the SAI2. Individual questions within each standard will be highlighted in Chapter 5, if needed. Each section's result will be displayed as mean scores from the seven or eight questions assigned to the category and the mean SD. For example, learning communities

contained questions 1-7. The mean response for questions 1-7 combined was 5.46 and, the SD=.74. The SAI2 was on a six-point scale ranging from Always=6 to Don't Know=1.

Table 12

SAI2 Mean and SD

SAI2 Standard	Mean	SD
Learning Communities	5.46	0.74
Leadership	5.60	0.66
Resources	5.40	0.88
Data	5.40	0.83
Learning Design	5.39	0.69
Implementation	5.41	0.75
Outcomes	5.39	0.65

Note. 48 total respondents.

Spearman's correlation was also used to help determine the relationship between the frequency of Web 2.0 tools use and professional development. The mean scores from the WTII represented the x values and mean scores from the SAI2 represented the y values. In Spearman's correlation, a scatterplot diagram was created to establish a monotonic relationship. In the scatterplot diagram for the WTII and SAI2, as one increased, the other also increased. Figure 5 displays the aforementioned scatterplot diagram description.

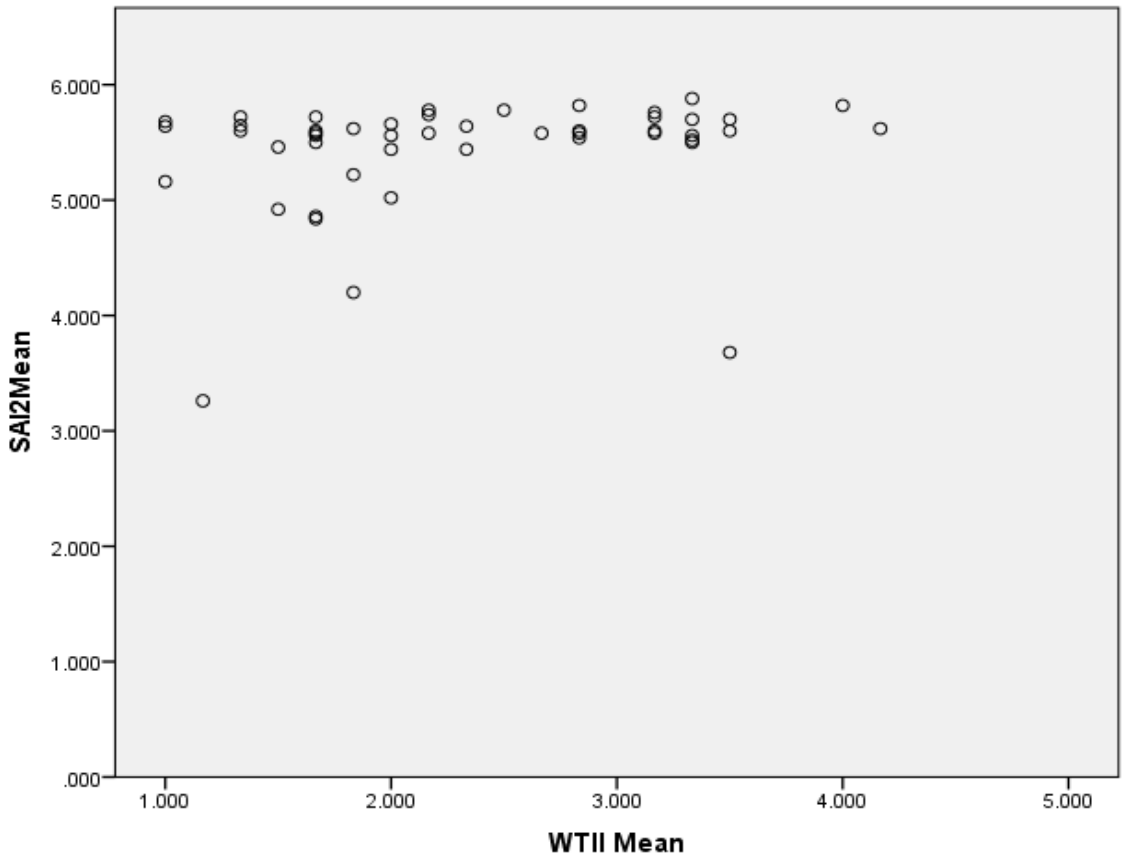

Figure 5. Scatterplot Diagram to Establish a Monotonic Relationship between SAI2 and WTII.

After a monotonic relationship was established through the above scatterplot diagram, Spearman's Correlation was the prescribed test to use. The two paired sets of data were the WTII means and SAI2 means. Table 13 shows the results from the Spearman's correlation test.

Table 13

Bivariate Correlations among the WTII and SAI2

		WTII Mean	SAI2 Mean
WTII Mean	Correlation Coefficient	1.000	.263
	Sig (2-tailed)	-	.071
	N	48	48
SAI2 Mean	Correlation Coefficient	.263	1.000
	Sig (2-tailed)	.071	-
	N	48	48

Note. Significant at the <0.001 level.

There was a weak positive correlation between the frequency of Web 2.0 tools use and professional development: r_s=.263, p<0.001. Two tenths to .29 is labeled and described as a weak positive correlation (Quinnipiac, 2015).

Focus group data found two themes related to professional development and Web 2.0 tools integration. Professional development on Web 2.0 tools increased teacher skills and knowledge on the specific Web 2.0 tools. Having knowledge and skills increased the likelihood of integration. Collaboration and communication in lesson planning was another theme identified. Web 2.0 tools made lesson planning more efficient. One teacher said, "I started to by in to Web 2.0 when I saw it was going to save a lot of time planning."

Post Hoc Research

Upon examining quantitative data and performing the previously addressed Spearman's rho correlations, the researcher realized the same correlation could be used to

analyze teaching experience (x value) and frequency of use (y value) in one of two additional correlations. The other Spearman's correlation test was teaching experience (x) and technology self-efficacy (y) to determine the relationship. Table 14 outlines the results from the former variables.

