# Staff Members' Perceptions of the Usefulness of Their Personal Learning Network on Twitter

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#### Abstract

The purpose of this study was to determine staff members' perceptions of the usefulness of their personal learning network (PLN) on Twitter and whether staff members' perceptions of the usefulness of their PLN on Twitter were affected by their number of years of educational experience, level of employment, and staff position. An additional purpose of this study was to describe staff members' experiences with a Twitter-supported PLN through individual interviews. A mixed method research design was implemented by collecting both quantitative and qualitative data. The sample for this study consisted of District JRZ certified staff members during the 2017-2018 and 2018-2019 school years. The sample for the qualitative portion of the study was composed of seven certified staff members of District JRZ. The results of the analysis indicated that staff members perceive a PLN on Twitter to be useful. The results of the data analysis indicated that staff members with 6 to 10 years of education experience perceive that their PLNs on Twitter have helped them make significant progress toward their professional development goal and have been a valuable part of their professional development more than staff members with 1 to 5 years of education experience. The results of the data analysis also indicated that staff members with 6 to 10 years of education experience perceive that Twitter is an effective platform for a PLN more than staff members with 1 to 5 and 21+ years of education experience. No other differences in perceptions based on education experience were found. The results showed that staff members at PreK-5 levels perceived that they had obtained resources from their PLNs on Twitter that they use in their classroom more than staff members at the 6-12 level. Finally, data indicated that staff members at the PreK-5 level are more likely to continue

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with their PLNs on Twitter for professional development. No other differences related to level of employment were found. Through interviews, the researcher found evidence to support the quantitative findings of this study. Based on the findings from this study, it is recommended that District JRZ continue providing professional development related to a PLN on Twitter. Recommendations for future research include replicating this study in other school districts as well as determining whether there is a correlation between staff members' perceptions of PLNs on Twitter and student achievement performance.

## Dedication

This work is dedicated to my mother, who taught me that girls with dreams become women with vision, and to my husband, Erik, who showed me that my reality could become more than I ever dreamed it could be. No one else understands the commitment and sacrifice it took for me to accomplish this goal better than you two. For all your love and support, I am beyond blessed to dedicate this work to you.

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#### Chapter 1

## Introduction

Over time, the implementation of professional development for educators has evolved to meet the needs of an ever-changing society. In the National Commission on Excellence in Education's 1983 publication, A *Nation at Risk*, the United States acknowledged the steady decline of student achievement in public education, citing that "America's position in the world may once have been reasonably secure," (p. 10) and further acknowledging that it no longer was. Also, in *A Nation at Risk* (1983), the need to "reform our educational system" (p. 14) to provide learning opportunities for our children during the informational age was addressed. Research on schools around the world, especially in the United States, has indicated that professional development is a major factor in improving student achievement (Darling-Hammond & Bransford, 2005).

The 21<sup>st</sup>-century learning skills reform is a movement through which school districts emphasized skills such as collaboration, critical thinking, innovation, and problem-solving (Rotherham & Willingham, 2009). To support the learning of 21<sup>st</sup>-century skills, many school districts have integrated technology on a one-to-one basis for students. As technology usage has increased in classrooms, educators have started to realize the effect it can have on student achievement and 21<sup>st</sup>-century skills (Riley, 2010). Furthermore, Ross, Maninger, LaPrairie, and Sullivan (2015) explained that educators need to understand the digital world to best prepare students for success in the ever-changing global world. Therefore, school districts have to acknowledge the digital needs of educators and provide professional development that models the 21<sup>st</sup>-century learning of students.

The push for educational technology around the world and lack of professional development is leading educators to experiment with social media as a form of informal professional development. Multiple forms of social media can be used; however, Davis (2012) found that educators preferred Twitter. Twitter was originally created to send "small bursts of information," also known as "tweets," containing information to share with other users on Twitter (Anderson, 2011). As the use of social media increases among educators, Twitter provides a platform for collaboration and communications between educators all over the world. Using Twitter, educators can communicate and chat about ideas and share and compile resources and strategies for the classroom by tweeting links to educational articles, websites, and blogs (Lu, 2011). Developing a personal learning network (PLN) could assist educators in connecting with other educators, take part in educational chats about current topics and trends in education, and form a network of professionals that can be accessed at any time. According to Cordell, Rogers, and Parker (2012), PLNs have taken professional learning communities a step further and assisted educators in creating borderless learning environments. PLNs can assist school districts in providing quality, relevant, and individualized professional development that is right on time.

#### Background

The Missouri Department of Elementary and Secondary Education (MODESE, 2018) defined District JRZ as a suburban school district located in Southwest Missouri, consisting of approximately 5,000 students in grades kindergarten through twelfth, with five elementary schools (grades K-4), one middle school (grades 5 & 6), one junior high school (grades 7 & 8), and one high school (grades 9-12). During the 2017-2018 school

year, the majority of students enrolled in District JRZ were white (70.9%); however, the Hispanic student population had been on the rise for the five previous years.

Additionally, the "other" category, mostly made up of the Pacific Islander population (see Table 1), has been increasing.

Table 1

| School Year | Hispanic | White | Other |
|-------------|----------|-------|-------|
| 2012-2013   | 10.9     | 77.7  | 11.4  |
| 2013-2014   | 11.4     | 76.4  | 12.2  |
| 2014-2015   | 12.0     | 74.4  | 13.6  |
| 2015-2016   | 13.5     | 73.4  | 13.1  |
| 2016-2017   | 14.2     | 72.2  | 13.6  |
| 2017-2018   | 14.5     | 70.9  | 14.6  |

District JRZ Race Percentages

*Note:* Adapted from "*Demographic data*, 2013-2017," by Missouri Department of Elementary and Secondary Education School Data and Statistics, 2017a. Retrieved July 1, 2018, from https://mcds.dese.mo.gov/guidedinquiry/District%20and%20Building%20Student%20Indicators/District% 20Demographic%20Data.aspx?rp:Districts=\_\_\_\_&rp:SchoolYear=2017&rp:SchoolYear=2016&rp:SchoolYear=2015&rp:SchoolYear=2014

For the 2017-2018 school year, the average daily attendance rate for District JRZ was 95.4% (MODESE, 2018b). Additionally, District JRZ has a consistent number of students qualify for free and reduced lunches at 61.5% (MODESE, 2018b).

Table 2 includes a summary of the teacher characteristics and faculty information for District JRZ. The average teacher salary increased approximately \$600 from \$40,973 during the 2012-3013 school year to \$41,584 during the 2016-2017; however, average

administrators' salaries had increased from \$77,560 during the 2012-2013 school year to \$89,566 during the 2016-2017 school year. Additionally, average years of experience (11 years) in District JRZ had remained consistent for the past five school years. District JRZ saw an increase in teachers with a master's degree or higher rising from 39.6% in the 2012-2013 school year to 42.7% in the 2016-2017 school year.

Table 2

| School Year | Average<br>Years of Experience | Percentage of Teachers with a Master's<br>Degree or Higher |
|-------------|--------------------------------|--|
| 2012-2013   | 11.3                           | 39.6   |
| 2013-2014   | 11.5                           | 37.4   |
| 2014-2015   | 11.3                           | 38.8   |
| 2015-2016   | 11.0                           | 41.8   |
| 2016-2017   | 11.3                           | 42.7   |
| 2017-2018   | 11.1                           | 43.6   |

Teacher Characteristics and Faculty Information

*Note:* Adapted from "District faculty information, 2013-2017, "by Missouri Department of Elementary and Secondary Education School Data and Statistics, 2017a. Retrieved July 1, 2018, from https://mcds.dese.mo.gov/guidedinquiry/District%20and%20Building%20Education%20Staff%20Indicator s/District%20Faculty%20Information.aspx?rp:DistrictCode=\_\_\_\_&rp:SchoolYear=2017&rp:SchoolYea r=2016&rp:SchoolYear=2015&rp:SchoolYear=2014

During the 2017-2018 school year, District JRZ high school students were beginning their third full year of 1:1 Chromebook implementation. Additionally, fifth through eighth-grade students were beginning their second year of 1:1 Chromebook implementation, while third-and fourth-grade students were 2:1. Kindergarten through second grades had access to a 1:1 iPad cart in each classroom. In order to support and assist with technology integration needs, District JRZ employs an educational technology director and an educational technology specialist. To equip new teachers in the district, the educational technology director and specialist host a three-day technology boot camp prior to the start of the school year.

During the technology boot camp, new teachers attended the learning session, *Twitter for educators: Establishing your PLN, Branding your mission.* The learning session involved facilitating the creation of Twitter accounts, outlined the specific expectations for District JRZ educators' use of Twitter, and allowed new teachers time to start creating their PLN. To continue the reinforcement of using Twitter in the district and practice Twitter skills in an engaging manner, new teachers participated in a game in which they were required to engage in the use of a variety of Twitter functions.

#### **Statement of the Problem**

Across the nation, school districts are spending large amounts of money on traditional professional development without research related to its positive effects on teacher learning (Jacob & McGovern, 2015). Traditional professional development in the United States tends to lack the components teachers value as 21<sup>st</sup>-century learners (Trust, 2012). Additionally, with the increased demand for technology use in the classroom and 21<sup>st</sup>-century skill development, it is imperative that teachers be provided professional development opportunities that model the learning students are to receive in the classroom. Currently, the traditional professional development method for preparing teachers to instruct this generation of learners is falling behind in meeting the needs of 21<sup>st</sup>-century educators (Borman & Dowling, 2008). As research continues pertaining to collaboration, communication, and reflection as components of effective professional

development, many educators are seeking out PLNs through social media sites such as Twitter to acquire relevant and lasting professional development opportunities (Lieberman & McLoughlin, 2000). District JRZ needed to determine the effectiveness of PLNs in assisting educators in meeting their professional development goals. This research might assist school districts in determining if PLNs via Twitter should be a part of their professional development plan.

#### **Purpose of the Study**

Creswell (2009) suggested that the purpose statement indicates why the researcher wants to conduct the study and what the researcher intends to accomplish. The first purpose of this study was to determine staff members' perceptions of the usefulness of their PLN on Twitter. The second purpose of this study was to determine whether staff members' perceptions of the usefulness of their PLN on Twitter was affected by the number of years of education experience (less than 1 year, 1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, or 21 or more years), the level of employment (PreK-5, 6-12, and other), and staff position (teacher, administrator, and other). The final purpose was to explore staff members' experience with a Twitter-supported PLN.

#### Significance of the Study

The significance of this study may help educators understand the perceptions of the usefulness of a PLN on Twitter. This research could also inform educational leaders about the use of a PLN on Twitter as a professional development tool. Visser, Evering, and Barrett (2014) researched teachers' use of Twitter for professional development and found that teachers who used Twitter felt it improved their teaching practices. A recommendation for further research on the use of Twitter was to investigate further the demographics of the teacher who values the use of Twitter. Learning whether the educator demographics of number of years of education experience (less than 1 year, 1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, and 21 or more years), the level of employment (PreK-5, 6-12, and other), and staff position (teacher, administrator, and other) influence the perception of the usefulness of a PLN via Twitter could be useful to District JRZ to provide relevant and differentiated professional development opportunities for employees. With social media being a relatively new professional development tool, this study could add to the limited research encompassing the uses of social media for professional development. School districts could use the results of this study to determine if PLNs via Twitter might benefit the educators in their districts.

### Delimitations

Lunenburg and Irby (2008) described delimitations as "self-imposed boundaries set by the researcher on the purpose and scope of the study" (p. 134). Due to the study involving professional development growth in staff members specifically relating to a year-long professional development goal, the current study was delimited to educators employed during the 2017-2018 and 2018-2019 school years by District JRZ. Also, demographic variables used in the data analysis included the total number of years in education, the level of employment, and staff position.

### Assumptions

According to Lunenburg and Irby (2008), "Assumptions are postulates, premises, and propositions that are accepted as operational for purposes of the research" (p. 135). The present study was based on the following assumptions:

• All participants provided honest and open feedback about their experiences.

- All participants were contacted through email; therefore, it is assumed that all certified district employees received the invitation to complete the survey.
- All participants have been trained on the use of Twitter.
- All participants responded to the survey items with an understanding of the definition of a PLN.

## **Research Questions**

Lunenburg and Irby (2008) distinguish research questions as "a directional beam for the study" (p. 126). This study was guided by the following research questions:

**RQ1.** To what extent do staff members perceive that their PLNs on Twitter are useful?

**RQ2.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on the number of years of education experience?

**RQ3.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on the level of employment?

**RQ4.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on staff position?

**RQ5.** What are staff members' experiences with a Twitter-supported PLN?

## **Definition of Terms**

According to Lunenburg and Irby (2008), a researcher should define key terms that are significant in the research study by using a "professional reference source" (p. 118). The terms are words that may not commonly be known or could be used in a variety of contexts. The following terms were widely used throughout this study. **Personal learning network (PLN).** Whitby (2013) defined a PLN as "a tool that uses social media and technology to collect, communicate, collaborate and create with connected colleagues anywhere at any time" (para. 1).

**Professional development.** Darling-Hammond, Hyler, and Gardner (2017) defined professional development as "learning that results in changes in teacher practices and improvements in student learning outcomes" (para. 3).

**Social media.** Nations (2019) defined social media as "web-based communication tools that enable people to interact with each other by both sharing and consuming information" (para. 10).

**Twitter.** Pollard (2015), Smith (2016), and Perez (2018) defined Twitter as a free microblogging social media network where users can post short messages that consist of 280 characters, known as tweets, by an electronic device. Users can interact with and follow other users. By following other users, @username, tweets will be shown on their timeline.

#### **Organization of the Study**

This study consists of five chapters. Chapter 1 introduced the study and provided background information on the suburban Missouri school district in the study. The problem statement, significance, the purpose of the study, delimitations, and assumptions were provided. The research questions and definition of terms were identified. Presented in Chapter 2 is a review of the literature starting with the explanation of adult learning theories such as andragogy, self-directed learning, and transformative learning. In addition, a history of professional development including features of effective professional development, barriers to current professional development models, and online professional development is included in the chapter. Chapter 2 concludes with descriptions of PLNs, the use of Twitter for professional development, and research on PLNs on Twitter. Presented in Chapter 3 is a description of the methodology used in this study. Included in Chapter 3 are the research design, participants, measurement, data collection procedures, data analysis and synthesis, researcher's role, trustworthiness and reliability, and the limitations of the study. Chapter 4 includes descriptive statistics and the results of the hypothesis testing, interview analysis results, and the integration of results. Finally, included in Chapter 5 are the study summary, findings related to the literature, and the conclusions.

### Chapter 2

## **Literature Review**

Included in this chapter is a review of the literature related to this study. First, adult learning theories such as andragogy, self-directed learning, and transformative learning are explored. Next, literature related to professional development is examined, and features of effective professional development and barriers to current professional development models are described as well as online professional development. Finally, PLNs, Twitter, and the use of Twitter as a platform for PLN are examined.

#### **Adult Learning Theories**

Understanding adult learning could have a major impact on professional development opportunities for educators. According to Merriam (2001), there is no one specific theory as to the perfect model for adult learning; however, through many decades of research studies, a variety of researchers have developed theories and explanations as to the best models of adult learning. This section begins with a review of andragogy, followed by an outline of self-directed learning, and transformational learning.

Andragogy. Knowles (1980) defined pedagogy as "the art and science of teaching children" (p. 40) and andragogy as "the art and science of helping adults learn" (p. 43). Knowles first referred to andragogy as a theory of adult learning; however, "as discussion ensued among scholars about andragogy, Knowles and others began to refer to andragogy less as a theory, and more as a model" (Beeler, 2015, p. 38). Knowles (1973) originally identified four critical assumptions about andragogy to show the difference between it and pedagogy: "(a) changes in self-concept, (b) the role of experience, (c) readiness to learn, and (d) orientation to learn" (p. 45). These assumptions were revised

in 1980, 1984, and 1989 with the addition of two more assumptions that (e) "adult learners benefit when they find an internal motivation to learn" (Knowles, Holton, & Swanson, 2005, p. 68), and (f) "adults should, if possible, enter into learning on a voluntary basis because of a critical need to know" (Knowles et al., 2005, pp. 64-65). These assumptions provided the foundation of the Knowles' adult learning theory.

Knowles et al. (2005) referred to the andragogical approach to facilitating learning as a "process model" (p. 115) versus the traditional method of instruction as a "content model" (p. 115) or a pedagogical approach. They further explained the difference between the two in that the content model emphasizes the transferring of information and skills, whereas the process model values the learner's ability to acquire information and skills by using procedures and resources (Knowles et al., 2005). Additionally, Knowles et al. (2005) stated that:

The andragogical teacher (facilitator, consultant, change agent) prepares in advance a set of procedures for involving the learners (and other relevant parties) in a process involving these elements: (1) preparing the learner; (2) establishing a climate conducive to learning; (3) creating a mechanism for mutual planning; (4) diagnosing the needs for learning; (5) formulating program objectives (which is content) that will satisfy these needs; (6) designing a pattern of learning experiences; (7) conducting these learning experiences with suitable techniques and materials; and (8) evaluating the learning outcomes and re-diagnosing learning needs. (p. 115)

Table 3 illustrates the underlying assumptions with each model in a side by side comparison.