Table 14

Bivariate Correlations among Teaching Experience and Frequency of Use

		Experience	Frequency of Use
Experience	Correlation Coefficient	1.000	-.431**
	Sig (2-tailed)	-	.002
	N	48	48
Frequency of Use	Correlation Coefficient	-.431	1.000
	Sig (2-tailed)	.002	-
	N	48	48

Note. **Correlation is significant at the 0.01 level (2-tailed).

There was a strong negative correlation between teaching experience and the frequency of Web 2.0 tools use: r_s=-.431, p=.01.

The second Spearman's correlation was computed using teaching experience (x value) and teacher technology self-efficacy (y value). Table 15 displays the results from this statistical test.

Table 15

Bivariate Correlations among Teaching Experience and Teacher Technology Self-Efficacy

		Experience	Teacher Technology Self-Efficacy
Experience	Correlation Coefficient	1.000	-.485**
	Sig (2-tailed)	-	.000
	N	48	48
Frequency of Use	Correlation Coefficient	-.485	1.000
	Sig (2-tailed)	.000	-
	N	48	48

Note. **Correlation is significant at the 0.01 level (2-tailed).

There was a strong negative correlation between teaching experience and teacher technology self-efficacy: r_s=-.485, p=.01. In Spearman's correlation, the closer the score is to zero, the weaker the association between the ranks (Laerd Statistics, 2013).

Evidence of Trustworthiness

The study was executed as described in Chapter 3. It was a QUAN-qual study in which quantitative data were collected first, then qualitative data. The exception, as noted in post hoc research was an analysis using Spearman's correlation. It was used to determine the relationship between teaching experience and the frequency of specific Web 2.0 tools implementation and self-efficacy. Since data had already been collected, the logical step was to complete the analysis. The quantitative data described what is happening and the qualitative data helped support findings by providing a possible rationale.

All of the instruments used in this study were created, validated, and tested for reliability by other researchers in their studies. These validations and reliability statistics were described in Chapter 3. Creswell (2012) stated a response rate of 50% or greater was the acceptable standard in most educational journals. However, in this study, the response rate fell slightly short at 46%. Creswell also identified prenotifying participants as a strategy to increase participation. However, the researcher was unable to prenotify all participants in this study. Prenotifying all participants would have delayed research by 1 month.

The study as described in Chapter 3 was transferred and implemented as in Chapter 3 with the exceptions noted above. Additional studies using this methodology would be highly transferrable to other locations due to all of the instruments being created and compiled by other researchers and successfully implemented in this study. The study is also highly transferrable because it was created for a beginning researcher and inexperienced researchers could use the methodology with little experience using Spearman's correlation and coding. Intra-coder reliability (consistency in the coding process from one researcher) was established through prearranged categories which drove the coding process. The researcher used Light and Polin's (2010) categories to establish common responses or themes of participants.

Summary

Research Question 1 sought to answer to what degree do elementary teachers report implementing specific Web 2.0 tools. The WTII data specifically answered this question through the mean, median, and mode data from each of the Web 2.0 tools. Blogs, wikis, podcasts, social networking, and photo sharing sites saw the means all equaling close to 2; the mode for each was 1; and median was 2 (except podcasts=1). A

score of 1 corresponded with never, 2 with at least once per year, 3 with at least once per month, 4 with at least once per week, and 5 daily. The outlier in this category was course management systems. The mean for course management systems was 3.94, the mode was 5, and the median was 5. This can be attributed to, based on the listed course management systems, the use of a system that keeps attendance, allows for share lessons, and allows for the tracking of grades, along with many other features.

Research Question 2 looked at the relationship between a teacher's technology self-efficacy and the utilization of the specific Web 2.0 tools. The mean scores from the WTII and WTISEI were used as a paired analysis in Spearman's correlation to help answer Research Question 2. There was a strong positive correlation between the frequency of Web 2.0 tools use and Web 2.0 tools self-efficacy: r_s=.671, $p<0.01$. Based on WTII and WTISEI results, teacher technology self-efficacy was consistently higher than reported frequency of use. The qualitative data suggested the same findings. Teacher's technology self-efficacy remained high for most participants. The participants with a higher technology self-efficacy were more likely to utilize Web 2.0 tools more frequently.

Research Question 3 focused on the frequency of use for specific Web 2.0 tools and professional development. Quantitative data were analyzed through Spearman's correlation. Each participant's WTII scores were paired with the participant's SAI2 score. Spearman's correlation found there was a weak positive correlation between the frequency of Web 2.0 tools use and professional development: r_s=.263, $p<0.001$. Focus group findings indicated professional development was necessary, important, and past experiences beneficial in using Web 2.0 tools to learn new strategies of implementation that cultivate relationships and support virtual learning.

Post hoc research found a strong negative correlation between teaching experience and the frequency of Web 2.0 tools use: r_s=-.431, p=.01; and a strong negative correlation between teaching experience and teacher technology self-efficacy: r_s=-.485, p=.01. A teacher's experience level was not a factor or indicator of a teacher having a higher technological self-efficacy. Whether a teacher had less experience or more experience, this did not affect the level of one's technological self-efficacy based on the strong negative correlation.

Chapter 5: Discussion

Introduction

Project Tomorrow (2013) found Web 2.0 tools were not being implemented to their fullest capabilities in the classroom. The pertinence of maximizing Web 2.0 tool capabilities was increased student achievement (O'Bannon & Britt, 2012). Pan and Franklin's (2011) study found self-efficacy and professional development were the two most important factors affecting Web 2.0 tools implementation in Grades 6-12. Therefore, examining the relationship between Web 2.0 tools implementation and self-efficacy along with professional development may be helpful in fully implementing Web 2.0 tools at the elementary level and increasing student achievement.

The purpose of this study was to examine the impact of self-efficacy and professional development on Web 2.0 tools implementation in elementary classrooms. This study aimed to answer the three following research questions.

1. To what degree do elementary teachers report utilization of specific Web 2.0 tools?
2. What is the relationship between teacher technology self-efficacy and utilization of Web 2.0 tools in the elementary classroom?
3. What is the relationship between professional development and utilization of Web 2.0 tools in the elementary classroom?

Quantitative data were collected through the use of Pan and Franklin's (2011) WTII, WTISEI, and Learning Forward's (2011) SAI2. Qualitative data collection occurred in focus groups with conversations driven by Sadaf's (2013) Interview Protocol. Teacher focus group data were studied through the use of the concept-indicator model (Straus, 1988).

Research Question 1, the frequency of Web 2.0 tools use, found specific Web 2.0 tools were being implemented by some, but the mode was never. Those implementing Web 2.0 tools were implementing at least on a monthly basis. Research Question 2, the relationship between self-efficacy and Web 2.0 tools implementation, was examined through the WTISEI and WTII using Spearman's correlation. Spearman's correlation found there was a strong positive correlation between a teacher's technology self-efficacy and how frequently specific Web 2.0 tools were implemented. Focus group data supported Spearman's correlation findings. Qualitative data for this question came from the teacher focus group and the use of the concept-indicator model. Research Question 3, the relationship between professional development and Web 2.0 tools implementation, was inspected through SAI2 and WTII data and Spearman's correlation. Spearman's correlation found a weak positive correlation between professional development and how frequently specific Web 2.0 tools were being implemented. The question results were also aided by the teacher focus group and the concept-indicator model. Focus group data indicated that a supporting, positive relationship from leadership and participants having had positive professional development experiences contributed to implementing new Web 2.0 tools.

Interpretation of Findings

Frequency of use for specific Web 2.0 tools. Project Tomorrow (2013) found Web 2.0 tools were not being utilized to their fullest capabilities in educational classrooms based on overall percentages and not frequency. The WTII measured the frequency of use for specific Web 2.0 tools using a Likert scale format. One might contend, based on a Likert scale format, that Web 2.0 tools are not being fully utilized until all respondents are utilizing Web 2.0 tools and there were zero "never" responses.

Others might contend that Web 2.0 tools are not being fully utilized until frequency of use scores are close to the top of the scale range, daily (5). However, to gauge definitively the WTII results in this study, the mean scores were compared to Pan and Franklin's (2011) results. Figure 6 outlines the mean score comparisons.

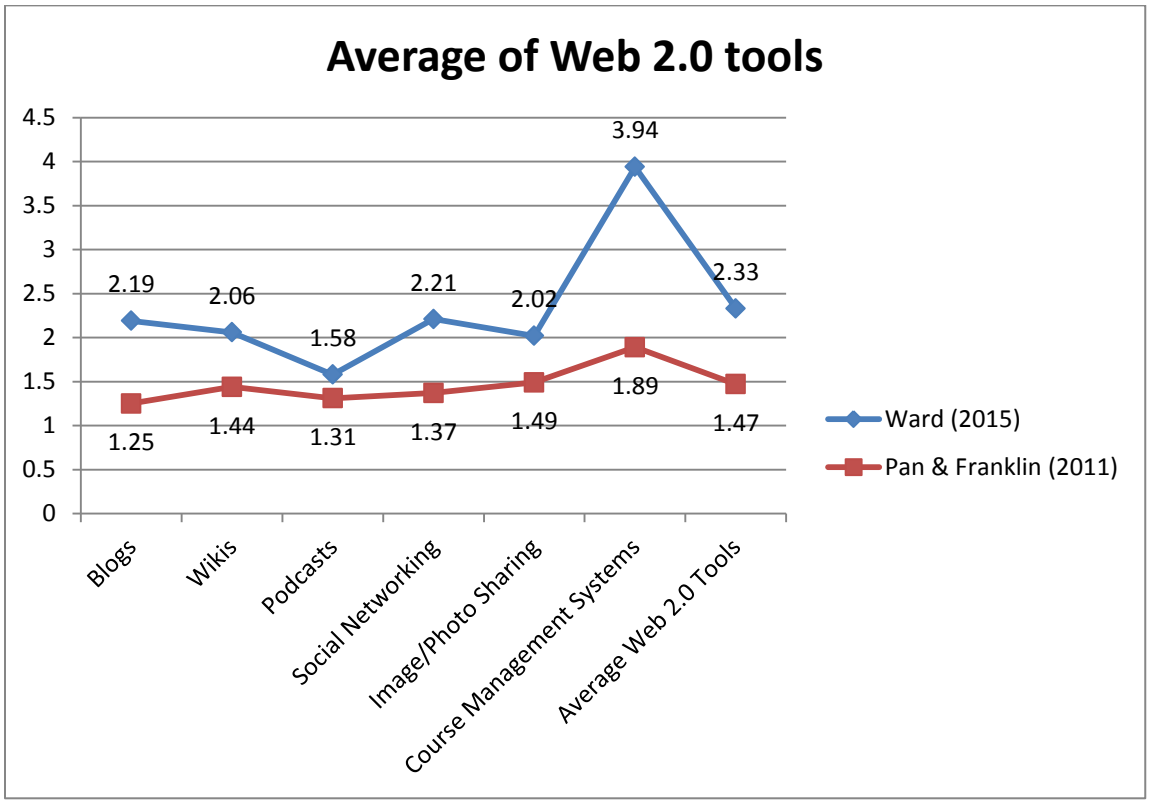

Figure 6. Ward (2015) WTII Results Compared to Pan and Franklin (2011) WTII Results.