## Table 3

| Process Elements | of Andragogy |
|------------------|--------------|
|------------------|--------------|

| Elements                    | Pedagogical Approach             | Andragogical Approach               |
|-----------------------------|----------------------------------|-------------------------------------|
| Preparing Learners          | Minimal                          | Provide information                 |
|                             |                                  | Prepare for participation           |
|                             |                                  | Help develop realistic expectations |
|                             |                                  | Begin thinking about content        |
| Climate                     | Authority oriented               | Relaxed, trusting,                  |
|                             | Formal                           | Mutually respectful,                |
|                             | Competitive                      | Informal, warm                      |
|                             |                                  | Collaborative, supportive,          |
|                             |                                  | Openness and authenticity,          |
|                             |                                  | Humanness                           |
| Planning                    | By teacher                       | Collaborative planning              |
| Diagnosis of Needs          | By teacher                       | By mutual assessment                |
| Setting of Objectives       | By teacher                       | By mutual negotiation               |
| Designing Learning<br>Plans | Learning Logic of subject matter | Sequenced by readiness,             |
|                             | Content Units                    | Problem units                       |
| Learning Activities         | Transmittal techniques           | Experiential techniques (inquiry)   |
| Evaluation                  | By teacher                       | Mutual re-diagnosis of needs        |
|                             |                                  | Mutual measurement of program       |

*Note:* Adapted from *The Adult Learner* by M. S. Knowles, E. F. Holton, & R. A. Swanson, 2005, p. 116. Burlington, MA: Elsevier.

Although andragogy is a widely accepted adult learning theory, some researchers have been critical of some of the areas that andragogy includes. Knowles et al. (2005) even wrote that critics disapprove of andragogy citing that it "does not account for the social aspects aligned with adult learning" (p. 142). Merriam (2001) argued that instead

of being considered a theory, andragogy should instead be seen as a model for creating learning opportunities. Merriam (2001) went on to argue that some of Knowles' assumptions could relate to the learning of both children and adults. Misch (2002) found that not all adult learners were solely motivated intrinsically, citing external motivation was a factor in adult learning. Furthermore, Merriam (2001) acknowledged that Knowles' assumptions have provided a foundation for many adult education programs and trainings and might likely continue to affect the practice of adult education now and in the future.

**Self-directed learning.** Studies have been conducted that provided a correlation between self-directed learning and the adult learner's motivation to pursue learning opportunities, in both formal and informal settings (Tough, 1979). While Knowles' theory of andragogy lends itself to self-directed learning, Houle (1961) is one of the first known researchers to study the effects of self-directed learning on adults. In a qualitative study on adults' motivation to pursue learning opportunities, Houle set out to identify specific reasons why adults participate in continuing education. Houle's (1961) study consisted of 66 participants who were identified as adult continuing learners in formal learning environments. Key findings of this study suggested that adult learners are significantly motivated to choose learning opportunities through intrinsic motivation such as seeking out personal learning opportunities, sharing a common interest with someone, and acquainting themselves with pleasant people. Additionally, Houle found extrinsic motivators such as complying with employer policies, securing professional advancement, and receiving a higher status in a job to produce little to no significance on adult learner motivation. While Houle's (1961) research provided insight into adult

learning through formal settings, Tough (1971) conducted a similar qualitative study; however, his participants were learners who created their learning through self-developed projects. Similarly, Tough (1971) concluded that self-directed learning could be directly tied to learner's motivation with content specific information.

"One of the most popular ideas in adult education is that individuals want to have control over their learning based on their personal goals and that learning will increase as a result" (Knowles et al., 2005, p. 173). Knowles' theory of adult learning called andragogy lends itself to the process of self-directed learning, which in broad terms refers to the learners' ability to control what they learn. Knowles (1975) defined self-directed learning as:

A process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes. (p. 18)

Brockett and Hiemstra (1991) identified two commonalities within successful learning opportunities for adults. They suggested that successful self-directed learning stems from:

1. The learner's desire to own the responsibility for their learning (autonomy).

 The learner's ability to assume responsibility for the entire process of learning, from the creation of the opportunity to implementation and ending in a reflection of the outcome (motivation) (Brockett & Hiemstra, 1991, p. 24).

Those who have studied self-directed learning have concluded that the success of the learner's outcome is directly related to the learner's personal responsibility, in other

words, learner autonomy (Brockett & Hiemstra, 1991; Knowles, 1980; Tough, 1979). In his research on andragogy, Knowles (1980) discussed the importance of adult learners possessing the ability to take responsibility for their learning. In 2009, Boucouvalas stated that "self-directed learning has even greater potential to contribute to the development of the human species when guided by a concept of *self* that includes both" (p. 1) the individual self (autonomous) and the connected self (homonymous). In her discussion of homonomous, Boucouvalas (2009) wrote, "the homonomous, connected sense of self is the experience of motivation that emanates from participation in something greater than the individual" (p. 6). In looking at self-directed learning from this perspective, Boucouvalas (2009) expressed the need for learners to shift from a "me" to a "we" mindset and instead of being motivated by a reward for the individual learner, become motivated to approach learning opportunities to better our surroundings. Boucouvalas (2009) acknowledged that the learner's autonomy does play a significant role in successful self-directed learning; however, she mentioned that it is only one of many aspects (including motivation) that play a role in the overall success of self-directed learning.

Studies have been conducted to determine the effects of self-directed learning in the field of education. Online learning is beneficial in providing opportunities to learners of all different backgrounds, goals, and interests (Barab, Thomas, & Merrill, 2001). Hiemstra (2009) indicated that the internet is an exemplary platform for self-directed learning due to its lack of time and location constraints. Additionally, Brookfield (2013) claimed that learners could be freed from "educational totalitarianism" (p. 95) when they take personal responsibility for their learning outcomes. In a study to determine specific characteristics that make some teachers more innovative than others, Thurlings, Evers, and Vermeulen (2015) purported that autonomy and motivation are among a number of factors influencing teacher innovation. Nochumson (2018) argued that by having teachers create "PLNs on Twitter, they have access to new ideas and are able to supply ideas to others, and they may experience a sense of freedom from many of the constraints they have regarding what and how they should learn" (p. 53), thus providing teachers with a self-directed learning opportunity.

**Transformative learning.** Mezirow's (1997) in-depth research on adult learners was pivotal to his writing about transformative learning. Transformative learning is defined as:

The process of effecting change in a *frame of reference*. Adults have acquired a coherent body of experience- associations, concepts, values, feelings, conditioned responses - frames of reference that define their world. Frames of reference are the structures of assumptions through which we understand our experiences.

(Mezirow, 1997, p. 5)

According to Mezirow (1997), frames of reference are comprised of two dimensions, habits of mind and point of view. Mezirow (1997) stated that habits of mind are broader, more ingrained, habitual, and influenced by assumptions, while points of view are easier to change and completely defined by the outcomes of our habits of mind.

Mezirow (1997) presented the need for adults to function as autonomous thinkers, defining autonomous thinking as the ability to "become critically reflective of one's own assumptions and to engage effectively in discourse to validate one's beliefs..." (p. 9). Adult educators must understand that the belief of transformative learning extends beyond the learning foundations for child learning. As educational professional development opportunities are created, Mezirow's (1997) research on transformative learning has shown it is necessary for adults to be autonomous thinkers. When studying effective models of professional development for educators, it is imperative to have an indepth understanding of the foundations of adult learning theories.

### **Professional Development**

According to Guskey (2000), professional development for educators is defined as the "processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students" (p. 16). Professional development provides educators with a thorough understanding of their content, as well as ensuring the use of instructional best practices to effectively transfer knowledge to their students (Reese, 2010). Effective professional development allows educators to explore new methods for teaching their content, provides an opportunity for educators to stay current with performance standards, introduces educators to the latest technologies for teaching, and provides them with tools to adjust their teaching to diverse student populations (Lawless & Pellegrino, 2007). In reality, it is often a struggle for school districts to meet these requirements for all educators.

Over the decades, policy changes and educational reform in the United States have changed the landscape of K-12 education, making it necessary for foundational changes to professional development models. These changes have pushed educators to participate in effective forms of professional development that encourage collaboration and autonomy in the acquisition of new skills (Owen, 2015). This section provides a brief overview of the features of effective professional development for educators. It further goes on to provide a foundation of knowledge of traditional models of professional development. This section concludes with the research related to online professional development for educators.

**Features of effective professional development.** For educators to grow in their profession, professional development must include specific qualities for their learning to be beneficial and effective (Deyamport, 2013). Studies have been conducted to determine the features of effective professional development with relatively similar findings, such as collaboration and reflection, in each research study (Ball & Cohen 1999; Guskey, 2010; Pollard, 2015). Guskey (2000) suggested that for professional development to be effective, it must be intentional with well-defined goals, continual reflection and evaluation, and systemic in that it constitutes for changes over time and creates learning at all levels of an organization. Darling-Hammond, Wei, Andree, Richardson, and Orphanos (2009) found that effective professional development consists of sustained and intense collaboration through many contact hours, ample time for personal reflection practice, and a focus on techniques to enhance student performance while engaging in the process of learning and transformation on the educator's part. Finally, Pollard (2015) suggested that effective professional development is a continuous cycle of learning throughout one's career that leads to adjusting their practice through ongoing reflection.

Desimone, Porter, Garet, Yoon, and Birman (2002) conducted a study to determine the effects of professional development on teachers' instruction by designing "a series of studies that allowed them to examine the relationships between alternative features of professional development and change in teaching practice in a cross-sectional, national probability sample of teachers and a smaller, longitudinal sample of teachers" (p. 3). The participants included 207 teachers from 30 schools, 10 districts, and five states, and data were collected through a series of surveys administered over three years. Desimone et al. (2002) hypothesized that six key structural features of professional development enhanced teacher performance: reform work type, duration of the activity, the degree to which collective participation occurs, the extent of active learning, the coherence of the activity, and the degree of content focus for the activity. They concluded that the effect of professional development on teachers' performance was positively impacted by active learning, coherence, and content specific activities (Desimone et al., 2002).

Wei, Darling-Hammond, and Adamson (2010) conducted a study in which they surveyed K-12 public teachers to examine state and district policies associated with professional development and were able to conclude that high quality professional development includes

(a) a focus on effective pedagogy and curriculum, (b) meaningful learning activities that integrate knowledge into practice, (c) an assessment linking professional development to curriculum standards, (d) activities that are offered throughout the school district as part of systematic reform, and (e) activities provide opportunities for peer learning and feedback. (p. 2)

Wei et al. (2010) found that only 16% of teachers felt they worked in a "climate of cooperative effort among staff members in their schools" (p. 20) and noted that teachers expressed the desire for increased collaboration as a way to improve student

achievement. As a result of the study, Wei et al. (2010) concluded that for professional development to have a significant impact on teaching practices and student achievement, it needed to be relevant to teachers' day to day work and sustained over a period of time.

A lack of collaboration denies educators the essential exposure to a variety of beliefs and practices and the chance to challenge their own experiences, beliefs, and pedagogy related to their educational practices (Smylie, 1995). "As research deepens our understanding of how teachers learn, many scholars have begun to place greater emphasis on job-embedded and collaborative teacher learning" (Darling-Hammond et al., 2009, p. 9). Hill, Stumbo, Paliokas, Hansen, and McWalters (2010) stated, "teachers develop expertise not as isolated individuals but through job-embedded professional development, as members of collaborative, interdisciplinary teams with common goals for student learning" (p. 10). Bigsby (2014) added that strong collaboration among educators is vital for changing norms of teaching and learning, claiming that this holds true especially for veteran teachers. Hattie (2015) indicated that collaboration among educators improves practices and further stated that collaborative communities within an educational organization could help educators determine areas for improvement, outlining strategies and interventions, and finally assess the success of the interventions.

Ball and Cohen (1999) pointed out that activities for educators' professional learning "could not be adequately cultivated without the development of more substantial professional discourse and engagement in communities of practice" (p. 13). Manouchehri (2001) used a naturalistic method (examining subjects' interactions in their environment) to examine collaboration among two pairs of middle school teachers engaged in collaborative environments. Both pairs were given daily plan time and specifically tasked with having conversations about concerns entailed with the implementation of a new textbook (Manouchehri, 2001). Findings indicated that one pair, Ben and Gary, stated they disagreed with each other's pedagogical styles, did not take time to critique each other; whereas the second pair, Julie and Doug, consistently questioned each other's thinking and challenged each other to explain their reasoning and create an environment of reflective collaboration within their group (Manouchehri, 2001). Based on his findings, Manouchehri (2001) concluded that to create a collaborative culture in which teachers work together to improve, teachers need first to believe they have the right to influence the education profession and second, engage with each other in reflective conversations to improve teacher growth.

In a 2010 study, Camburn set out to determine how reflection and collaboration could enhance professional learning. Camburn (2010) stated that "there is a general lack of understanding about how a broader array of teacher's work experiences beyond traditional staff development supports teacher development" (p. 465). Camburn's (2010) sample included 1,540 teachers from 17 large cities around the country who were involved in reflective practice and embedded learning in their educational organizations. The results showed that both peer collaboration and working with experts had a positive impact on teacher professional development; however, reflection only had a limited effect on sustained improvement in educator practice with one-third of the educators disagreeing with the idea "that their learning experiences provided them with useful feedback" (Camburn, 2010, p. 476). The researcher concluded that reflection makes a valuable contribution to improvement when conversations are held between people who have non-threatening relationships built on trust and a feeling of collegiality (Camburn, 2010).

In a comparative qualitative study, Williams, Terras, and Warwick (2013) sought to create opportunities for educators to collaborate and reflect on their current educational organization's embedded professional development experiences. Both Camburn (2010) and Williams et al. (2013) agreed that school culture, teacher involvement, administrator support, and level of employment all had an impact on the success of collaborative teams. Through interviews with participants, "sharing your knowledge with one another" (Williams et al., 2013, p. 36) surfaced as an emergent theme in this study. However, one participant stated that professional development meant "learning from a district specialist" (p. 36). Williams et al. (2013) found that educators valued the opportunity to work in collaborative groups instead of being in isolated work environments. Williams et al. (2013) concluded that the result of collaboration was the ability to accept or reject teaching practices or content not beneficial to a particular experience or situation.

According to research on professional development, collaboration among educators is critical for it to be successful (Smylie, 1995). Therefore, organizational structures that support collegiality such as observation of peers, feedback from peers, conversations and reflections with peers, planning and evaluating together are all positive factors (McLaughlin & Talbert, 1993). Additionally, McLaughlin and Talbert (2001) found that collaboration through which educators shared instructional resources and reflections of practice are essential to their success in the classroom. McLaughlin and Talbert (2001) concluded that professional development should be sustained and frequent, site-based, enable teachers to be reflective participants in their own pedagogy and tied to current standards and curriculum.

**Barriers to current professional development models.** In addition to reviewing the literature and research about the characteristics of effective professional development, it is also imperative to examine the barriers and obstacles associated with professional learning. Although researchers agree that effective professional development encompasses the four overarching characteristics of time, collaboration, content focused, context centered practice, the struggle for traditional models of professional development to embed these characteristics remains prevalent (Darling-Hammond et al., 2009). At its core, professional development is intended to be a process that provides educators with experiences and knowledge that will support them as they implement what they learned (Holmes, Signer, & MacLeod, 2010). Educators are beginning to realize that traditional professional development models still contain problems that hinder professional learning (Holmes et al., 2010).

Building professional learning experiences that inspire innovative teaching has been challenging for leaders of professional development. Educators often complain that workshop or conference-based professional developments are too removed from their actual teaching practice and therefore have little impact (Duncan-Howell, 2010). Educators have stated professional development time is mostly used for collaboration among staff, as well as claiming that the professional development received was mostly weak and not relevant to their actual teaching areas (Darling-Hammond et al., 2009). There are various existing barriers present in educational organizations with regard to effective professional development, including the continued use of only traditional models of professional development. Lieberman (1995) stated, "In the view of traditional staff development, workshops and conferences count, but authentic opportunities to learn from and with colleagues do not" (p. 67). Additionally, Bigsby and Firestone (2017) found that external factors, such as time and money, strongly influence the ability for educational institutions to provide effective professional development and for educators to become actively engaged in available professional development opportunities.

Zimmerman and May (2003) conducted a quantitative study to determine principals' perceptions of the effective traits of quality professional development for teachers. The participants in the study included 143 principals from elementary, middle school, junior high, and high schools (Zimmerman & May, 2003). Through their research, Zimmerman and May (2003) cited multiple hindering factors of effective professional development for principals including few resources, inadequate professional development, time, and financial resources to support professional development activities. Principals also felt that another inhibiting factor of effective professional development is teacher resistance to professional development activities (Zimmerman & May, 2003). Additionally, they found that other factors included human resources concerns, few viable candidates for substitutes, overloaded teachers and administrators, and lack of support from central office staff (Zimmerman & May, 2003). Klingner (2004) also cited possible concerns that inhibit effective professional development such as pressure to perform on state and national exams, an excess of curriculum content to teach, time constraints due to many district and state mandates, and differences in teaching styles, methods of delivery, and instructional practices mandated.