Three qualifications must be noted in the two studies. First, Web 2.0 tools had the opportunity to advance and grow in education over a span of 4 years, and Pan and Franklin's (2011) study occurred in all grade levels K-12 compared to K-5 only in this study. However, based on the WTII data, specific Web 2.0 tools were being utilized at a higher rate. Second, Pan and Franklin's study was comprehensive and on a larger scale. Participants were from multiple regions of the United States. Qualitative findings

suggested higher WTII means might have been attributed to access to technology and training received through professional development opportunities. The schools in this study have been placing an emphasis on providing access to technology and providing quality professional opportunities for teachers. Third, the spike in CMS usage most likely is a result of the state-mandated requirement to utilize a CMS. These three components combined with high technology self-efficacy (which will be discussed in the next section) may have resulted in the higher WTII results.

Self-efficacy and specific Web 2.0 tools. Multiple studies have indicated a teacher's technology self-efficacy is one of the most or the most important factor in implementing Web 2.0 tools (Huitt, 2000; Pan & Franklin, 2011). One's previous experiences most influence one's self-efficacy (Bandura, 1982). Implementing Web 2.0 tools in an elementary classroom generally takes courage (Kist et al., 2010). Several studies found a teacher's technology self-efficacy to be one of the most influential factors or the most important factor affecting the implementation of specific Web 2.0 tools (Huitt, 2000; Pan & Franklin, 2011). If one was previously successful at a task, that success increased self-efficacy and was the most important factor in having a higher self-efficacy. The results of this study, particularly specific to self-efficacy, confirm and support the statement that a teacher's technology self-efficacy was the most important factor in implementing Web 2.0 tools.

There was a strong positive correlation found in this study between the frequency of Web 2.0 tools use and Web 2.0 tools self-efficacy: r_s=.671, $p<0.01$. This was higher than the weak positive correlation between the frequency of Web 2.0 tools use and professional development. Based on data found, this aligns with research stated above that describes a teacher's technology self-efficacy as an important factor in Web 2.0 tools

implementation. However, based on the comparison of WTISEI mean scores to WTII scores for each specific Web 2.0 tool, a higher technology self-efficacy does not necessarily lead to more frequent use. Teachers had higher scores on the WTISEI, generally 2 value points higher. Even though initial thoughts may have been the WTISEI data was inaccurate, the WTISEI scores were reviewed multiple times to ensure accuracy. A higher self-efficacy, in this study, did not lead to implementing technology on a weekly or daily basis. However, through Spearman's correlation, there is a relationship between the two.

Professional development and specific Web 2.0 tools. Many studies regarding professional development have found when professional development was used and implemented correctly, student achievement increased (Biancarosa et al., 2010; Saunders et al., 2009). Pan and Franklin (2011) found professional development specifically affected Web 2.0 tools implementation and was one of the two most important factors. There was a weak positive correlation between the frequency of Web 2.0 tools use and professional development, $r_s=.263$, $p<0.001$, found in this study. Strictly focusing on quantitative data from this study, one might conclude professional development as being less important than self-efficacy. However, qualitative data indicated professional development was just as important to specific Web 2.0 tools being implemented. Participants in the focus group had previously received professional development on Web 2.0 tools. One of the common themes identified was that professional development increased their skills and knowledge which led to a higher self-efficacy. Professional development, in a sense, preceded self-efficacy in importance. Professional development will be discussed more in the implications section; but when attempting to increase Web 2.0 tools implementation, professional development opportunities serve a dual purpose:

increasing participants Web 2.0 tools skills and knowledge while attempting to develop and increase self-efficacy.

Teaching experience. Demographic data indicated nearly the majority of participants in this study had between 5-16 years of experience. Only 23% of respondents had 17 years or more of experience. It also indicated 71% of respondents had been teaching at their current school for less than 10 years. According to participant demographic data, there were only six teachers with 25 years of experience or more and three teachers who had been teaching at their school for more than 21 years. In the education field, some studies have shown more experienced teachers are more likely to implement technology in their classroom (Buabeng-Andoh, 2012). This was attributed to the more experienced teachers having greater classroom management skills and a higher self-efficacy in adapting to new challenges because students were managed well. In this study, the researcher determined whether there was an association between experience and the frequency of Web 2.0 tools use. Spearman's correlation found that teacher's experience level had a negative relationship to frequency of use and self-efficacy. The association between experience and the frequency of Web 2.0 tools use was explored to add to the study, but it was not necessary information to address the research questions for this study.

Limitations

Limitations are potential weaknesses or problems with the study identified by the researcher (Creswell, 2012). A limitation of this study was the lack of prior research related specifically to the impact of self-efficacy and professional development on Web 2.0 tools implementation. Bandura (1977, 1982, 1997, 2001, 2006) is a leader on the concept of self-efficacy. However, there is limited research available on a teacher's

technology self-efficacy and its relationship to Web 2.0 tools being implemented. Numerous studies have been completed on professional development, but specifically applying their impact to Web 2.0 tools implementation was a relatively new study and concept. Additional research to compare findings to would have strengthened or disagreed with the findings to a greater degree.

Limitations also extended into the qualitative data. Creswell (2012) identified several potential limitations to qualitative research, some of which applied to this study. The first limitation to qualitative research in this study was that findings may not translate and transfer to other settings or people. The limited number of participants in focus groups only may not have represented the general thoughts of other teachers in this region (southeastern) of the United States. The research volunteers in the focus groups may not have represented a generalized idea or thought, too. The generalized idea or thought could be different in other regions of the country, the state, districts, or even within the same school due to the limited number of participants. Another limitation was the time and size of the study. With qualitative research, Creswell stated that data collection and analysis were more time consuming than with quantitative research. A large number of focus group participants was not feasible in this study due to the limited amount of time. In Straus's (1988) theoretical sampling step of qualitative research, the researcher identified groups, locations, or subgroups to further study. In this study, research only took place once during a set period of time, 2 months. The researcher did not restudy the same group or initiate additional studies at other locations with identified groups or subgroups. Any identified locations, groups, or subgroups that may be beneficial to study are discussed in the recommendations for further research section.

The spike in course management system usage (Figure 6) could be the result of a

state-mandated requirement for teachers to use a particular course management system which tracks attendance, grades, allows for collaboration on lesson planning, etc., which is a limitation of this study. With technology constantly changing, some instruments in this study are already becoming dated. For example, the specific tools identified (i.e., blogs, wikis, podcasts) in the WTII and WTISEI are dated and could be updated to reflect the most current Web 2.0 tools. Last, open-ended responses provided in the WTII may indicate a lack of knowledge about what constitutes a Web 2.0 tool. A specific example would be teacherspayteachers.com. Teacherspayteachers.com would be difficult to implement in a classroom with students to benefit student learning. Therefore, this may indicate a lack of knowledge of the definition of Web 2.0 tools.

Recommendations for Further Research

The following are recommendations that would benefit future researchers utilizing this study. First, with an emphasis on feasibility in future studies, the invitation to participate in the study could be sent to more potential participants. This would naturally increase the number of participants, assuming the same response rate as this study of approximately 46%. Second, increasing the number of participants would improve the strength of the qualitative data. Results in this study's qualitative data were limited to a small population (two focus groups) due to a limited amount of time and participant volunteers for the focus group. Creswell (2012) identified this as a limitation to qualitative data. Findings of qualitative research may not represent ideas or thoughts of other schools, districts, states, or regions of the United States. The researcher recommended for elementary-level studies to make a distinction between K-2 teachers and Grades 3-5 teachers.

A post hoc analysis to inform professional development could be completed. The

recommendation would be to complete a multiple regression analysis on all variables collected which would inform professional learning opportunities. Along with the multiple regression analysis, a post hoc analysis could be performed on the data collected as they relate to the ISTE standards. Next, professional development mean scores on the SAI2 were all above 5. The highest value label was 6 on the SAI2. Therefore, qualitative data could be collected to determine the rationale for the high SAI2 scores and why professional development is perceived as very effective. Finally, with the transition to online professional development opportunities, additional data could be collected to determine how to make online professional development opportunities most effective for teachers as they relate to Web 2.0 tools.

Implications for Professional Learning

Teachers, school leaders, and technology leaders who understand how critical self-efficacy is to the utilization of Web 2.0 tools will foster the development of self-efficacy in themselves and others. Those who understand the impact of increased student achievement through Web 2.0 tools can use that knowledge to increase fully implemented Web 2.0 tools (Tschannen-Moran & Woodfolk-Hoy, 2001). This study found a strong positive correlation between self-efficacy and Web 2.0 tools utilization. Because Web 2.0 tools increase student achievement (O'Bannon & Britt, 2012), increasing a teacher's technology self-efficacy affects how often teachers implement Web 2.0 tools.

Implementing and integrating Web 2.0 tools in this particular setting has a strong correlation to a teacher's self-efficacy. Bandura's (1982) four factors that contribute to one's self-efficacy could be a beneficial starting point to integrating Web 2.0 tools. Bandura's most important factor was enactive attainment (experiences). A teacher's

technology self-efficacy using Web 2.0 tools translated to being more likely to integrate and implement specific Web 2.0 tools in his/her classroom. Therefore, teachers with a lower Web 2.0 tools self-efficacy may benefit from created learning situations that return a high rate of success. Based on Bandura's (1982) findings, this is the most likely way to increase a teacher's Web 2.0 tools self-efficacy.

Pajares (2002) found that using specific and challenging short-term goals narrowed the focus. This created the view that the goal was attainable. He said when the goal was achieved, the result positively affected self-efficacy. If one were attempting to increase a teacher's technology self-efficacy with Web 2.0 tools, short-term and specific goals could focus on WTISEI questions. For example, a goal might consist of successfully completing the task described in question 4 of the WTISEI. Question 4 asked for participant's confidence in adding links on a blog. This could be a short-term, specific goal. Another example, question 6 on the WTISEI sought to determine participant's self-efficacy on editing information on a wiki. The WTISEI questions lend themselves to being specific, short-term goals. The focus of the professional development opportunity could be simply helping participants learn how to add a link to a blog or edit information on a wiki. A second practical application might be helping a colleague who implements zero Web 2.0 tools to learn just one tool to implement before a set time period or deadline. If a teacher has an interest in a particular Web 2.0 tool, he or she is more likely to implement that specific Web 2.0 tool. Therefore, the Web 2.0 tool that interests the participant should be encouraged (Pajares, 2002).

The second of Bandura's factors effecting self-efficacy was vicarious experience (modeling). Modeling may be beneficial to visually follow an expert in technology creating a step-by-step model. If participants are able to visualize and articulate their

"next steps" through a specific learning strategy, they are more likely to be successful, which may increase technology self-efficacy (Pajares, 2002). A practical application for modeling may be to utilize teacher leaders with a high technology self-efficacy. Teacher leaders could demonstrate the desired task. After demonstrating the desired task, teacher leaders could help others complete the task. Teacher leaders could help others create a step-by-step plan using specific strategies while verbalizing their tasks or steps to achieve the goal. It would be beneficial if these tasks were written as well. Participants would be able to refer back to steps that may not be remembered (Pajares, 2002). While implementing strategies to increase teacher technology self-efficacy, there might be instances of failure. Pajares (2002) found properly attributing the failure helps keep self-efficacy from falling. If failure occurs, assuring teachers that failure is not due to their capabilities would be a key to it not affecting their technology self-efficacy. Failure was most likely due to a lack of experience with the Web 2.0 tools or simply not following a previously outlined step which is a common occurrence (Pajares, 2002).

Pritchett, Pritchett, and Wohleb (2013) found participants were more likely to use Web 2.0 tools if they received training and professional development. Motivation on learning tasks for students and professional development participants increased when given a collaborative online environment (Chin-Fei & Chia-Ju, 2012). Professional development participants on Web 2.0 tools would benefit from development consisting of a specific skill to navigate the tool and strategies for implementation. If these two were present, Web 2.0 tools were more likely to be implemented, according to Chin-Fei and Chia-Ju (2012). However, in this study, data indicated a weak positive correlation between Web 2.0 tools utilization and professional development. It may be possible that time may be better spent focusing on teacher technology self-efficacy than strictly

professional development on Web 2.0 tools.