Jenkins (2012) conducted a qualitative study to determine if structured and organized professional development had a significant impact on teacher performance. Participants included teachers from three high schools in one southeastern Virginia school district who were asked about characteristics specific to the school in which they worked (Jenkins, 2012). Through interviews, Jenkins (2012) asked participants to define characteristics that are a part of effective professional development. Through this study, Jenkins (2012) was able to identify time, relevancy, and flexible scheduling as characteristics of effective professional development. Jenkins (2012) cited that participants felt time was the most difficult challenge to effective professional development claiming that fatigue and many responsibilities of the teacher lead to less time for individual professional learning. Also, she found that open and constant communication between administrators and staff is vital to producing professional development opportunities that positively impact teacher performance (Jenkins, 2012).

The problems with traditional professional development, including timely interactions and relevancy, were pushing educational leaders to move toward an alternative method for professional development; for example, using technology to enhance professional development opportunities (Dede, Ketelhut, Whitehouse, Breit, & McCloskey, 2009). In 2013, Mockler wrote that traditional thinking for professional development was outdated and needed to evolve to match the current needs of educators. The error many educational leaders are making is in determining that professional development is a product of hours collected, instead of a continual process of learning, reflecting, and growing in one's pedagogy and knowledge (Mockler, 2013). Because of
previous research presented, many educational leaders have initiated some changes in the method for obtaining professional development (Jones & Dexter, 2014).

Just as the current population of students is rapidly transforming into a more diverse and innovative thinking population, teachers leading these classrooms cannot be constrained by the professional development of the past (Lieberman & McLaughlin, 2000). Educational leaders can no longer fully rely on traditional, face-to-face forms of professional development that are disconnected from current teaching pedagogy (Borko, 2004). When studying past trends in educational professional development, many school districts would hire outside agencies to provide growth opportunities that did not always lead to better teaching (Desimone & Garet, 2015).

Teachers should determine their own professional development paths based on their personal classroom goals (Putnam & Borko, 2000). Although much research has found that sustained and meaningful professional development is key, traditional models lack these qualities and many times leave teachers feeling unsatisfied and on an island of their own when trying to implement initiatives (Guskey & Yoon, 2009). Understanding the barriers to effective professional development will help districts transition from a one size fits all traditional model of professional development to a more innovative model of learning that can personalize learning opportunities for educators (Desimone, 2009). With the goal of professional development to impact students' learning, it is important that educators "start being professional learners – intensely critical of the professional development we participate in" (Perkins, 2010, p. 17).

If educators are moving toward learning environments that possess a culture of innovative thinkers, it only seems realistic that professional development for these

educators would mirror that same opportunity (Holloway, 2006). Dever and Lash (2013) found that the most meaningful professional development used collaboration to ignite conversations and experiences between participants where previous pedagogy and knowledge is sparked in new and innovative ways that can be applied to an educator's learning environment on the spot. Researchers have viewed collaboration as a way for educators to share their professional strengths and interests in a way that will help the entire group to eventually lead to higher levels of student learning (Carpenter & Krutka, 2014). Additionally, Carpenter and Linton (2016) stated that networking and collaboration might lead to improved teacher pedagogy. School district should provide professional development opportunities that incorporate collaboration as a means to support, motivate, and engaged participants (Tour, 2017).

Lieberman and McLaughlin (2000) asserted that one key to effective professional development is the encouragement of ongoing interaction between educators. Duncan-Howell (2010) expressed that using modern modes of communication, such as the Internet, provides educators with the opportunity to obtain information and resources as well as providing a social platform for interactions. Duncan-Howell (2010) stated that educators are using online communities to improve professional support and inspiration. Menard and Olivier (2014) found that the use of technology enhances this form of collaboration and the ability to share information among communities of educators. Menard and Olivier (2014) further stated that technology allows teachers the ability to share and collaborate while providing learning communities that can be accessed at any time. Professional development in education needs to transform if leaders want to see educators become fluent in digital learning tools to effectively assist students who are

already familiar with many technological tools (Beach, 2012). Dede, Jass Ketelhut, Whitehouse, Breit, and McCloskey (2009) asserted that district-mandated professional development could often feel irrelevant to specific and current teacher needs and forced because of time or budget restraints. Using the Internet to provide online professional development opportunities allowed participants the flexibility of choosing the time of learning, the preferred method of delivery and location, and the individualized information that best fits their current professional need (Dede et al., 2009).

In a three-year study, Gunn and Hollingsworth (2013) followed the implementation of district-wide professional development mandates where teachers were required to spend at least eight hours a year in professional development sessions linked to technology integration. Gunn and Hollingsworth (2013) found that although the delivery of professional development opportunities was different depending on the location, spending time on technology integration professional development led to teachers having a higher efficacy with new technologies and online learning programs. They concluded that time and ongoing professional learning opportunities were vital to sustaining pedagogical changes.

The transition from traditional professional learning to online learning opportunities for educators requires a mental shift in what the meaning is behind using online professional development (Lock, 2006). Individuals who are not aware of the benefits of online learning opportunities go through a process of altering their current philosophies, routines, and communication habits to further their collaboration skills (Lock, 2006). Online professional development can be beneficial for school districts that may not have access to a local professional development option or are struggling financially to support the learning needs of their educators (Summerville & Johnson, 2006). Effective professional development provides educators with the skills and resources to implement new learning experiences into their learning environments (Holmes et al., 2010).

**Online professional development.** Understanding the potential for online professional development to foster learning and growth in educators is one thing; however, accepting the endless possibilities that online professional development tools have to offer educators is another. Rasmussen and Northrup (2002) explained online professional development as "delivery of professional development where participants and instructors are separated by time and usually distance using the World Wide Web for instruction, communication, and collaboration" (p. 2). While online professional development does provide teacher-centered advantages, using online tools allows all users to have accessibility to resources (Greenhow, Robelia, & Hughes, 2009).

Bancheva and Ivanova (2015) found that online learning could make up as much as 75% of the learning by educators. By tweaking the use of online platforms that educators currently use, personal interests are driving the professional learning of the individual user (McLoughlin & Lee, 2010). When educators participate in forms of online learning, they promote autonomy, break down professional isolation barriers, and take part in a community that inspires each other through resources and support (Menard & Olivier, 2014). Additionally, Menard and Olivier (2014) explained that the use of technology might enhance collaboration among other educators and increase the sharing of resources and information. Perkins and Ritchhart (2004) claimed that the research to validate the effectiveness of online learning was limited and further expressed the lack of a researched-based framework left holes in the creation and evaluation of online learning. Additionally, Rademaker (2008) expressed that more research on the design and implementation of effective online professional learning needed to take place to identify best practices. Rademaker (2008) further identified the challenge of designing online platforms for professional development that would not require a steep learning curve for the educators who are participating.

Duncan-Howell (2010) conducted a study to determine if online learning could equate to meaningful professional development by surveying 98 educators who were members of three different online communities. Duncan-Howell (2010) found that 86.73% of the participants strongly agreed that being an active participant in an online learning community was a meaningful professional learning experience. Additionally, Duncan-Howell (2010) noted that participants were actively engaged in professional online learning opportunities 1-3 hours per week, which led the researcher to conclude that online professional development was worthwhile and essential to the professional lives of educators.

# PLN

Lieberman and McLaughlin (2000) explained that educators were turning to PLNs to meet the rise in expectations to create innovative learning opportunities for students. Lieberman and McLoughlin (2000) suggested that PLNs offered teachers a sense of community to enhance their professional skills instead of being "passive receivers of prescriptive programs" (p. 226). Flanigan (2011) defined a PLN as a "teacher-driven, global support network that decreases isolation and promotes independence" (p. 11). Trust (2012) described a PLN as a "system of interpersonal connections and resources that support informal learning" (p. 133). Trust (2012) suggested that the manner through which individuals learn has changed and found that PLNs provided a means for educators to connect and provide new knowledge through adaptive and functional online spaces.

PLNs offer educators an anytime, anywhere means of obtaining information for professional learning. Hofman and Dijkstra (2010) explained that PLNs consist of educators forming groups in which they can share daily experiences through common goals and interests. Although some PLNs are created in more centralized settings, Nelson (2012) suggested that they are not limited to a specific location because of the use of Web 2.0 tools and digital communication that allow educators to form networks worldwide. Trust (2012) explained that PLNs provide a means of support, collaboration, and feedback for educators in less restrictive locations through the use of the internet.

According to Lieberman and McLoughlin (2000), PLNs were created for the individual professional needs of educators, as a means of collaboration without borders, and allowed for flexibility and more participation in individual learning opportunities. Boyle, Lamprianou, and Boyle (2005) conducted a longitudinal study and found that educators tended to have pre-determined views of PLNs, leaning toward the view that PLNs are more effective than traditional models of professional development. An explanation for these findings is that members of PLNs may not physically know each other; however, over time they built interpersonal relationships through the sharing of knowledge, resources, and experiences (Kabilan, Adlina, & Embi, 2011). Vescio, Ross, and Adams (2008) stated that "participation in learning networks facilitates professional

development that is driven by the needs of teachers as they are naturally engaged in efforts to accomplish their goals." (p. 86). Researchers suggested that highly effective educators no longer work in isolation; instead, they thrive by collaborating with other educators to improve their instruction thus impacting student achievement (Pil & Leana, 2009). According to Darling-Hammond et al. (2009), PLNs were also formed because schools lack the time, budget, and resources to equip teachers properly. Darling-Hammond et al. (2009) stated, "American teachers spend much more time teaching students and have significantly less time to plan and learn together, and to develop highquality curriculum and instruction than teachers in other nations" (p. 6). Hofman and Dijkstra (2010) explained that PLNs could have a positive effect on teacher retention due to the alternate model of professional development and the network's ability to provide educators with the specific learning needed to teach successfully. Trust (2012) stated that PLNs would dramatically change the professional development experiences for isolated educators and transform these individuals into motivated professional learners. Traditionally, professional development experiences have often been mandated policies by district administrators and scripted for educators; engagement through PLNs offers experiences that are more personalized, collaborative, and authentic to the individual educator's needs and interests (Krutka, Carpenter, & Trust, 2016).

Technology makes it possible for educators to professionally network worldwide, as well as pursue learning opportunities that may not have been accessible otherwise (Siemens, 2008). Educators who took part in PLNs as a way to collaborate in professional learning reported having gained instructional improvements due to the learning from their network (Lom & Sullenger, 2011). As budget cuts continue to limit district-level training opportunities personal learning networks take an organic, grassroots approach to professional development. Administrators and teachers say such networks reduce isolation, promote autonomy, and provide inspiration by offering access to support and information not only within the walls of a school but also around the globe. (Flanigan, 2011, p. 1)

Trust, Krutka, and Carpenter (2016) conducted a study to research the impact of PLNs. The population of the study consisted of 732 PK-12 educators who were familiar with the idea of a PLN (Trust et al., 2016). The study was conducted for 75 days and concluded with an online survey. Based on the data collected, Trust et al. (2016) determined that PLNs do positively support professional learning because of the flexibility, availability, and on the spot information for the individual needs of the educator. They concluded that the quickness of responses in a PLN allowed educators the ability to access information, resources, and support that assist in professional growth (Trust et al., 2016).

The Internet offers a variety of formats for educators to receive information that allows learners the opportunity to meet their individual learning needs (Warlick, 2009). According to Pettenati and Cigognini (2007), using social media as a platform for a PLN allows educators access to individually relevant resources without time or space constraints. Many educators are already familiar with the use of social media for personal use, so the idea of combing the use of social media for professional learning is not an unfamiliar idea as social media platforms support PLNs and allow users to access information and resources based on individual needs (Pettenati & Cigognini, 2007). Many social media platforms support PLNs; however, Ebner and Reinhardt (2009) claimed that the social networking technology, Twitter, was the ideal platform for supplementing the traditional face-to-face learning environment. Trust (2012) added that social media-based PLNs provided support for larger groups of people while being less demanding of the user's time and allowing educators to participate when their time allows. Burridge and Carpenter (2013) found that joining a PLN on a social media platform was beneficial to educators because of the need to collaborate with diverse individuals that lead to reflection and evaluation of one's practice that ultimately lead to new knowledge and understanding of pedagogy. Furthermore, Jones and Dexter (2014) stated that instant access to information, resources, and activities is a major benefit to social media-based PLNs.

The advantage of using social media sites for PLNs is the platform's ability to individualize professional learning for each educator (McElvaney & Berge, 2010). The method for creating a PLN varies with each social media site; however, educators are continuously building their PLNs as they listen to podcasts, follow more individuals on Twitter, and read educational blog posts (Trust, 2012). The rapid growth of participation on social media sites such as Twitter has created increased interest and knowledge of PLNs (Jones & Dexter, 2014). Furthermore, Cook (2014) explained that the use of Twitter is an efficient means of collaboration and an essential part of transforming professional development to meet the ever-changing needs of educators in a global society.

## Twitter

In 2011, Couros discussed the importance social media plays in our society when successful companies use it. As he continued through his blog post, Couros (2011) cited

five reasons he felt social media was impacting the world of education: "(1) it is free, (2) it cuts down isolation, (3) it builds tolerance and understanding of cultural diversity, (4) it can amplify passion, and (5) the world of education is (and needs to be) more open" (para. 6). Also, Couros (2011) posted that social media helps schools highlight their strengths to the community and assists educational institutions in building upon relationships and creating connections with stakeholders and the community.

Twitter is a free form of social media where users can create short microblogs (280-characters or less) through posts that are referred to as tweets and interact with other Twitter users (Perez, 2018). Originally, Twitter users were restricted to a 140-character limit; however, in 2017 the limit of characters was increased to accommodate users whose languages struggled to meet the short character limit (Molina, 2017). Aslam (2018) purported that Twitter had 330 million active users a month and more than 500 million tweets were written every day. Additionally, approximately 80% of Twitter users were connected to this social media platform through mobile devices, and over 67 million users resided in the United States (Aslam, 2018).

Twitter was first launched in 2006 and has been an active social media platform since its inception (Aslam, 2018). Larson (2016) explained that users of Twitter could insert links to articles, web pages, pictures, text, or videos and then their followers can share or retweet the original post to their followers. Molina (2017) further explained that Tweets from users could include hashtags (for example #edchat), which assist in categorizing tweets by subject. Hashtags are also beneficial to other users who do not follow the original user and can help in searching for the tweet (Molina, 2017). Using the platform of Twitter enables a user to create short content that can reach millions of people worldwide (Aslam, 2018).

Many educators across the world are using Twitter to connect, share, and learn. Ferriter (2010) shared that Twitter allows users to individualize their pages to reflect individual interests and instant professional needs. Furthermore, Twitter consists of several features that are beneficial in assisting educators in using the social media platform for collaborative and professional purposes, including developing a technologysupported PLN (Ferriter, 2010). Java, Song, Finin, and Tseng (2007) claimed four distinct behaviors as to why people use Twitter: (1) daily chats, (2) conversation, (3) sharing information, and (4) reporting news. Even more, Java et al. (2007) stated that Twitter allows users to be active creators of content, instead of just passive information consumers. Veletsianos (2011) claimed that educators use Twitter in seven different ways:

- shared information, resources, and media relating to their professional practice;
- (2) shared information about their classroom and their students;
- (3) requested assistance from and offered suggestions to others;
- (4) engaged in social commentary;
- (5) engaged in digital identity and impression management;
- (6) sought to network and make connections with others; and
- (7) highlighted their participation in online networks other than Twitter. (para. 4)

A user's profile is very important in establishing a PLN through Twitter because it reflects your beliefs and experiences to other educators around the world (Ferguson, 2010). To further explain, Ferguson (2010) suggested that a user's bio should include professional background, interests, and a photograph to assist users in putting a person behind the profile. Profiles assist people in determining whom to connect with and follow (Anderson, 2011).

The next step in developing a PLN through Twitter is connecting with other users by adding them to the list of people the user is following. In addition to adding users recommended by Twitter, users can also find lists of other people to follow that have been created under people's profiles (Anderson, 2011). For the most part, Twitter users are categorized under these lists (Ferguson, 2010). Larson (2016) provided the example of a secondary English teacher having a list of educators, or more specifically narrowing the users by categories such as technology education and AP English. Richardson and Mancabelli (2011) recommended using other websites or wikis to perform a search when determining which educators to follow. When the user identified someone they would like to follow, that person could be added or removed from the user's list, and this cycle continues and allows the people being followed to in turn add the user to their list of followers (Anderson, 2011).

The next phase in developing a PLN via Twitter is encountering interactions which included several patterns of participation with the most common form involving posting and sharing content (Richardson & Mancabelli, 2011). One way to do this is by posting resources or links to resources that users have found useful in their professional practice or educational setting (Larson, 2016). Through in-person interviews for an article, Lu (2011) cited that many educators use Twitter to improve their teaching. For educators, Twitter has provided a platform for interacting and learning from fellow educators by connecting users to other classrooms throughout the world or sharing popular links for resources to use in their own settings (Lu, 2011).

One of the most effective means for creating a successful PLN via Twitter is through the usage of various hashtags (#), which are labels for resources or information found on Twitter (Trinkle, 2009). For example, if a user were to tweet an educational technology resource link, it is recommended that a hashtag, such as #edtech, be included so that the tweet is categorized, and other users have the ability to view the tweet or information (Miller, 2010). The benefit of using hashtags is to label or categorize tweets in the hopes that others with common interests can find each other (Miller, 2010). Another goal is to find individuals who share information through tweets with common interests, professional necessities, and knowledge in specific fields (Trinkle, 2009). Hashtags are commonly used for weekly Twitter chats. Whitby (2013) is known for starting the popular education centered chat with the hashtag #edchat that discusses a broad selection of educational issues. Twitter users also host a variety of grade-level or subject-specific educational chats as well.

Finally, building relationships is an essential part of developing a PLN via Twitter. Although the other steps in the process have been a one-time focus, building connections takes a commitment from the user to both establish and maintain connections with other users. This process is very similar to developing new friendships, much like standing back and observing is acceptable, compared to observing interactions on Twitter; however, the greatest benefit of a PLN via Twitter lies in the connections and relationships that are formed based on the interactions between users (Ferguson, 2010). Furthermore, initiating and maintaining connections between users is vital in developing and maintain a PLN via Twitter (Ferguson, 2010).

There are many ways that a user can grow their PLN via Twitter. One way is by replying to other users who compose tweets that are of interest, therefore creating a dialogue between users (Ferriter, 2010). Furthermore, Ferriter (2010) explains that replying to users can be done publicly, in that users can mention another user in a tweet, or privately through direct messages that can only be viewed by the sender and receiver. Another form of interacting, which can take on many forms, is adding to the knowledge sharing component (Ferriter, 2010). The most common method is by retweeting, or in other words tweeting someone's original tweet, which typically occurs when a user finds information worth sharing (Ferguson, 2010). When a user retweets, the retweet shows up on the original user's feed, leading to the possibility of further interactions or the ability to follow a new user (Ferguson, 2010).

Other accepted methods of initiating interactions with other Twitter users included thanking users who retweet a message, celebrating an achievement, or asking questions (Miller, 2010). Additionally, Miller (2010) added that sharing one's resources, experiences, tips, and ideas are easy ways to gain followers, as well as starting conversations and creating connections with other educators on Twitter. Ferguson (2010) uses the educators on her PLN for guidance and ideas, much like she would educators in her own school building. By reaching out to other educators through a variety of means on Twitter, educators are able to grow their PLN and in turn their on-demand resources for professional development (Ferguson, 2010). The results of the research have shown that Twitter's platform has been found to be an effective tool for creating connections that lead to professional growth. Sie et al. (2013) researched a "tweetstorm" (a rapid chain of tweets made by one user) to investigate the motivation behind professionals using Twitter for professional reasons. The tweetstorm that Sie et al. (2013) studied lasted approximately 45 minutes. Sie et al. (2013) found that the format of a tweetstorm allowed easy access for the participants to follow and engage in the discussions. Also, they found motivation to be the highestranking category of tweets and cited that the participants in this study had a high motivation to participate in the learning opportunity that the tweetstorm posed.

A study of 755 educators conducted by Carpenter and Krutka (2014) sought to identify the reasons why educators use Twitter and to determine the benefits of being a Twitter user. Carpenter and Kruta (2014) found that educators who use Twitter tend to use it for communication, activities and resources for the classroom, and professional development. Participants felt that Twitter allowed them to create connections with other educators as a means to share resources and ideas. In addition to primarily using Twitter for professional development purposes, 96% of participants reported that they use and prefer Twitter for professional development more so than other means (Carpenter & Kruta, 2014). The researchers found that participants in this study appreciated using Twitter for professional development purposes because of its personalization, usefulness, accessibility, and on the spot information (Carpenter & Kruta, 2014).

Sauers and Richardson (2015) sought to determine if K-12 educational leaders use Twitter and to identify the main purposes for their use. The study participants consisted of 115 school leaders who were active users of Twitter, had more than 2,000 followers, and had a listed leadership title such as superintendent or principal in their profile (Sauers & Richardson, 2015). After collecting over 180,000 tweets, Sauers and Richardson (2015) cited that the median number of tweets per week by each participant was 48 and coded the tweets into three categories: educational, personal tweets, and unknown. Sauers and Richardson (2015) found two themes in their results: (1) participants were using Twitter as a means of creating a PLN, and (2) participants frequently used Twitter for educational purposes.

Langhorst (2015) conducted a qualitative research study using weekly edchats between social studies teachers to determine the effectiveness of Twitter for collaboration purposes. Langhorst (2015) coded 10 transcripts of edchats from 2013, defining interactions within the edchat as users creating conversations with others replying. Langhorst (2015) analyzed 2,821 tweets and found that 54.6% had replies. Additionally, Langhorst (2015) interviewed seven participants who provided the most interactions throughout the 10 edchats and found that the majority of participants specifically mentioned that they felt the edchat on Twitter was more beneficial for their professional learning than traditional professional development models.

Powers (2017) sought to identify educational leaders' perceptions of the benefits and barriers of using Twitter for leadership professional development. In selecting the participants for this study, Powers (2017) sent a questionnaire through email to 2,220 Missouri principals and received responses from 539 of them. Additionally, Powers (2017) interviewed six of the respondents (three Twitter users and three non-users) to further investigate the benefits and barriers of Twitter for professional development. Powers (2017) found that Twitter users' ability to search, accumulate, and share resources was the most valuable aspect for professional development purposes. Missouri principals identified barriers to effectively using Twitter for professional development such as time and the stress of having to learn new technology to accommodate learning (Powers, 2017).

Research involving Twitter as a professional development tool has not solely been for participants who have been mandated to participate in the online forum. Strahler (2014) conducted a study using an online survey and found participants who started using Twitter for professional purposes on their own. Strahler (2014) found that Twitter users believe it is a valuable platform for online learning while providing an on-going learning experience that can be personalized to the user. Similarly, Visser et al. (2014) conducted a mixed methods study of K-12 educators' perceptions of Twitter and concluded that using Twitter for professional purposes is more common than personal use. The researchers found that educators prefer professional learning on Twitter because the platform is "welcoming and fosters collaboration and participation, and that meaningful interpersonal relationships arise as a result of the friendly, participatory culture of the community" (Visser et al., 2014, p. 409). The results of these studies provide an understanding of using Twitter as a means for creating a PLN and showed that further research into online technologies for PLNs is beneficial to 21<sup>st</sup>-century learning and professional development.

#### **PLN and Twitter**

Lalonde (2011) conducted a qualitative study to explore educators' experiences with a PLN on Twitter and more specifically examined motivating factors of using Twitter for a PLN, determine unique factors of Twitter that separated it as a platform for a PLN, and the impact Twitter had in maintaining a PLN. In-depth interviews were conducted with seven participants who were educators in both K-12 and higher education who were also familiar with maintaining a technology-based PLN (Lalonde, 2011). As a result of the interviews, Lalonde (2011) found that Twitter was a platform that allowed users to communicate and collaborate through dialogue and participate in interactions that included sharing experiences, resources, offering support and providing feedback from questions asked by users. Lalonde (2011) also cited that educators felt that specific features of Twitter, such as hashtags, lists, and retweets were beneficial when determining people to add to their PLN and further expressed that the platform of Twitter allowed them to create connections with others that led to in-person interactions or varying methods of communication such as electronic mail. Lalonde's (2011) research yielded four major themes regarding an educator's use of Twitter for a PLN:

- 1. Twitter allowed participants to engage in sustained and consistent dialogue with their professional PLN.
- 2. Twitter provided a way for participants to access the collective knowledge of their PLN.
- 3. Twitter provided participants the ability to amplify and promote deeper thoughts and ideas to a large audience.
- 4. Twitter has specific features that helped to expand a PLN. (p. 57)

Ivanova, Grosseck, and Holotescu (2012) conducted a study to determine if professional growth among educators was viable through a technology-supported PLN. Participants included K-12 and higher education educators who belonged to an international education society. Data was collected through a survey sent to participants and by analyzing the participation patterns of each participant's PLN (Ivanova et al., 2012). The researchers found that both Facebook and Twitter were the most popular platforms for a PLN among participants; however, the data indicated that the participants largely used Twitter to support their professional learning needs by exchanging information and resources and following a larger number of people (Ivanova et al., 2012). The researchers concluded that Facebook supported more personal growth through participants having the desire to maintain friendships, whereas Twitter-supported participants' professional growth (Ivanova et al., 2012).

Deyamport (2013) conducted an action research study to examine the ways that a PLN on Twitter can support the professional growth of educators. The six-week study consisted of eight participants and data were collected from weekly meetings, group interviews, participants' Twitter feeds, the researcher's notes, and a survey at the end of the study (Deyamport, 2013). The results of the study indicated that a Twitter-supported PLN was beneficial to some participants, and 88% of the participants indicated that they would continue using their PLN on Twitter, while 100% of the participants felt that Twitter was an acceptable platform for creating and maintaining a PLN (Deyamport, 2013). In addition to citing the advantages of using Twitter, the researcher also concluded that the steep learning curve of Twitter negatively impacted the participants and suggested that the six-week period be extended in future studies to allow participants to feel comfortable with the technology (Deyamport, 2013).

Ross et al. (2015) conducted a study of educator participation in a Twittersupported PLN. The researchers interviewed 32 educators and found that the participants largely preferred receiving professional development through Twitter. Ross et al. (2015) concluded that participants in his study use Twitter to develop and sustain a PLN, take part in professional learning opportunities, and communicate and network with other educators worldwide.

Wallinger (2016) conducted a study to explore how educators use Twitter to provide professional learning opportunities for themselves. The participants in the study included 14 K-8 educators from a variety of school districts that were members of a Twitter group created by the researcher as a means of providing professional development (Wallinger, 2016). The results of the study indicated that educators who are actively maintaining a PLN on Twitter appreciated the on-the-spot learning and felt that the knowledge and expertise found on their PLN immediately impacted their classrooms (Wallinger, 2016).

Catlett (2018) conducted a qualitative study through which he sought to explore educators' experiences with a PLN on Twitter that specifically led to professional growth. The study involved interviews with five participants who were members of the researcher's PLN, represented one of the five geographical regions of the United States, were active Twitter users, and had at least 1,000 followers (Catlett, 2018). The results of the study indicated that educators felt Twitter was beneficial in supporting their professional growth through global connections, sharing and gathering resources, and developing a community of professionals for support and feedback (Catlett, 2018). "When educators use tools like Twitter as a professional learning network, they are empowered to create new opportunities for themselves and the students they serve" (Catlett, 2018, p. 83).

# Summary

Provided in Chapter 2 was literature related to adult learning, professional development, PLNs, and the use of Twitter. Studies and expert opinions regarding the use of PLNs via Twitter were discussed, and research regarding the ability of PLNs via Twitter to provide professional development was shared. Chapter 3 contains the research design, selection of participants, measurement, and data collection procedures. The data analysis and synthesis, the researcher's role, and trustworthiness and reliability for the study are presented as well as the limitations of the study.

#### Chapter 3

## Methods

The first purpose of this study was to determine staff members' perceptions of the usefulness of a PLN on Twitter. The second purpose of this study was to determine whether staff members' perceptions of the usefulness of their PLN on Twitter was affected by the number of years of educational experience, the level of employment, and staff position. The final purpose was to determine staff members' experience with a Twitter-supported PLN. This chapter includes the research design, selection of participants, measurement, and data collection procedures. Additionally, the data analysis and synthesis, the researcher's role, trustworthiness and reliability, and limitations are presented.

## **Research Design**

This study was conducted using a mixed methods design. According to Creswell (2003), "A mixed-methods approach is one in which the researcher employs strategies of inquiry that involve collecting data either simultaneously or sequentially to represent both quantitative and qualitative information" (pp. 19-20). This research was conducted using a sequential explanatory strategy. Creswell (2009) described this strategy as "characterized by the collection and analysis of quantitative data in a first phase of research followed by the collection and analysis of qualitative data in a second phase that builds on the results of the initial quantitative results" (p. 211).

The first method, quantitative, was conducted through a survey to determine educators' perceptions of the effectiveness of a PLN via Twitter to assist in meeting personal professional development goals. The second method consisted of collecting qualitative data through interviews with educators to identify specific perceptions of the effectiveness of a PLN via Twitter to assist in meeting personal professional development goals. The dependent variables in this study were educators' perceptions of the effectiveness of a PLN via Twitter to assist in meeting personal professional development goals. The independent variables in this study were educators' number of years in education, level at which the educator worked, and staff member position.

#### **Selection of Participants**

The selection of participants was determined using purposive sampling. According to Bloomberg and Volpe (2012), "The logic of purposeful sampling lies in selecting information-rich cases, with the objective of yielding insight and understanding of the phenomenon under investigation" (p. 104). The participants for the quantitative portion of the research study were identified as certified employees with District JRZ during the 2017-2018 and 2018-2019 school years. All certified employees of District JRZ were invited to complete the survey by electronic mail. Certified employees that were not employed during both school years were not included in the survey.

Additionally, the researcher used the survey to identify participants for the qualitative portion of the research study. The final page before submitting the survey was a statement asking for participants to volunteer for interviews. Participants willing to be interviewed contacted the researcher via electronic mail. These participants volunteered to provide a more in-depth review of their experiences using Twitter to reach a professional development goal. In all, 15 employees volunteered, and seven were chosen to be interviewed for the qualitative portion of this study. Participants were chosen based on years of education experience, level of employment, and staff position in the order the

researcher received their electronic mail. Interview participants' identities were kept confidential. The researcher referred to the interview participants as Participant 1, Participant 2, Participant 3, Participant 4, Participant 5, Participant 6, and Participant 7. **Measurement** 

The measurement used for the quantitative portion of this study was a Twitter/PLN survey that was sent using electronic mail to all 2017-2018 and 2018-2019 District JRZ certified employees. The original survey was developed by Deyamport (2013) for his doctoral dissertation. Electronic mail correspondence seeking permission to use and modify the survey is found in Appendix A. Electronic mail correspondence from Deyamport granting the researcher permission to use and modify the survey is also found in Appendix A.

The original survey (see Appendix B) was reorganized into the current survey (see Appendix C) to fit the purpose of this study. Items 1-3 on the current survey were items 4-6 from Deyamport's survey. Due to different meanings of resources and strategies in the education field, the researcher split item 7 from the original survey into two items on the revised survey; item 4, *I have obtained resources from my PLN on Twitter that I use in my classroom*, and item 5, *I have obtained strategies from my PLN on Twitter that I use in my classroom*. Items 6 and 7 on the current survey reflect items 8 and 9 on the original survey. To narrow the focus specifically to Twitter use, the researcher changed "*PLN*" on the original survey to "*PLN on Twitter*" for the current survey items 1, 2, 3, 4, 5, and 7. A Likert-scale was used in both surveys; however, Deyamport's survey used the answer choices *Strongly Disagree, Disagree, Agree,* and

*Strongly Agree*; whereas the researcher used *Strongly Disagree*, *Disagree*, *Neutral*, *Agree*, and *Strongly Agree* in the current study.

Demographic information was collected in both the original survey and the current survey. However, the original survey collected data regarding the number of years taught (item 1), grade level assigned (item 2), and subject area (item 3) at the beginning of the survey. In the second section of the current survey, the researcher chose to collect demographic data including the number of years in education (item 8), position in the district (item 9), and grade level (item 10). The original survey started by asking the multiple-choice question, *How long have you taught*? Respondents were given six choices: *less than 1 year, 1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, 21 or more years.* The researcher replaced the word "*taught*" from the original survey with "*worked in education*" to encompass all roles in education. The answer options were kept the same.

The current researcher's survey was revised to exclude item 3 from the Deyamport survey because it did not pertain to the current study. An additional item (item 9) was added to the current survey: *Please indicate your position in the district*, to allow the researcher to gather demographic data related to RQ4. Respondents were offered the following options: *Teacher, Administrator, Other (Please Specify)*. Finally, the researcher modified the open-ended item 2 from the original survey, *Please indicate the grade level you are currently assigned*, to the multiple-choice item on the current survey (item 10), *Please indicate the grade level at which you work*. Answer options included *PK-5, 6-12, Other (Please Specify)*. The last section of the current survey included a message to the respondents to seek out volunteers for the qualitative portion of

the study. The researcher provided an email address and requested that anyone who would be willing to take part in an interview email the researcher.