Conclusion

Classrooms that are considered modern or 21st century cultivate skills necessary to be successful in today's global environment. Modern classrooms teach and develop necessary qualities and skills such as information, communication, problem solving, self-direction, digital technology, and real world skills. Web 2.0 tools have the ability to prepare and give students experience in all of the characteristics of a modern, 21st century classroom. Most importantly, implementing and integrating Web 2.0 tools increases student achievement (Norman, 2009; O'Bannon & Britt, 2012; Tschannen-Moran & Woodfolk-Hoy, 2001). Unfortunately, Web 2.0 tools are not being implemented to their fullest capabilities; and opportunities to increase student achievement are being lost, according to Project Tomorrow (2013).

This study found a strong positive correlation between a teacher's technology self-efficacy and implementing Web 2.0 tools in the classroom which suggests efforts should be focused on the development of self-efficacy. A weak positive correlation between professional development and Web 2.0 tools implementation was found, and time spent on professional development would also be beneficial. In a survey of over 1,700 CEOs from companies around the world, the value of Web 2.0 tools was realized through the internal communication of knowledge, collaborating externally with other companies, and providing service to their customers. Businesses that are developing and implementing Web 2.0 tools report an improvement in operational costs by 10% and a 30% increase in speed to outside resources which affects the bottom line (McKinsey, 2009). Educators have an opportunity to take advantage of Web 2.0 tools through developing technology self-efficacy to increase the bottom line in their field, student

achievement.

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Appendix A

District Informed Consent

Dear Superintendent and Principals,

I am currently working to complete an educational doctorate at Gardner-Webb University. One of the requirements is to write a dissertation. I have chosen to examine the impact of self-efficacy and professional development on the implementation of web 2.0 in elementary school settings.

Pan & Franklin (2011) created surveys (attached) that measure the frequency of web 2.0 use and the effect of self-efficacy on web 2.0 implementation. To measure professional development's relationship to web 2.0 implementation, a survey created by Learning Forward has been attached. The Learning Forward (2011) is a leading organization on professional development. The surveys keep teachers' time a priority with a completion time of around 15-20 minutes. To add a qualitative measure, the option to participate in a focus group will also be given. The focus groups would take approximately 30-45 minutes depending on teachers' dialogue and the questions were created by a professor at Purdue University (Sadaf, 2013).

All information concerning the school and the school district will remain confidential and anonymous. The participation in this survey is completely voluntary, but all teachers in grades kindergarten through fifth would be asked to complete the online surveys via an email invitation. This will help the researcher ensure that data is more reliable and accurate. The right to not participate is maintained through the online format (Google Docs) and the option to easily not respond.

If you have any questions, you may contact the researcher by phone at 980.329.0887 or by email at stephenward5019@gmail.com. Any questions regarding the research or requirements for Gardner-Webb University may be directed toward Dr. Sydney Brown at 704.406.3019 or by email at skbrown@gardner-webb.edu.

If all parties are in agreement of this proposed study, please sign on the following page. Thank you for your time and interest in the study.

Sincerely,

Stephen Ward
Doctoral Candidate, Gardner-Webb University

_____	_____
Superintendent Signature	Date
_____	_____
Principal Signature	Date
_____	_____
Principal Signature	Date
_____	_____
Principal Signature	Date
_____	_____
Principal Signature	Date
_____	_____
Principal Signature	Date

Appendix B

Letter to Faculty

Dear Faculty at _____ Elementary School,

My name is Stephen Ward and I am doctoral student at Gardner-Webb University. I am finishing the requirements for my degree by completing a dissertation on the effects of self-efficacy and professional development on the implementation of web 2.0.

Research participation is strictly voluntary and any data collected remains anonymous. You, your school, or district will not be referenced at any point. The surveys are online and compiled by Google Docs. Individual surveys will only be viewed by the researcher and there is no way to identify who the participant is in Google Docs. If you would like to complete the survey only, simply click on the link provided in the email to be sent. If you would like to participate in the focus group, please reply to the email.

Thank you for considering taking approximately 15-20 minutes to complete the surveys and/or 30 minutes to 45 minutes to participate in a focus group to help further education.

Sincerely,

Stephen Ward
Doctoral Candidate, Gardner-Webb University

Appendix C

Web 2.0 Tools Integration Instrument (WTII)

Web 2.0 Tools Integration

Please check how often you use the following Web 2.0 tools with your students (check one for each category) and indicate what kinds of Web 2.0 tools you use.

Please circle one for each category

Blogs

Daily At least once per week At least once per month At least once per year Never

Please list the blogs you use for teaching, if applicable:

Wikis

Daily At least once per week At least once per month At least once per year Never

Please list the wikis you use for teaching, if applicable:

Podcasts

Daily At least once per week At least once per month At least once per year Never

Please list the podcasts you use for teaching, if applicable:

Social Networking Sites (ex. Facebook, My Space, Second Life, etc.)

Daily At least once per week At least once per month At least once per year Never

Please list the social networking sites you use for teaching, if applicable:

Image/Photo Sharing Sites (ex. Flickr, Picasa, etc.)

Daily At least once per week At least once per month At least once per year Never

Please list the Image/Photo Sharing Sites you use for teaching, if applicable:

Course Management Systems (ex. Angel, Blackboard, Moodle, WebCT, etc.)