To test the reliability and validity of the survey, Deyamport (2013) "field tested the survey questions to a group of teachers in an elementary school with similar demographics" (p. 58). Deyamport emailed five experts on PLNs that are established through social media platforms for educational professional development. The experts all had at least 20 years of K-12 teaching experience, extensive experience in integrating technology within their classrooms, and presented at a large educational technology conference. Deyamport presented each expert with the leading research question of the study as well as an explanation of the focus for his study and asked for feedback regarding his research question in relation to his focus and survey questions. All five experts responded to Deyamport's request and provided feedback. Deyamport adjusted the focus and survey questions in his study based on the expert feedback.

Lunenburg and Irby (2008) referred to "the degree to which an instrument consistently measures whatever it is measuring" as reliability (p. 182).

Most commonly used single-item measures can be divided into two categories: (a) those measuring self-reported facts . . . and (b) those measuring psychological constructs, e.g., aspects of personality . . . measuring the former with single items is common practice. However, using a single-item measure for the latter is considered to be a "fatal error" in research. If the construct being measured is sufficiently narrow or is unambiguous to the respondent, a single item may suffice. (Sackett & Larson, 1990, p. 631)

A reliability analysis was not needed for the survey utilized in this research because a scale was not constructed from the survey items. The researcher used single-item measurement.

To acquire data for the qualitative portion of this study, the researcher adapted questions 10-17 from Deyamport's survey for an interview script. The following interview questions were asked in every interview the researcher conducted. Additionally, the researcher asked follow-up questions as needed in each survey.

- 1. Please tell me about your discovery of Twitter.
- 2. What types of learning opportunities have you found using Twitter?
- 3. How have you used Twitter to develop a PLN?
- 4. How has Twitter been an effective tool as you have developed a PLN?
- 5. Tell me about your professional development goal. How did you decide what to focus on?
- 6. How have you enhanced your progress toward your professional development goal via the use of a PLN on Twitter?
- 7. In what ways, if any, has Twitter provided professional learning opportunities not available through other means?
- Tell me about how Twitter can be used to individualize professional development.
- 9. Share with me the impact that your PLN has had on your classroom practice.
- 10. What resources that you discovered through our PLN have you used in your classroom?

11. What strategies that you discovered through your PLN have you used in your classroom?

12. Is there anything else you want to tell me about a PLN using Twitter? A digital recording device was used to record all interviews; all interviews were transcribed.

## **Data Collection Procedures**

Before the study was conducted, the researcher obtained permission to conduct the research. Permission was first obtained from the assistant superintendent of District JRZ. The assistant superintendent was presented with a written proposal that was sent through electronic mail on January 13, 2018 (see Appendix D). On January 15, 2018, the assistant superintendent granted permission for the study to be conducted through electronic mail (see Appendix D). Next, the researcher initiated the process to obtain permission from Baker University. A proposal for conducting the study was presented to Baker University on August 13, 2018. The Baker University Institutional Review Board (IRB) committee approved the research study on August 27, 2018 (see Appendix E). Data collection began following the approval of the study by Baker University IRB.

Data were collected sequentially for this research study. First, the quantitative data were collected through the survey to identify educators' perceptions of the effectiveness of a PLN via Twitter to meet their professional development goal. The survey was administered through a Google Form that was sent to participants through electronic mail. Attached to the survey was a cover letter explaining the research study (see Appendix F). The cover letter consisted of an explanation of the purpose of the study and the information that the survey was being administered anonymously. On September 5, 2018, the cover letter and survey were first sent out to participants electronically. The researcher sent a second electronic mail message on September 18, 2018, to remind participants of the survey. On September 24, 2018, the survey was closed, and the quantitative part of the research study concluded.

Next, the researcher conducted in-person interviews to collect the qualitative data. The interviews were held in the participants' classrooms or offices. Interviews with participants began on September 9, 2018 and concluded on December 5, 2018. The researcher interviewed seven educators from District JRZ. The researcher asked questions to identify the educators' perceptions of the effectiveness of the use of a PLN via Twitter to meet professional development goals. Each participant signed a consent form before being interviewed (see Appendix G). Each interview was recorded using a digital recording device and transcripts were created from the interviews using Trint online transcribing program. Each participant received a transcript of their interview to make corrections and approve the transcription. Following participant approval, transcripts were analyzed.

#### **Data Analysis and Synthesis**

Hypothesis testing and qualitative analysis were used to determine educators' perceptions of the effectiveness of the use of a PLN via Twitter to meet a personal professional development goal. Hypothesis testing was used to determine if there were differences in perceptions based on educators' years in education, current position, and level of current experience. Data for the quantitative portion of this study were obtained through a survey using Google Forms. This survey data addressed research questions 14. Research question 5 was explored through an analysis of interview responses in the qualitative portion of this study.

**RQ1.** To what extent do staff members perceive that their PLNs on Twitter are useful?

*H1.* Staff members perceive that they have made significant progress toward their professional development goals via PLNs on Twitter.

*H2.* Staff members perceive that their PLNs on Twitter have been a valuable part of their professional development.

*H3.* Staff members perceive that their PLNs on Twitter have had a positive impact on their classroom practice.

*H4.* Staff members perceive that they have obtained resources from their PLNs on Twitter that they use in their classroom.

*H5.* Staff members perceive that they have obtained strategies from their PLNs on Twitter that they use in their classrooms.

*H6.* Staff members perceive that Twitter is an effective platform for developing a PLN.

*H7.* Staff members plan to continue with their PLNs on Twitter for professional development.

Seven one-sample t tests were conducted to test H1-H7. Each of the sample means was compared against a reference value of 3. The level of significance was set at .05.

**RQ2.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on the number of years of education experience?

*H8.* There is a difference in staff members' perceptions that they have made significant progress toward their professional development goals via PLNs on Twitter based on the number of years of education experience.

*H9.* There is a difference in staff members' perceptions that their PLNs on Twitter have been a valuable part of their professional development based on the number of years of education experience.

*H10.* There is a difference in staff members' perceptions that their PLNs on Twitter have had a positive impact on their classroom practice based on the number of years of education experience.

*H11.* There is a difference in staff members' perceptions that they have obtained resources from their PLNs on Twitter that they use in their classroom based on the number of years of education experience.

*H12.* There is a difference in staff members' perceptions that they have obtained strategies from their PLNs on Twitter that they use in their classrooms based on the number of years of education experience.

*H13.* There is a difference in staff members' perceptions that Twitter is an effective platform for developing a PLN based on the number of years of education experience.

*H14.* There is a difference in staff members' plan to continue with their PLNs on Twitter for professional development based on the number of years of education experience.

Seven one-factor ANOVAs were conducted to test H8-H14. The categorical variable used to group staff member perceptions was number of years of education

experience (less than 1 year, 1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, and 21 or more years). The level of significance was set at .05.

**RQ3.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on the level of employment?

*H15.* There is a difference in staff members' perceptions that they have made significant progress toward their professional development goals via PLNs on Twitter based on the level of employment.

*H16.* There is a difference in staff members' perceptions that their PLNs on Twitter have been a valuable part of their professional development based on the level of employment.

*H17.* There is a difference in staff members' perceptions that their PLNs on Twitter have had a positive impact on their classroom practice based on the level of employment.

*H18.* There is a difference in staff members' perceptions that they have obtained resources from their PLNs on Twitter that they use in their classroom based on the level of employment.

*H19.* There is a difference in staff members' perceptions that they have obtained strategies from their PLNs on Twitter that they use in their classrooms based on the level of employment.

*H20.* There is a difference in staff members' perceptions that Twitter is an effective platform for developing a PLN based on the level of employment.

*H21.* There is a difference in staff members' plan to continue with their PLNs on Twitter for professional development based on the level of employment.

Seven one-factor ANOVAs were conducted to test H15-H21. The categorical variable used to group staff member perceptions was level of employment (PK-5, 6-12, or Other (Please Specify)). The level of significance was set at .05.

**RQ4.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on staff position?

*H22.* There is a difference in staff members' perceptions that they have made significant progress toward their professional development goals via PLNs on Twitter based on staff position.

*H23.* There is a difference in staff members' perceptions that their PLNs on Twitter have been a valuable part of their professional development based on staff position.

*H24.* There is a difference in staff members' perceptions that their PLNs on Twitter have had a positive impact on their classroom practice based on staff position.

*H25.* There is a difference in staff members' perceptions that they have obtained resources from their PLNs on Twitter that they use in their classroom based on staff position.

*H26.* There is a difference in staff members' perceptions that they have obtained strategies from their PLNs on Twitter that they use in their classrooms based on staff position.

*H27.* There is a difference in staff members' perceptions that Twitter is an effective platform for developing a PLN based on staff position.

*H28.* There is a difference in staff members' plan to continue with their PLNs on Twitter for professional development based on staff position.

Seven one-factor ANOVAs were conducted to test H22-H28. The categorical variable used to group staff member perceptions was staff position (Teacher, Administrator, Other). The level of significance was set at .05.

**RQ5.** What are staff members' experiences with a Twitter-supported PLN?

Qualitative data were analyzed to address RQ5. The researcher interviewed seven participants. Each interview was recorded using a digital recording device. Transcripts were created from the interviews. Finally, similarities and differences were derived from participant responses.

#### **Researcher's Role**

According to Bloomberg and Volpe (2012), "Qualitative researchers recognize and acknowledge that their own background shapes their interpretation, and they thus 'position' themselves in the research to acknowledge their own cultural, social and historical experiences" (p. 43). The researcher was a secondary educator in District JRZ during the 2017-2018 and 2018-2019 school years. The researcher held a bachelor's degree in elementary education, and a master's degree in reading, and is a doctoral candidate in educational leadership. The researcher is a female who had worked in education for eight years. Additionally, the researcher had been an educator at both the elementary and secondary levels. The researcher had only held teaching positions in her career. Finally, the researcher was an avid Twitter user.

#### **Trustworthiness and Reliability**

According to Bloomberg and Volpe (2012), the focus of qualitative research "is on how well the researcher has provided evidence that her or his descriptions and analysis represent the reality of the situations and persons studied" (p. 112). Credibility refers to how well the researcher portrays the participants' perceptions (Bloomberg & Volpe, 2012). A transcript of the interview was sent to each participant to conduct a "member check" and determine the accuracy of the information recorded in the transcript. Participants did not request any changes to the transcripts.

"Dependability refers to whether one can track the processes and procedures used to collect and interpret data" (Bloomberg & Volpe, 2012). Every interview was recorded using a digital device and transcribed using the Trint online software transcribing program. Transcripts of each interview were then created using a Microsoft Word document. The transcribed interviews were then uploaded to the Dedoose website. According to Rubin and Rubin (2012), "Systematic coding forces you to look not just at what you remember from the interviews but also at the passages that might modify your ideas or indicate when and how your ideas might be true or not true" (p. 192). The researcher reviewed the interviews for common concepts and themes, including examples. Using transcript excerpts, the same concepts and themes were coded for referencing. After sorting the transcript pieces, the researcher summarized the findings.

### Limitations

Lunenburg and Irby (2008) defined limitations as "factors that may have an effect on the interpretation of the findings or on the generalizability of the results" (p. 133). The results of the study are limited to only the District JRZ employees who voluntarily responded to the survey. The researcher did not play a role in establishing, promoting, facilitating, or organizing the use of PLNs by respondents; therefore, the researcher could not control the level of training and exposure District JRZ employees had related to their PLN via Twitter. Another limitation of this research study is the uncertainty of why participants volunteered to take the survey. Finally, participants selected for the qualitative portion of this study were limited to volunteers who completed the survey. **Summary** 

Chapter 3 consisted of a description of the design methods used in this study. This study was conducted using a mixed methods approach and was conducted using a sequential explanatory strategy with a purposive sampling of participants. Research study participants consisted of volunteers who were employed as educators during the 2017-2018 and 2018-2019 school years in District JRZ. The measurement instruments consisted of a survey and interviews. Data collection procedures were identified, research questions were reviewed, and hypothesis and the analysis of the data collected during the interviews were described. Finally, the researcher's role, trustworthiness and reliability, and the limitations of the study were explained. Chapter 4 includes the results of the study.
## **Chapter 4**

# Results

The purpose of this study was to determine staff members' perceptions of the usefulness of their PLN on Twitter and whether staff members' perceptions of the usefulness of their PLN were affected by their number of years of educational experience, level of employment, and staff position. The final purpose was to determine staff members' experience with a Twitter-supported PLN. Chapter 4 includes the descriptive statistics, results of the hypothesis testing, and interviews. This chapter concludes with a discussion of the integration of quantitative and qualitative data.

# **Descriptive Statistics**

Table 4 presents the numbers and percentages for participant characteristics for the quantitative portion of the study that addresses research questions one through four. A total of 208 participants completed the survey. Due to the date of the survey, staff members with less than 1 year of education experience were eliminated from the study because they had not yet completed a professional development goal for the district.

|                     | n   | %    |
|---------------------|-----|------|
| Years in Education  |     |      |
| Less than 1         | 9   | 4.3  |
| 1 to 5              | 28  | 13.5 |
| 6 to 10             | 55  | 26.6 |
| 11 to 15            | 37  | 17.9 |
| 16 to 20            | 27  | 13.0 |
| 21 or more          | 51  | 24.6 |
| Level of Employment |     |      |
| PK-5                | 103 | 50.0 |
| 6-12                | 98  | 47.6 |
| Other               | 5   | 2.4  |
| Staff Position      |     |      |
| Teacher             | 194 | 93.3 |
| Administrator       | 7   | 3.4  |
| Other               | 7   | 3.4  |

Frequencies and Percentages for Participant Demographics

Table 5 includes the numbers and percentages for participant characteristics for the qualitative portion of the study, which addressed RQ5. A total of 15 participants volunteered to be interviewed. The researcher interviewed seven staff members from District JRZ that encompassed all demographic areas (except for the category of Other staff position) represented for the quantitative portion of the study.

# Table 5

| Frequencies | and Percentages | for Interview | Participant l | <i>Demographics</i> |
|-------------|-----------------|---------------|---------------|---------------------|
| 1           | 0,              |               | 1             | 01                  |

|                     | n | %    |
|---------------------|---|------|
| Years in Education  |   |      |
| 1 to 5              | 2 | 28.6 |
| 6 to 10             | 2 | 28.6 |
| 11 to 15            | 1 | 14.3 |
| 16 to 20            | 1 | 14.3 |
| 21 or more          | 1 | 14.3 |
| Level of Employment |   |      |
| PK-5                | 4 | 57.1 |
| 6-12                | 2 | 28.6 |
| Other               | 1 | 14.3 |
| Staff Position      |   |      |
| Teacher             | 5 | 71.4 |
| Administrator       | 2 | 28.6 |
| Other               | 0 | 0.0  |
| Gender              |   |      |
| Female              | 4 | 57.1 |
| Male                | 3 | 42.9 |

# **Hypothesis Testing**

The hypothesis testing to address RQ1-RQ4 is presented. Each research question is addressed by seven associated hypotheses. Following the statement of each research question is the analysis used for the seven associated hypotheses. Each hypothesis is then identified, and the results of the hypothesis testing for that hypothesis are provided.

**RQ1.** To what extent do staff members perceive that their PLNs on Twitter are useful?

Seven one-sample *t* tests were conducted to test H1-H7. Each of the sample means was compared against a reference value of 3. The level of significance was set at .05.

*H1.* Staff members perceive that they have made significant progress toward their professional development goals via PLNs on Twitter.

The results of the test for H1 indicated a statistically significant difference between the group mean and the test value, t(207) = 4.446, p = .000. The sample mean (M = 3.370, SD = 1.201) was significantly different from the test value (3). Staff members perceive that they have made significant progress toward their professional development goals via PLNs on Twitter. H1 was supported. The effect size associated with this test, Cohen's d = 0.31, indicated the mean is 0.31 standard deviations above 3. According to Cohen (1988), this is a medium effect.

*H2.* Staff members perceive that their PLNs on Twitter have been a valuable part of their professional development.

The results of the test for H2 indicated a statistically significant difference between the group mean and the test value, t(207) = 4.817, p = .000. The sample mean (M = 3.389, SD = 1.166) was significantly different from the test value (3). Staff members perceive that their PLNs on Twitter have been a valuable part of their professional development. H2 was supported. The effect size associated with this test, Cohen's d = 0.33, indicated the mean is 0.33 standard deviations above 3. According to Cohen (1988), this is a medium effect.

*H3.* Staff members perceive that their PLNs on Twitter have had a positive impact on their classroom practice.

The results of the test for H3 indicated a statistically significant difference between the group mean and the test value, t(207) = 7.780, p = .000. The sample mean (M = 3.577, SD = 1.069) was significantly different from the test value (3). Staff members perceive that their PLNs on Twitter have had a positive impact on their classroom practice. H3 was supported. The effect size associated with this test, Cohen's d = 0.54, indicated the mean is 0.54 standard deviations above 3. According to Cohen (1988), this is a medium effect.

*H4.* Staff members perceive that they have obtained resources from their PLNs on Twitter that they use in their classroom.