Daily At least once per week At least once per month At least once per year Never

Please list the Course Management System you use for teaching, if applicable:

Appendix D

Web 2.0 Tools Integration Self-Efficacy Instrument (WTISEI)

Web 2.0 Tools Self-Efficacy Survey

Please rate your level of agreement using the following scale: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD)

When using Web 2.0 tools in teaching, I feel confident I can…

	Strongly Agree (SA)	Agree (A)	Neutral (N)	Disagree (D)	Strongly Disagree (SD)
Create my own blog (to be accessed by my students as part of a lesson)	❑	❑	❑	❑	❑
Post news or comments on a blog	❑	❑	❑	❑	❑
Edit or delete information on a blog	❑	❑	❑	❑	❑
Add links on a blog	❑	❑	❑	❑	❑
Upload attached files on a blog	❑	❑	❑	❑	❑
Add information on a wiki	❑	❑	❑	❑	❑
Edit information on a wiki	❑	❑	❑	❑	❑
Delete information on a wiki	❑	❑	❑	❑	❑
Revise the information version for what I want on a wiki (use the history record tool to verify the version I want)	❑	❑	❑	❑	❑
Upload files to a wiki, such as pictures, PowerPoint, word documents, PDF files, etc.	❑	❑	❑	❑	❑
Use computers for create a podcast, such as an mp3 file	❑	❑	❑	❑	❑
Upload podcast files online	❑	❑	❑	❑	❑
Download podcast files online	❑	❑	❑	❑	❑
Use RSS feed to subscribe to podcast files	❑	❑	❑	❑	❑
Create my own social network site	❑	❑	❑	❑	❑
Post information on social network sites	❑	❑	❑	❑	❑
Maintain contact with my friends through social network sites	❑	❑	❑	❑	❑
Invite friends to join my social network site	❑	❑	❑	❑	❑
Set up profile security levels of my social network site	❑	❑	❑	❑	❑

Create an Image/Photo Sharing Site account	❑	❑	❑	❑	❑
Use Image/Photo Sharing Sites to upload images/photos online	❑	❑	❑	❑	❑
Use Image/Photo Sharing Sites to edit images/photos (such as add text, resize images, or add tags)	❑	❑	❑	❑	❑
Use Image/Photo Sharing Sites to create a slideshow or video presentation	❑	❑	❑	❑	❑
Use a course management system to manage classroom materials, such as post a syllabus and curriculum documents	❑	❑	❑	❑	❑
Arrange a layout of my course management system site, such as display course material as weekly topics or social issues	❑	❑	❑	❑	❑
Use a course management system embedded tools to communicate and interact with my students, such as a blog, wiki, announcement, or chat room	❑	❑	❑	❑	❑
Use a course management system to create quizzes for my students online	❑	❑	❑	❑	❑
Use a course management system to assess the progress of my students	❑	❑	❑	❑	❑

Appendix E

Professional Development Survey: Standards Assessment Inventory 2

Information about You

In order to learn more about your professional learning experiences at your school, please choose the responses that most accurately reflect your own experiences at your school.

1. Role

   Content Area Teacher

   Support Teacher

   Elective or Special Area Teacher

2. Experience level as an educator

   Less than 1 year

   1-4 years

   5-10 years

   11-16 years

   17-25 years

   More than 25 years

3. Years at Current School

   0-1 years

   2-4 years

   5-9 years

   10-20 years

   21 or more years

4. School Setting

Career/Technical

College Preparatory

Early Learning Center

Early Childhood

Elementary

Middle

High

5. School Governance

Corporation

Faith Based

Private, Non-Faith Based

Private Charter

Public

Public Charter

Learning Communities

Please rate the following items and write your answer beside each question:

A. Always B. Frequently C. Sometimes D. Seldom E. Never F. Don't Know

1. My school's learning communities are structured for teachers to engage in the continuous improvement cycle (i.e. data analysis, planning, implementation, reflection, and evaluation).

2. Learning community members in my school believe the responsibility to improve student learning is shared by all stakeholders, such as all staff members, district personnel, families, and community members.
3. My school system has policies and procedures that support the vision for learning communities in schools.
4. All members of the learning communities in my school hold each other accountable to achieve the school's goals.
5. Learning communities in my school meet several times per week to collaborate on how to improve student learning.
6. In my school, some of the learning community members include non-staff members, such as students, parents, or community members.
7. In my school, learning community members demonstrate effective communication and relationship skills so that a high level of trust exists among the group.

Leadership

Please rate the following items and write your answer beside each question:

A. Always B. Frequently C. Sometimes D. Seldom E. Never F. Don't Know

8. My school's leaders consider all staff members to be capable of being professional learning leaders.
9. My school's leaders regard professional learning as top priority for all staff.
10. My school's leaders cultivate a positive culture that embrace characteristics such as collaboration, high expectations, trust, and constructive feedback.
11. My school's leaders are active participants with other staff members in the school's professional learning.
12. My school's leaders advocate for resources to fully support professional learning.
13. My school's leaders provide teachers with equitable resources to support our individual and collaborative goals for professional learning.
14. My school's leaders speak about the important relationship between improved student achievement and professional learning.

Resources

Please rate the following items and write your answer beside each question:

A. Always B. Frequently C. Sometimes D. Seldom E. Never F. Don't Know

15. In my school, time is available during the school day for professional learning.
16. Professional learning is available to me at various times, such as job-embedded experiences, before- or after- school hours, and summer experiences.

17. Practicing and applying new skills with students in my classroom are regarded as important learning experiences in my school.
18. Teachers in my school have access to various technology resources for professional learning.
19. Professional learning experiences, such as registration and consultant fees, staff, and materials, are openly discussed at my school.
20. Teachers in my school are involved with monitoring the effectiveness of the professional learning resources.
21. Teachers in my school are involved with the decision making about how professional learning resources are allocated.

Data

Please rate the following items and write your answer beside each question:

A. Always B. Frequently C. Sometimes D. Seldom E. Never F. Don't Know

22. My school uses a variety of student achievement data to plan professional learning that focuses on school improvement.
23. My school uses a variety of data to monitor the effectiveness of professional learning.
24. In my school, teachers have the opportunity to evaluate each professional learning experience to determine its' value and impact on student learning.
25. A variety of data are used to assess the effectiveness of my schools professional learning.
26. In my school, various data, such as teacher performance data, individual professional learning goals, and teacher perception data, are used to plan professional learning.
27. In my school, teachers use what is learned from professional learning and adjust and inform teaching practices.
28. Some professional learning programs in my school, such as mentoring or coaching, are continuously evaluated to ensure quality results.
29. In my school, how to assess the effectiveness of the professional learning experience is determined before the professional learning plan is implemented.