The results of the test for H4 indicated a statistically significant difference between the group mean and the test value, t(207) = 4.620, p = .000. The sample mean (M = 3.337, SD = 1.051) was significantly different from the test value (3). Staff members perceive that they have obtained resources from their PLNs on Twitter that they use in their classroom. H4 was supported. The effect size associated with this test, Cohen's d = 0.32, indicated the mean is 0.32 standard deviations above 3. According to Cohen (1988), this is a medium effect. *H5.* Staff members perceive that they have obtained strategies from their PLNs on Twitter that they use in their classrooms.

The results of the test for H5 indicated a statistically significant difference between the group mean and the test value, t(207) = 6.706, p = .000. The sample mean (M = 3.505, SD = 1.086) was significantly different from the test value (3). Staff members perceive that they have obtained strategies from their PLNs on Twitter that they use in their classrooms. H5 was supported. The effect size associated with this test, Cohen's d = 0.46, indicated the mean is 0.46 standard deviations above 3. According to Cohen (1988), this is a medium effect.

*H6.* Staff members perceive that Twitter is an effective platform for developing a PLN.

The results of the test for H6 indicated a statistically significant difference between the group mean and the test value, t(206) = 11.956, p = .000. The sample mean (M = 3.899, SD = 1.081) was significantly different from the test value (3). Staff members perceive that Twitter is an effective platform for developing a PLN. H6 was supported. The effect size associated with this test, Cohen's d = 0.83, indicated the mean is 0.83 standard deviations above 3. According to Cohen (1988), this is a large effect.

*H7.* Staff members plan to continue with their PLNs on Twitter for professional development.

The results of the test for H7 indicated a statistically significant difference between the group mean and the test value, t(207) = 7.385, p = .000. The sample mean (M = 3.577, SD = 1.127) was significantly different from the test value (3). Staff members plan to continue with their PLNs on Twitter for professional development. H7 was supported. The effect size associated with this test, Cohen's d = 0.51, indicated the mean is 0.51 standard deviations above 3. According to Cohen (1988), this is a medium effect.

**RQ2.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on the number of years of education experience?

Seven one-factor ANOVAs were conducted to test H8-H14. The categorical variable used to group staff member perceptions was number of years of education experience (1 to 5 years, 6 to 10 years, 11 to 15 years, 16 to 20 years, and 21 or more years). The level of significance was set at .05.

*H8.* There is a difference in staff members' perceptions that they have made significant toward their professional development goals via PLNs based on the number of years of education experience.

The results of the one-way ANOVA used to test H8 indicated a marginally significant difference between at least two of the means, F(4, 193) = 1.986, p = .098. See Table 6 for the means and standard deviations for this analysis. A post hoc was not warranted. Although the difference is not statistically significant, the mean for staff members with 1 to 5 years of experience (M = 2.964) is lower than the mean for staff members with 6 to 10 years of experience (M = 3.686). Staff members' perceptions that they have made significant progress toward their professional development goals via PLNs are different based on the number of years of education experience. H8 was supported.

| Experience (years) | М     | SD    | Ν  |
|--------------------|-------|-------|----|
| 1 to 5             | 2.964 | 1.170 | 28 |
| 6 to 10            | 3.686 | 1.241 | 51 |
| 11 to 15           | 3.473 | 1.152 | 55 |
| 16 to 20           | 3.486 | 1.239 | 37 |
| 21+                | 3.185 | 1.111 | 27 |

Descriptive Statistics for the Results of the Test for H8

*H9.* There is a difference in staff members' perceptions that their PLNs on Twitter have been a valuable part of their professional development based on the number of years of education experience.

The results of the one-way ANOVA used to test H9 indicated a marginally significant difference between at least two of the means, F(4, 193) = 2.170, p = .074. See Table 7 for the means and standard deviations for this analysis. A post hoc was not warranted. Although the difference is not statistically significant, the mean for staff members with 1 to 5 years of experience (M = 3.000) is lower than the mean for staff members with 6 to 10 years of experience (M = 3.765). Staff members' perceptions that their PLNs on Twitter have been a valuable part of their professional development are different based on the number of years of education experience. H9 was supported.

| Experience (years) | М     | SD    | Ν  |
|--------------------|-------|-------|----|
| 1 to 5             | 3.000 | 1.122 | 28 |
| 6 to 10            | 3.765 | 1.124 | 51 |
| 11 to 15           | 3.345 | 1.142 | 55 |
| 16 to 20           | 3.432 | 1.168 | 37 |
| 21+                | 3.407 | 1.152 | 27 |

Descriptive Statistics for the Results of the Test for H9

*H10.* There is a difference in staff members' perceptions that their PLNs on Twitter have had a positive impact on their classroom practice based on the number of years of education experience.

The results of the one-way ANOVA used to test H10 indicated the difference between at least two of the means was not statistically significant, F(4, 193) = 1.547, p = .190. See Table 8 for the means and standard deviations for this analysis. A post hoc was not warranted. Staff members' perceptions that their PLNs on Twitter have had a positive impact on their classroom practice based on the number of years of education experience are not different based on the number of years of education experience. H10 was not supported.

| Experience | М     | SD    | Ν  |
|------------|-------|-------|----|
| 1 to 5     | 3.357 | 0.951 | 28 |
| 6 to 10    | 3.902 | 1.082 | 51 |
| 11 to 15   | 3.582 | 1.134 | 55 |
| 16 to 20   | 3.595 | 1.066 | 37 |
| 21+        | 3.444 | 0.934 | 27 |

Descriptive Statistics for the Results of the Test for H10

*H11.* There is a difference in staff members' perceptions that they have obtained resources from their PLNs on Twitter that they use in their classroom based on the number of years of education experience.

The results of the one-way ANOVA used to test H11 indicated the difference between at least two of the means was not statistically significant, F(4, 193) = 0.853, p = .853. See Table 9 for the means and standard deviations for this analysis. A post hoc was not warranted. Staff members' perceptions that they have obtained resources from their PLNs on Twitter that they use in their classroom are not different based on the number of years of education experience. H11 was not supported.

| Experience | М     | SD    | Ν  |
|------------|-------|-------|----|
| 1 to 5     | 3.321 | 1.188 | 28 |
| 6 to 10    | 3.569 | 0.985 | 51 |
| 11 to 15   | 3.291 | 1.100 | 55 |
| 16 to 20   | 3.324 | 1.082 | 37 |
| 21+        | 3.148 | 0.864 | 27 |

Descriptive Statistics for the Results of the Test for H11

*H12.* There is a difference in staff members' perceptions that they have obtained strategies from their PLNs on Twitter that they use in their classrooms based on the number of years of education experience.

The results of the one-way ANOVA used to test H12 indicated the difference between the means was not significant, F(4, 193) = 0.947, p = .438. See Table 10 for the means and standard deviations for this analysis. A post hoc was not warranted. Staff members' perceptions that they have obtained strategies from their PLNs on Twitter that they use in their classrooms are not different based on the number of years of education experience. H12 was not supported.

| Experience | М     | SD    | Ν  |
|------------|-------|-------|----|
| 1 to 5     | 3.286 | 1.243 | 28 |
| 6 to 10    | 3.706 | 1.026 | 51 |
| 11 to 15   | 3.582 | 1.150 | 55 |
| 16 to 20   | 3.486 | 0.961 | 37 |
| 21+        | 3.333 | 1.074 | 27 |

Descriptive Statistics for the Results of the Test for H12

*H13.* There is a difference in staff members' perceptions that Twitter is an effective platform for developing a PLN based on the number of years of education experience.

The results of the one-way ANOVA used to test H13 indicated a statistically significant difference between at least two of the means, F(4, 192) = 3.095, p = .017. See Table 11 for the means and standard deviations for this analysis. A post hoc test was conducted to determine which means were different. The Tukey's HSD indicated the mean for staff members with 1 to 5 years of experience (M = 3.667) is marginally different (p = .086) from the mean for staff members with 6 to 10 years of experience (M = 3.519) is significantly different (p = .017) from the mean for staff members with 6 to 10 years of experience (M = 4.294); and the mean for staff members with 21+ years of experience (M = 3.519) is significantly different (p = .017) from the mean for staff members with 6 to 10 years of experience (M = 4.294). Staff members' perceptions that Twitter is an effective platform for developing a PLN are different based on the number of years of education experience. H13 was supported. The effect size for the ANOVA, as indexed by partial eta squared

(.061), indicated that 6.1% of the variability in staff members' perceptions is explained by staff member experience. According to Cohen (1988), this is a small effect. Table 11

| Experience | М     | SD    | N  |
|------------|-------|-------|----|
| 1 to 5     | 3.667 | 1.074 | 27 |
| 6 to 10    | 4.294 | 0.986 | 51 |
| 11 to 15   | 3.927 | 1.069 | 55 |
| 16 to 20   | 4.000 | 0.972 | 37 |
| 21+        | 3.519 | 1.122 | 27 |

Descriptive Statistics for the Results of the Test for H13

*H14.* There is a difference in staff members' plan to continue with their PLNs on Twitter for professional development based on the number of years of education experience.

The results of the one-way ANOVA used to test H14 indicated the difference between the means was not significant, F(4, 193) = 0.597, p = .665. See Table 12 for the means and standard deviations for this analysis. A post hoc was not warranted. Staff members' plan to continue with their PLNs on Twitter for professional development are not different based on the number of years of education experience. H14 was not supported.

| Experience | М     | SD    | Ν  |
|------------|-------|-------|----|
| 1 to 5     | 3.607 | 1.343 | 28 |
| 6 to 10    | 3.804 | 1.077 | 51 |
| 11 to 15   | 3.582 | 1.134 | 55 |
| 16 to 20   | 3.514 | 0.961 | 37 |
| 21+        | 3.444 | 1.188 | 27 |

Descriptive Statistics for the Results of the Test for H14

**RQ3.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on the level of employment?

Seven one-factor ANOVAs were planned to test H15-H21. However, sample size issues with the third category, *other* (n = 5), made it impossible to conduct the ANOVAs. Therefore, seven independent-samples *t* tests were conducted to test the hypotheses. The categorical variable used to group staff member perceptions was level of employment (PK-5, 6-12). The level of significance was set at .05.

*H15.* There is a difference in staff members' perceptions that they have made significant progress toward their professional development goals via PLNs on Twitter based on the level of employment.

The results of the independent-samples *t* test used to test H15 indicated the difference between the two means was not statistically significant, t(199) = -0.006, p = .995. See Table 13 for the means and standard deviations for this test. Staff members' perceptions that they have made significant progress toward their professional

development goals via PLNs on Twitter are not different based on the level of employment. H15 was not supported.

Table 13

Descriptive Statistics for the Results of the Test for H15

| School Level  | М     | SD    | Ν   |
|---------------|-------|-------|-----|
| Grades PreK-5 | 3.379 | 1.197 | 103 |
| Grades 6-12   | 3.378 | 1.231 | 98  |

*H16.* There is a difference in staff members' perceptions that their PLNs on Twitter have been a valuable part of their professional development based on the level of employment.

The results of the independent-samples *t* test used to test H16 indicated the difference between the two means was not statistically significant, t(199) = -1.148, p = .252. See Table 14 for the means and standard deviations for this test. Staff members' perceptions that their PLNs on Twitter have been a valuable part of their professional development are not different based on the level of employment. H16 was not supported.

Table 14

Descriptive Statistics for the Results of the Test for H16

| School Level  | М     | SD    | Ν   |
|---------------|-------|-------|-----|
| Grades PreK-5 | 3.485 | 1.092 | 103 |
| Grades 6-12   | 3.296 | 1.245 | 98  |

*H17.* There is a difference in staff members' perceptions that their PLNs on Twitter have had a positive impact on their classroom practice based on the level of employment.

The results of the independent-samples *t* test used to test H17 indicated the difference between the two means was not statistically significant, t(199) = -1.513, p = .132. See Table 15 for the means and standard deviations for this test. Staff members' perceptions that their PLNs on Twitter have had a positive impact on their classroom practice are not different based on the level of employment. H17 was not supported.

# Table 15

Descriptive Statistics for the Results of the Test for H17

| School Level  | М     | SD    | Ν   |
|---------------|-------|-------|-----|
| Grades PreK-5 | 3.699 | 1.008 | 103 |
| Grades 6-12   | 3.469 | 1.142 | 98  |

*H18.* There is a difference in staff members' perceptions that they have obtained resources from their PLNs on Twitter that they use in their classroom based on the level of employment.

The results of the independent-samples *t* test used to test H18 indicated the difference between the two means was statistically significant, t(199) = -1.985, p = .049. The mean for staff members employed in PreK-5 buildings (M = 3.476) was higher than the mean for staff members from 6-12 buildings (M = 3.184). See Table 16 for the means and standard deviations for this test. Staff members' perceptions that they have obtained resources from their PLNs on Twitter that they use in their classroom are different based on the level of employment. H18 was supported. The effect size associated with this

test, Cohen's d = 0.28, indicated the mean for staff members in grades PreK-5 is 0.28 standard deviations above the mean for staff members in grades 6-12. According to Cohen (1988), this is a small effect.

#### Table 16

Descriptive Statistics for the Results of the Test for H18

| School Level  | М     | SD    | Ν   |
|---------------|-------|-------|-----|
| Grades PreK-5 | 3.476 | .979  | 103 |
| Grades 6-12   | 3.184 | 1.106 | 98  |

*H19.* There is a difference in staff members' perceptions that they have obtained strategies from their PLNs on Twitter that they use in their classrooms based on the level of employment.

The results of the independent-samples *t* test used to test H19 indicated the difference between the two means was not statistically significant, t(199) = -1.586, p = .114. See Table 17 for the means and standard deviations for this test. Staff members' perceptions that they have obtained strategies from their PLNs on Twitter that they use in their classrooms are not different based on the level of employment. H19 was not supported.

# Table 17

Descriptive Statistics for the Results of the Test for H19

| School Level  | М     | SD    | Ν   |
|---------------|-------|-------|-----|
| Grades PreK-5 | 3.388 | 1.163 | 103 |
| Grades 6-12   | 3.631 | 1.010 | 98  |

*H20.* There is a difference in staff members' perceptions that Twitter is an effective platform for developing a PLN based on the level of employment.

The results of the independent-samples *t* test used to test H20 indicated the difference between the two means was not statistically significant, t(198) = -1.257, p = .210. See Table 18 for the means and standard deviations for this test. Staff members' perceptions that Twitter is an effective platform for developing a PLN are not different based on the level of employment. H20 was not supported.

#### Table 18

Descriptive Statistics for the Results of the Test for H20

| School Level  | М     | SD    | Ν   |
|---------------|-------|-------|-----|
| Grades PreK-5 | 4.000 | 1.024 | 102 |
| Grades 6-12   | 3.806 | 1.155 | 98  |

*H21.* There is a difference in staff members' plan to continue with their PLNs on Twitter for professional development based on the level of employment.

The results of the independent-samples *t* test used to test H21 indicated the difference between the two means was statistically significant, t(199) = -2.084, p = .038. The mean for staff members employed in PreK-5 buildings (M = 3.748) is higher than the mean for staff members from 6-12 buildings (M = 3.418). See Table 19 for the means and standard deviations for this test. Staff members' perceptions that they have made significant progress toward their professional development goals via PLNs on Twitter are different based on the level of employment. H21 was supported. The effect size associated with this test, Cohen's d = 0.29, indicated the mean for staff members in

grades PreK-5 is 0.29 standard deviations above the mean for staff members in grades 6-12. According to Cohen (1988), this is a small effect.

Table 19

Descriptive Statistics for the Results of the Test for H21

| School Level  | М     | SD    | Ν   |
|---------------|-------|-------|-----|
| Grades PreK-5 | 3.748 | 1.045 | 103 |
| Grades 6-12   | 3.418 | 1.192 | 98  |

**RQ4.** To what extent is there a difference in staff members' perceptions about the usefulness of their PLN on Twitter based on staff position?

Seven one-factor ANOVAs were planned to test H22-H28. However, the sample sizes in the *administrator* staff position category (n = 7) and the *other* staff position category (n = 7) were disproportionally small in comparison to the *teacher* staff position category (n = 194). Therefore, no analyses were conducted to test H22-H28.

# **Interview Analyses and Results**

RQ5 guided the researcher in determining staff members' experiences with a Twitter-supported PLN. The researcher analyzed qualitative data to address RQ5. The following information is from in-person interviews with seven certified staff members of District JRZ. Staff members were asked questions regarding their personal experiences with a Twitter-supported PLN. Interview questions addressed staff members' introductions to Twitter, PLN via Twitter, professional learning experiences on Twitter, and instructional strategies and resource allocation on Twitter. The interviews were recorded using a digital recording device, transcripts were produced using Trint online transcribing, and the content was analyzed.

#### Interview Question 1: Tell me about why you started using Twitter. All

participants interviewed indicated that they were introduced to Twitter through professional means. While a few participants were exposed to Twitter prior to working for District JRZ, each participant indicated receiving additional training related to Twitter from the district. Participants expressed a variety of ways through which they received training from the district such as new teacher training, faculty meetings, and professional development sessions. Examples of participant comments include:

Participant 4: During new teacher training one of the big things the district pushed was for us to get a Twitter account and start using hashtags.

Participant 5: I had heard about Twitter through our instructional technology director, and she was pushing us to use it. Since I had not really gotten into it at the time, I had her come and lead a faculty meeting. She showed us the benefits, and I totally bought in after that.

Three participants stated that they managed multiple Twitter accounts and had been exposed to Twitter prior to working for District JRZ. Three of the seven participants (Participant 1, Participant 3, and Participant 4) shared that they have social and professional accounts on Twitter. Additionally, four participants (Participant 1, Participant 2, Participant 4, and Participant 7) expressed that outside sources led them to create a Twitter account prior to receiving training through the district.

Participant 1: I really started using Twitter when I was in high school for the social networking aspect. We had a class in college where it was required for us to make a professional Twitter and we had certain requirements to fulfill. Then,

when I started working for this district, we had our technology boot camp, and they really had us dive into Twitter.

Participant 3: At first, I started using Twitter just for information, following people, more for personal use. As I got more into education, I started looking at other ways of using it. Actually, I had a class in college that required me to start my own PLN.

Participant 4: I started using Twitter for the social aspect of it. I honestly was just told from my district to create a professional account, but I found that I really enjoy using it for school-related activities.

# Interview Question 2. What types of learning opportunities have you found

**using Twitter?** All participants indicated that Twitter provided learning opportunities that fit into one of three categories; #edchats, technology resources, and inspiring ideas. Six out of the seven participants recalled specific #edchats they had participated in and expressed value in their learning from taking part in the #edchat. Participants 1 and 4 were reluctant to participate in an #edchat; however, decided to give it a try and enjoyed the experience. An example of an #edchat experience includes:

Participant 4: I did my first #edchat this year with the intention of just getting professional development hours, but I actually enjoyed it. It was nice to be at home in shorts and still getting to learn stuff.

Two participants also mentioned learning about technology resources through Twitter. Participant 2: One example was troubleshooting Flipgrid with some new updates ... and I was able to find some resources quickly on how to best utilize it. Participant 6: The biggest opportunity for my classroom is Skype. Through

Twitter, I connect with other teachers across the United States, and we set up a

time to Mystery Skype. I have built relationships with other first grade teachers. Finally, two participants shared stories of ideas that were found on Twitter that they read about and adjusted to meet the needs of their classroom.

Participant 3: I think for me, the biggest learning opportunity would just be exposure to various ideas, teaching strategies or ways that people would teach certain content. I read something last week . . . I've taken that, and I begin to challenge my students with it every day.

Participant 5: At Christmas time I was scrolling through Twitter and noticed someone who had baked five dozen cookies and passed them out in their community. So, our teachers decided to bake cookies, and we got on a bus and passed them out at different community locations.

Interview Question 3. How have you used Twitter to develop a PLN? Six of the participants responded to this question by outlining the process of developing their own PLNs on Twitter. Participants discussed the purposes of following others on Twitter and the methods for which they use to find more people to add to their PLN. Additionally, every participant mentioned at least one example of specific people or companies that are a part of their PLN. Participant 2 shared learning more about Flipgrid through Twitter, while Participant 6 shared about finding teachers around the world with whom to Mystery Skype. Participant 5 also identified Beth Houf, Ron Clark, Wade King, and Hope King. Furthermore, participants stated that they have followed or unfollowed people ranging anywhere from daily to weekly. Example responses include: Participant 2: Based upon what I need and what I need to know I pick whom I want to follow. Then, if people become irrelevant to me, I unfollow them. That's the beauty of Twitter. You can pick what you want. I always say, if your feed's crap it is because you follow crappy people.

Participant 7: I have a wide range of people and educational companies that I follow on Twitter. When I meet people at conferences, they share their Twitter handles, and I immediately add them to my PLN. Also, when I am introduced to new technology ideas for my classroom, I typically follow those companies because I become exposed to many great classrooms uses for that specific technology.

#### Interview Question 4. How has Twitter been effective/ineffective in

**developing a PLN?** All participants indicated that Twitter has been effective in developing a PLN. Participants cited reasons such as customization, easy access, and ondemand support as effective reasons. Two of the seven participants also expressed why a PLN on Twitter could be perceived as ineffective citing reasons of source credibility and an overabundance of information as reasons. Participants' responses included:

Participant 2: It's been effective just because of the capability to search for something and find an answer. I feel like it is ineffective sometimes and this is maybe my own personal struggle, but sometimes it provides a squirrel moment of jumping down a rabbit hole of something I really don't need to. Participant 3: I think it's been effective for me. I'm not a very creative person.

Ideas just don't come bubbling in my head. So, for me, I use it for different ways of teaching.

Participant 4: I think it's very effective when I put my mind to it. The ineffective part of it is there's a lot, and I just don't know what to trust on there.
Participant 6: I think it's been hugely effective because if I didn't have Twitter, I definitely wouldn't have connected with all of these people.
Participant 7: Twitter and my PLN have been so effective in helping me to stay current with trends in education and providing my students an up-to-date education.

#### Interview Question 5. Tell me about your professional development goal.

Participants indicated having professional developments goals such as individualized instruction, technology, classroom transformations, and delivery of professional development. Cognitive engagement and test-taking strategies were also identified as professional development goals by participants. One participant shared a goal of individualized learning, a relatively new trend in education:

Participant 3: My professional development goal ultimately was to do individualized instruction and so moving toward that goal of each student being able to learn at their own pace, being able to learn at their own level.

Another participant shared a broader goal of technology:

Participant 5: My goal this year was still technology related. I still wanted to support staff in digging deeper into Twitter.

Interview Question 6. How have you enhanced your progress toward a professional development goal via the use of a PLN on Twitter? Participants indicated that reaching out to people, searching specific hashtags, or scrolling through their PLNs on Twitter have all led to enhancement of their progress toward reaching their professional development goal. Three of the seven participants acknowledged the easy access and use of Twitter as a benefit. Example responses include:

Participant 4: Personally, I use my phone a lot when I want to initially research a topic. Twitter is easier on my phone than it is on the computer in my opinion. Participant 5: Tara Martin, who I found on Twitter was doing book snaps. I couldn't find how to do it on Google. So, I went on her Twitter account, and I scrolled through her stuff, and actually it's in her bio. So, I taught myself how to do book snaps through her Twitter page.

#### Interview Question 7. Tell me about a PLN's ability to support professional

**learning goals.** All participants felt that their PLN on Twitter did overall support their growth toward reaching their professional development goals. One participant felt that if the goal was based more around a traditional classroom setting, there would be more information found on Twitter. Examples of participant responses included:

Participant 1: I think that they can support you because, just like any sort of team, you're getting different ideas that you may not have thought about, and you are given a different perspective. I think that's about the best part of collaboration because not everyone thinks the same way.

Participant 4: I think that's actually a big part of it because when you find people that like to talk about the things that you're interested in or that you're researching it's a lot easier to find their stuff on Twitter. You may find one thing on a website, whereas at least on Twitter a person will continually post things about similar topics. Participant 5: You don't need face to face with people for support, and that's the beauty of Twitter. You don't have to be on the phone. You don't have to see them in person. You just have to take the initiative.

#### Interview Question 8. In what ways, if any, has Twitter provided

#### individualized professional learning opportunities not available through other

**means?** Through the interview, five of the participants indicated that the customization, easy accessibility, and on-demand learning aspects of Twitter provided individualized professional learning opportunities that were not available through other means. All participants shared that the customizable component of Twitter lends itself to individualized professional development. Some example responses from Twitter include:

Participant 2: I can customize it. Then I can see that feed from my customization. It's all individualized by who I follow.

Participant 3: I think there's also a lot of people that are in your everyday classroom who are doing things that are exceptional. So, to be able to have access to those people via Twitter connects me to people that otherwise, I would not have access.

Participant 7: It is easier to get on Twitter and find learning opportunities than to ask my principal for PD, find the PD, pay for the PD, and so on. Basically, I can receive on-demand training in areas that need it at a specific moment.

Additionally, five of the seven participants compared the learning experiences of conferences and workshops to the professional learning possibilities on Twitter. Two of the seven participants felt that traditional models of professional development allowed for a more in-depth learning opportunity. While three of the seven participants used Twitter

to ask more questions of presenters and see professional learning applications in real classroom settings. Participant 3 explained how Twitter provides an avenue for more indepth questions of presenters. In comparison, Participant 4 valued both traditional professional development and Twitter explaining that traditional professional development provides the foundational information for teachers and Twitter shows the real-world in-class application. Responses from participants below are examples of the differences between traditional professional development and professional development and professional development and professional through Twitter:

Participant 3: In looking at conferences, often times they're either keynote speakers, or they are people who are conducting short classes. Which you do have a little bit of an opportunity to talk to them, but their time is limited, and it's on a very narrow topic. On Twitter, you are able to follow them and see their ideas on multiple topics that they may have. So, I think Twitter provides an avenue for them to share multiple ideas and in return for me to be able to view a wider range of content.

Participant 4: When I go to a training, I feel like I receive the basic how-to information and the background knowledge for an educational topic. Then, when I use Twitter, I get to see that idea in action and how it applies to my personal classroom. Twitter provides an enhancement to my learning from a conference.

Interview Question 9. Share with me the impact that your PLN has had on your classroom practices, resource choices, and instructional strategies. All participants responded by sharing specific examples of classroom practices, resources, or instructional strategies they have found on Twitter. Additionally, four of the seven participants named specific apps or technology software they use in the classroom that they found on Twitter. Furthermore, two of the seven participants indicated that they found classroom design and management ideas from their PLN on Twitter. Finally, three of the seven participants shared stories of finding classroom instructional strategies on Twitter and immediately applying the strategies in their classrooms the following day. One participant shared finding classroom callback strategies, while another found more rigorous morning work to implement with students. Examples of classroom instructional strategies found include:

Participant 1: There's so many times where I'll be scrolling through Twitter all night and I'll either see an activity, callback, or something in a class, and I'll change my plans for the next day and use it just to see what happens. Participant 3: Things I have found on Twitter include classroom management or organizational ideas that people have, design ideas for my classroom, and content related strategies.

Participant 6: When I first switched from special education to regular education, I had just started using Twitter. It's kind of addictive because once you get on there and you see all these resources available, you find apps and ideas to use where kids are really learning. It's totally changed the way I teach.

Interview Question 10. Please share anything else you want to tell me about a PLN using Twitter. Three participants answered "no" to this question and felt that they had adequately shared their experiences through their responses to the previously asked questions. Four of the seven participants offered positive feedback related to using Twitter as a PLN. Example responses included:

Participant 1: I think Twitter is a nice way to build a community of followers and support each other in a world that can be so negative sometimes.

Participant 2: I feel like if I am going to be successful, I have to be connected.

It's kind of like gasoline to a fire. It just kind of ignites that passion and broadens my perspective of what's out there and what's possible.

Participant 3: I would just encourage people to take that step and to see the value in PLNs.

Participant 5: If educators are not using Twitter they'll get left behind. I can almost see it here. There is a difference in the ones who are using it in their classrooms and the ones who are not. They are literally head and shoulders above the rest.

# **Integration of Results**

Creswell and Plano Clark (2011) stated that the integration of quantitative and qualitative research can significantly enhance the value of a mixed-methods research study. The following section provides an integration of the quantitative and qualitative findings in this study. The section is organized in sequential order by survey questions from the quantitative portion of the study. The researcher provided qualitative findings related to each question.

**Survey Question 1.** I have made significant progress toward my professional development goal via my PLN on Twitter.

H1, H8, H15, and H22 addressed the demographic data related to survey question1. Due to small sample sizes, H22 could not be tested. Quantitative data were analyzed and produced three outcomes:

H1: Staff members perceive that they have made significant progress toward their professional development goals via PLNs on Twitter.

H8: Staff members' perceptions that they have made significant progress toward their professional development goals via PLNs are different based on the number of years of education experience.

H15: Staff member's perceptions that they have made significant progress toward their professional development goals via PLNs are not different based on the level of employment.

Using the results of the quantitative data, the researcher concluded that as a whole group, staff members felt their PLNs led to progress toward meeting their professional development goals. However, further testing indicated that there was a marginally significant difference based on the number of years of education, specifically between staff members with 1 to 5 years of experience and staff members with 6 to 10 years of experience. Qualitative data supported this finding in that the participants who had 1 to 5 years of educational experience had started using Twitter prior to being introduced for professional development purposes. An example response included:

Participant 1: "I started using Twitter when I was in high school, and it was more

for the social networking aspect of tweeting out random things."

Whereas the participants who have 6 to 10 years of educational experience claimed they were introduced to Twitter through a professional setting.

Participant 2: "I learned about Twitter at a conference. The presenter talked about how it changed his career. I decided to check it out, and it kind of took off from there."

**Survey Question 2.** My PLN on Twitter has been a valuable part of my professional development.

H2, H9, H16, and H23 addressed the demographic data related to survey question2. Due to small sample sizes, H23 could not be tested. Quantitative data were analyzed and produced three outcomes:

H2: Staff members perceive that their PLNs on Twitter have been a valuable part of their professional development.

H9: Staff members perceive that their PLNs on Twitter have been a valuable part of their professional development are different based on number of years of education experience.

H16: Staff members perceive that their PLNs on Twitter have been a valuable part of their professional development are not different based on the level of employment.

Using the results of the quantitative data, the researcher concluded that as a whole group, staff members perceived their PLNs have been a valuable part of their professional development. However, further testing indicated that there was a marginally significant difference based on the number of years of education, specifically between staff members with 1 to 5 years of experience and staff members with 6 to 10 years of experience. Qualitative data supported this finding in that the participants who had 1 to 5 years of educational experience did not necessarily know whom to follow or how to find the most reliable information.

Participant 2: "I think they're overwhelmed with the amount of information that's out there. That's where if we had a better list of interests and people to follow it would help new teachers out."

Participant 4: "The ineffective part of it is there's a lot, and I just don't know whom to trust on there. They can have a professional picture pretty easily on there."

Whereas, staff members with 6 to 10 years of educational experience had more of an understanding of people, topics, and ideas for which to search.

Participant 3: "Once I started following people I got to where I was looking at math teachers and specific content areas. After I saw the large number of people were fairly knowledgeable, I started to really buy into Twitter."

**Survey Question 3.** My PLN on Twitter has had a positive impact on my classroom practice.

H3, H10, H17, and H24 addressed the demographic data related to survey question 3. Due to small sample sizes, H24 could not be tested. Quantitative data were analyzed and produced three outcomes:

H3: Staff members perceive that their PLNs on Twitter have had a positive impact on their classroom practice.

H10: Staff members perceive that their PLNs on Twitter have had a positive impact on their classroom practice are not different based on the number of years of education experience.

H17: Staff members perceive that their PLNs on Twitter have had a positive impact on their classroom practice are not different based on the level of employment.

Using the results of the quantitative data, the researcher concluded that as a whole group, staff members perceived their PLNs have had a positive impact on their classroom practices. These findings were not significantly different based on the number of years of education experience or level of employment. Qualitative data related to these findings were presented in the previous section.

**Survey Question 4.** I have obtained resources from my PLN on Twitter that I use in my classroom.

H4, H11, H18, and H25 addressed the demographic data related to survey question 4. Due to small sample sizes, H25 could not be tested. Quantitative data were analyzed and produced three outcomes:

H4: Staff members perceive that they have obtained resources from their PLNs on Twitter that they use in their classrooms.

H11: Staff members perceive that they have obtained resources from their PLNs on Twitter that they use in their classrooms are not different based on the number of years of education experience.

H18: Staff members perceive that they have obtained resources from their PLNs on Twitter that they use in their classrooms are different based on the level of employment.

Using the results of the quantitative data, the researcher concluded that as a whole group, staff members perceived that they have obtained resources from their PLNs on

Twitter that they use in their classrooms. However, further testing indicated that there was a significant difference based on the level of employment. Specifically, staff members from PreK-5 buildings were more inclined to agree with this question. Qualitative data supported this finding in that the participants who taught in PreK-5 buildings provided more specific details relating to apps and resources. Additionally, three of the four participants from PreK-5 buildings specifically mentioned finding resources and changing lesson plans the following day. Example responses included:

Participant 5: "We are using Flipgrid and Extra Math apps, and our teachers tweet out to those companies. Those companies will like and share and comment on what our kids are doing."

Participant 6: "I get tons of ideas off of Twitter. Even the resources that we use in the classroom like SeeSaw and Chatterpix. I follow those companies on Twitter, and they'll repost things that other classrooms have done."

**Survey Question 5.** I have obtained strategies from my PLN on Twitter that I use in my classroom.

H5, H12, H19, and H26 addressed the demographic data related to survey question 5. Due to small sample sizes, H26 could not be tested. Quantitative data were analyzed and produced three outcomes:

H5: Staff members perceive that they have obtained strategies from their PLNs on Twitter that they use in their classrooms.

H12: Staff members perceive that they have obtained strategies from their PLNs on Twitter that they use in their classrooms are not different based on the number of years of education experience.