Learning Designs

Please rate the following items and write your answer beside each question:

A. Always B. Frequently C. Sometimes D. Seldom E. Never F. Don't Know

30. In my school, teachers have an opportunity to observe each other as one type of job-embedded professional learning.

31. Teachers in my school are responsible for selecting professional learning to enhance skills that improve student learning.
32. Professional learning in my school includes various forms of support to apply new practices.
33. The use of technology is evident in my school's professional learning.
34. In my school, teacher's backgrounds, experience levels, and learning needs are considered when professional learning is planned and designed.
35. Teacher's input is taken into consideration when planning school wide learning professional learning.
36. In my school, participation in online professional learning opportunities is considered as a way to connect with colleagues and to learn from the experts in education.

Implementation

Please rate the following items and write your answer beside each question:

A. Always B. Frequently C. Sometimes D. Seldom E. Never F. Don't Know

37. A primary goal for professional learning in my school is to enhance teaching practices to improve student performance.
38. Professional learning experiences planned at my school are based on research about effective school change.
39. My school has a consistent professional learning plan in place for three to five years.
40. Teachers in my school receive ongoing support in various ways to improve teaching.
41. In my school, teachers give frequent feedback to colleagues to refine the implementation of instructional strategies.
42. My school's professional learning plan is aligned to school goals.
43. In my school, teachers individually reflect about teaching practices and strategies.

Outcomes

Please rate the following items and write your answer beside each question:

A. Always B. Frequently C. Sometimes D. Seldom E. Never F. Don't Know

44. Professional learning experiences in my school connect with teacher performance standards (e.g. teacher preparation standards, licensing standards, etc.).
45. Student learning outcomes are used to determine my school's professional learning plan.
46. My professional learning this school year is connected to previous professional learning.

47. All professional staff members in my school are held to high standards to increase student learning.
48. Professional learning at my school focuses on the curriculum and how students learn.
49. Professional learning in my school contributes to increased student achievement.
50. In my school, professional learning supports teachers to develop new learning and then to expand and deepen that learning over time.

Appendix F

Web 2.0 Focus Group Protocol

Web 2.0 Teacher Focus Group Protocol

Project: *The Effect of Self Efficacy and Professional Development on Web 2.0 Use in the Elementary Classroom*

Web 2.0: *Web 2.0 tools are online applications that support collaboration and interaction through easy to use web interfaces. Popular examples include Wikis, Blogs, Facebook, YouTube, etc*.

Time of Interview:
Date:
Place:
Interviewer:
Number of teachers participating in the focus group:

Reflecting on your teaching experience, please answer the following questions:

1. Please tell me about your teaching experience this past year and specifically about
   a. class size
   b. grade level
   c. student demographic estimates

2. Have you used any type of Web 2.0 technologies during the past year?
   a. Can you explain how you incorporated web 2.0 into your teaching?
   b. Can you explain why you incorporated web 2.0 into your teaching? For what outcomes?
   c. Do you think integrating web 2.0 impacted your student learning?
      i. Can you give an example?

3. Did you use any other web 2.0 technology? Why or why not?

4. What factors influenced your decision to use or not to use web 2.0 technologies?

5. Which individuals (students, self, colleagues, administrators, parents, etc.) influenced your decision your decision to use web 2.0 technologies?
   a. Explain how and why?

6. Tell me about the factors that facilitated or hindered your use or lack of use of web 2.0?
   a. Did you have enough knowledge and skills or use web 2.0? Please explain.
   b. Did you have enough resources in terms of computers and internet access? Please explain.
   c. Did you have enough control over the use of web 2.0? Please explain.
   d. Did you have enough professional learning experiences related to web 2.0 utilization? Please explain.

7. Anything else you would like to share?

Appendix G

Focus Group Consent Form

Consent Form: Focus Groups

Purpose:
The researcher, Stephen Ward, is conducting a study under the supervision of Dr. Sydney Brown at Gardner-Webb University for the dissertation requirements of the school of education. You are invited to participate. The purpose of the study is to examine self-efficacy and professional development's impact on web 2.0 implementation in the elementary classroom. We will use this information to add a qualitative measure to this study.

Procedures:
If you participate in this study, you will be in a group with your peers. There will be a facilitator who will ask questions and facilitate the discussion. The conversation will be recorded so the researcher can analyze and identify common themes discussed. The recording will be used for this purpose only. If you volunteer to participate in this focus group, you will be asked some questions relating to your experience web 2.0. These questions will help us to better understand self-efficacy and professional developments effect on web 2.0. Your participation is completely voluntary. You may withdraw from this study at any time without penalty.

Benefits and Risks:

Your participation may benefit you and your peers by helping to understand potential barriers or enablers to implementing web 2.0 in your classroom. No risk greater than those experienced in ordinary conversation are anticipated.

Everyone will be asked to respect the privacy of the other group members. All participants will be asked not to disclose anything said within the context of the discussion, but it is important to understand that other people in the group with you may not keep all information private and confidential.

Confidentiality:

Anonymous data from this study will be analyzed by the researcher. No individual participant will be identified or linked to the results. Study records, including this consent form signed by you, may be inspected by the dissertation committee at Gardner-Webb University. The results of this study will be presented while defending the dissertation and recorded in the dissertation document; however, your identity will not be disclosed. All information obtained in this study will be kept strictly confidential. All materials will be stored in a secure location.

Consent:
By signing this consent form, you are indicating that you fully understand the above information and agree to participate in this focus group.
Participant's signature: _____
Printed name: _____
Date: _____
If you have any questions or concerns about this study, please contact Stephen Ward or Dr. Sydney Brown at Gardner-Webb University.

Sample consent form made available by the University of Arizona (2014).