H19: Staff members perceive that they have obtained strategies from their PLNs on Twitter that they use in their classrooms are not different based on the level of employment.

Using the results of the quantitative data, the researcher concluded that as a whole group, staff members perceive that they have obtained strategies from their PLNs on Twitter that they use in their classrooms. These findings were not significantly different based on the number of years of education experience or level of employment. Qualitative data related to these findings were presented in the previous section.

**Survey Question 6.** Twitter is an effective platform for developing a PLN.

H6, H13, H20, and H27 addressed the demographic data related to survey question 6. Due to small sample sizes, H27 could not be tested. Quantitative data were analyzed and produced three outcomes:

H6: Staff members perceive that Twitter is an effective platform for developing a PLN.

H13: Staff members perceive that Twitter is an effective platform for developing a PLN are different based on the number of years of education experience.

H20: Staff members perceive that Twitter is an effective platform for developing a PLN are not different based on the level of employment.

Using the results of the quantitative data, the researcher concluded that as a whole group, staff members perceived that Twitter is an effective platform for developing a PLN. However, further testing indicated that there was a significant difference based on the number of years of education experience. Specifically, staff members with 6 to 10 years of experience were more inclined to agree with this question. Qualitative data supported this finding in that the participants who taught 6 to 10 years preferred the easy access and customization that Twitter provided. In contrast to the quantitative findings, the participant who had over 21 years of educational experience only shared positive remarks about Twitter and specifically spoke about the differences prior to using Twitter stating: "The differences are night and day. I've often said, 'What did we do before Twitter?""

**Survey Question 7.** I plan to continue with my PLN on Twitter for professional development.

H7, H14, H21, and H28 addressed the demographic data related to survey question 7. Due to small sample sizes, H28 could not be tested. Quantitative data were analyzed and produced three outcomes:

H7: Staff members plan to continue with their PLNs on Twitter for professional development.

H14: Staff members plan to continue with their PLNs on Twitter for professional development are not different based on the number of years of education experience.

H21: Staff members plan to continue with their PLNs on Twitter for professional development are different based on the level of employment.

Using the results of the quantitative data, the researcher concluded that as a whole group, staff members plan to continue with their PLNs on Twitter for professional development. However, further testing indicated that there was a significant difference based on the level of employment. Specifically, staff members at PreK-5 buildings were more inclined to agree with this question. In contrast to the quantitative findings, the
qualitative interviews found that seven out of seven participants planned to continue their PLNs on Twitter.

## **Summary**

Chapter 4 presented the results of the data analysis and hypothesis testing related to staff members' perceptions about a PLN on Twitter. The results of the one-sample *t* tests, one-factor ANOVAs, and analyses of the interviews were presented. Chapter 5 contains a study summary, consisting of the overview of the problem, purpose statement and research questions, a review of the methodology, and major findings. Additionally, Chapter 5 contains findings related to the literature and conclusions, which include implications for action, recommendations for further study, and concluding remarks.

## **Chapter 5**

#### **Interpretation and Recommendations**

This mixed-methods study was conducted to examine staff members' perceptions of the usefulness of PLN on Twitter. Chapter 5 is presented in three sections. The first section is a study summary, which consists of an overview of the problem, purpose statement and research questions, a review of the methodology, and the major findings. Presented in the next section are the findings related to literature. The final section of the chapter, conclusions, includes implications for action, recommendations for future research, and concluding remarks.

## **Study Summary**

This section provides a summary of the mixed-methods study that was conducted to examine staff members' perceptions of the usefulness of PLNs on Twitter. This section begins with an overview of the problem and includes the purpose of the study and the research questions. A review of the methodology and major findings conclude this section.

**Overview of the problem.** The New Teacher Project found that on average, school districts were spending as much as \$18,000 per teacher on professional development without seeing increased performance on teacher evaluations (Jacob & McGovern, 2015). The Education Secretary under President Obama, Arne Duncan, was quoted saying, "As I go out [and] talk to great teachers around the country, when I ask them how much is that money improving their job or development, they either laugh or they cry. They are not feeling it" (Layton, 2015, para. 11). Traditional professional development in the United States tends to lack the components teachers value as 21<sup>st</sup>-

century learners (Trust, 2012). Building professional learning experiences that inspire innovative teaching has been challenging for leaders of professional development, having educators that often complain that workshop or conference type professional developments are too removed from their actual teaching practice and therefore have little impact (Duncan-Howell, 2010). Many educators are seeking out PLNs through social media sites such as Twitter to acquire relevant and lasting professional development opportunities (Lieberman & McLoughlin, 2000). Since District JRZ spends time and resources on encouraging staff members to maintain a PLN on Twitter, there was a need to collect data pertaining to staff members' perceptions of the usefulness of a PLN on Twitter.

**Purpose statement and research questions.** The first purpose of this study was to determine staff members' perceptions of the usefulness of their PLN on Twitter. The second purpose of this study was to determine whether staff members' perceptions of the usefulness of their PLN on Twitter was affected by the number of years of educational experience, the level of employment, and staff position. The final purpose was to explore staff members' experience with a Twitter-supported PLN. To guide this study, four research questions were developed, and 28 hypotheses were tested to address the first four purposes of this study. Finally, interviews were conducted with seven participants to address the last purpose of the study.

**Review of the methodology.** A mixed method research design was used with a sequential explanatory strategy. The research study was conducted in a suburban school district located in Southwest Missouri. The researcher collected both quantitative and qualitative data. Data was collected by surveying and interviewing staff members of

District JRZ. The participants included 208 staff members of District JRZ who completed the survey and seven staff members who were interviewed. The survey was completed using Google Forms. One-sample *t* tests, independent sample *t* tests, and one-factor ANOVAs were used to test the hypotheses. To complete the qualitative portion of the study, transcriptions were developed from audio recordings of the interviews. The transcriptions were analyzed, and the content was compared for similarities and differences.

**Major findings.** Several major findings were identified in the current research study. The results of the data analysis indicated that staff members perceive their PLNs on Twitter to be useful. Specifically, they perceive they have made significant progress toward their professional development goals, their PLNs have been a valuable part of their professional development, their PLNs have had a positive impact on their classroom practice, they have obtained strategies to use in their classrooms, that Twitter is an effective platform for developing a PLN, and that they plan to continue with their PLNs on Twitter for professional development.

The results of the data analysis for RQ2 related to the differences in staff member's perceptions that their PLNs on Twitter have been useful based on years of education experience were mixed. The results of the data analysis indicated that staff members with 6 to 10 years of education experience perceive that their PLNs on Twitter have helped them make significant progress toward their professional development goal and have been a valuable part of their professional development more than staff members with 1 to 5 years of education experience. The results of the data analysis also indicated that staff members with 6 to 10 years of education experience perceive that Twitter is an effective platform for a PLN more than staff members with 1 to 5 and 21+ years of education in experience. No other differences in perceptions based on education experience were found.

The results of the data analysis related to the differences in staff members' perceptions that their PLNs on Twitter have been useful based on level of employment were mixed. The results showed that staff members at PreK-5 levels perceived that they had obtained resources from their PLNs on Twitter that they use in their classroom more than staff members at the 6-12 level. Finally, data indicated that staff members at the PreK-5 level are more likely to continue with their PLNs on Twitter for professional development. No other differences related to level of employment were found. Data analysis testing related to RQ4 could not be conducted due to the small population size of administrator and other categories.

Qualitative findings indicated that staff members had positive experiences with their PLN on Twitter. Participants indicated that they routinely participate in learning opportunities such as #edchats. Additionally, the research findings indicated that participants perceive Twitter as an effective platform for professional learning due to its easy accessibility and personalization. These findings confirmed the findings of the quantitative portion of the study. Finally, the qualitative data revealed that the anytime, anywhere, on the spot learning of Twitter is important for educators to use in the future to utilize to keep up with the 21<sup>st</sup>-century skills needed to teach students.

## **Findings Related to the Literature**

An examination of the current study's findings as they relate to the literature regarding staff members' perceptions of the usefulness of a PLN on Twitter is found in

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this section. Previous research has been conducted to examine staff member's perceptions of PLNs on Twitter (Catlett, 2018; Deyamport, 2013; Lalonde, 2011; Powers, 2017). This study confirms previous research regarding staff members' perceptions of the usefulness of a PLN on Twitter (Davis, 2012; Gustafson, 2014; Larson, 2016).

Ross et al. (2015) found that educators prefer receiving professional development through Twitter. Ross et al. (2015) also found that 90% of participants "indicate that they are extremely likely to use Twitter professionally within the next six months" (p. 68). Langhorst (2015) found that participants perceive that Twitter was more beneficial for their professional learning than traditional professional development models. Additionally, Carpenter and Krutka (2014) found that 96% of their participants prefer professional learning on Twitter more so than other means. Similarly, the results of the current study indicated that by maintaining a PLN on Twitter, staff members make significant progress toward their professional development goal, believe it to be a valuable part of their professional development, and acknowledge the benefits of learning compared to a traditional model of professional development. The findings of the current study are in contrast to Ivanova et al. (2012), who found that only 35% of educators define Twitter as a tool for professional development.

Ivanova et al. (2012) found that "70% of educators recognize Twitter as a powerful tool for teaching and learning" (p. 6). Similarly, the results of the current study indicated that staff members perceive their PLNs on Twitter have had a positive impact on their classroom practices and obtained valuable resource and strategies. The results of Catlett's (2018) study indicated that 100% of participants agree that "the ability to share resources and curate ideas is an integral function of Twitter" (p. 74). Additionally,

Carpenter and Kruta (2014) found that teachers use Twitter for classroom activities and resources. The results of the current study support the findings of Ivanova et al. (2012), Catlett (2018), and Carpenter and Kruta (2014). In contrast, Deyamport (2013) found that some participants cite time, information overload, and source credibility as barriers to a PLN on Twitter. The current study did not support Deyamport's findings; however, during the interview when answering an interview question, Participant 4 was the only interviewee in the current study who mentioned source credibility on Twitter. Ultimately, Participant 4 did not perceive that it was a barrier to effectively obtaining resources from Twitter.

Lalonde (2011) found that Twitter is a platform that allowed users to communicate and collaborate through dialogue and participate in interactions that included sharing experiences, resources, offering support, and providing feedback from questions asked by users. The results of the current study indicated that staff members perceive Twitter to be an effective platform for a PLN. Similarly, Deyamport (2013) found that 100% of participants agree that Twitter is an effective platform for a PLN. According to the results of Tucker's (2016) study, 80% of participants value their professional growth through Twitter and plan to continue using it. The results of the current study indicated that staff members plan to continue their PLNs on Twitter for professional development.

At the time of conducting research, literature in relation to the effect of staff members' years of education experience on their perceptions of their PLNs on Twitter was not found. Additionally, no research was found related to staff members' level of employment compared to perceptions of the usefulness a PLN on Twitter. Therefore, the researcher was not able to compare these findings from the current study to previous studies.

#### Conclusions

This mixed methods study was designed to examine staff members' perceptions of the usefulness of their PLNs on Twitter and experiences with a PLN on Twitter. This section includes implications for action and recommendations for future research. This section ends with concluding remarks.

**Implications for action.** The findings of the current research study provide implications for action pertaining to the usefulness of Twitter for professional development purposes. This mixed method study was designed to gather insight into the effectiveness of a PLN on Twitter to provide professional development. The findings of both the quantitative and qualitative portions of the study reveal that staff members from District JRZ perceive a PLN on Twitter to be effective; therefore, the researcher recommends that the district continue providing professional development opportunities related to establishing and continuing a PLN on Twitter.

One of the findings from this current research study indicated that staff members' level of employment does make a difference in the perceptions of staff members' ability to obtain resources from Twitter. Because of this finding, the researcher suggests that District JRZ provide different PLN and Twitter support to elementary and secondary educators. With professional development supports to fit individual needs, staff members are more likely to gain the support needed to use a PLN on Twitter properly for professional growth. All participants in the qualitative portion of the study agreed that following experts on Twitter lead to increased learning after returning from conferences or other professional development trainings. The researcher recommends that staff members be encouraged to follow training leaders as they return from conferences. Additionally, these staff members could share their experiences and additional information or examples they have found on Twitter with their other staff members. By allowing other staff members to share their Twitter experiences, District JRZ would be motivating all staff members to continue with a PLN on Twitter.

**Recommendations for future research.** The following recommendations represent areas in which the researcher has identified the possibility of further research. The first recommendation is to replicate this study in other school districts. Although the current study found a PLN on Twitter to provide beneficial professional development opportunities, other districts might not yield the same results. Additionally, comparisons could be made among urban, suburban, and rural teachers regarding the use of a PLN on Twitter.

Data in the current study were collected from staff members using Twitter to support a PLN. The second recommendation, then, is to research the effects of PLNs maintained on other social media sites. This research could provide additional insight into professional development through social media and inform school district leaders about the best methods for providing relevant professional development to all educators.

The third recommendation is to conduct a study with non-Twitter users as the participants. The current research study surveyed active Twitter users. Researching why staff members do not use Twitter could provide valuable information for a district-level

leader when determining the best professional development opportunities for staff members.

The final recommendation for future study is to compare staff members' perceptions of the usefulness of a PLN on Twitter and student achievement. The main goal of professional development is to increase student learning. It would be interesting to see if there was a correlation between active Twitter usage and student state test scores or student growth during a school year.

**Concluding remarks.** The purpose of this study was to determine staff members' perceptions of the usefulness of a PLN on Twitter. The findings of this study showed that staff members believe their PLNs on Twitter are valuable for professional development and classroom practice. Additionally, the results indicated that staff perceive Twitter to be an effective platform for maintaining a PLN and plan to continue engaging with their network for professional development purposes. The results of the current research study provide data that can assist district leaders in making decisions related to the professional development of educators, especially using current technologies.

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## Appendices

Appendix A: Permission to Use Survey

Emily Yoakam <yoakamemily@

# Permission to Use- Survey/Interview 2 messages

Dr. W. H. Deyamport III,

I am a doctoral student from Baker University in Overland Park, Kansas. The topic of my dissertation is the use of Twitter for informal professional development, specially researching personal learning networks under the direction of my major advisor, Dr. Susan Rogers.

I would like your permission to use and modify your survey instrument and your questions used during the interview process in my research.

Sincerely,

Emily Yoakam

Will Deyamport, III, EdD <whdeyamportiii@gmail.com> To: Emily Yoakam <yoakamemily@r

Tue, Mar 13, 2018 at 2:38 PM

Emily,

Thank You for reaching out to me. You have my permission to use or modify my survey instrument and focus group interview questions for your doctoral research and dissertation.

Sincerely,

Will Deyamport, III, Ed.D. [Quoted text hidden]

Will Deyamport, III, Ed.D. Tour guide to *leading* digital change. Company website: The Deyamport Group Blog: http://www.thedrwillshow.com Tue, Mar 13, 2018 at 2:26 PM

## **Appendix B: Original Survey from Deyamport**

## **Twitter/PLN Survey - Survey Questions**

Please answer all of these questions to the best of your ability.

## 1. How long have you taught?

- a. Less than 1 yearb. 1 to 5 years
- 10
- c. 6 to 10 years
- d. 11 to 15 years
- e. 16 to 20 years
- f. 21 or more years

2.Please indicate the grade level(s) that you are currently assigned.

**3.**Please indicate the subject area(s) that you are currently assigned.

# 4.I have made significant progress toward my professional development goal via my PLN.

| Strongly disagree   | Disagree                          | Agree                    | Strongly agree           |
|---|-----------------------------------|--------------------------|--------------------------|
| <b>5. My PLN has been a valu</b><br>Strongly disagree         | able part of my profe<br>Disagree | essional develo<br>Agree | pment.<br>Strongly agree |
| 6. My PLN has had a positive impact on my classroom practice. |                                   |                          |                          |
| Strongly disagree   | Disagree                          | Agree                    | Strongly agree           |
| 7. I have obtained resources and strategies from my PLN that  |                                   |                          |                          |
| I use in my classroom.  |                                   |                          |                          |
| Strongly disagree   | Disagree                          | Agree                    | Strongly agree           |
| 8. Twitter is an effective platform for developing a PLN.     |                                   |                          |                          |
| Strongly disagree   | Disagree                          | Agree                    | Strongly agree           |
### 9. I plan to continue with my PLN for professional

### development.

| Strongly disagree | Disagree | Agree | Strongly agree |
|-------------------|----------|-------|----------------|
|                   | 8        | 0     |                |

10. Did your PLN support you in making progress toward your professional development goal? If so, how?

11. In what ways, if any, do you consider your PLN a valuable part of your professional development?

12.In what ways has your PLN had a positive impact on your classroom practice?

13. Which resources or strategies that you discovered through your personal learning network have you used in your classroom?

14. How has Twitter been effective in developing a PLN? In what ways, if any, has Twitter provided professional learning opportunities not available through other means?

15. What was the most important thing you learned during your participation in the study?

16. Having participated in this study, do you feel as though you are now part of a larger community of teachers? If so, how has this community impacted your thoughts on what is good professional development?

17. Please provide any other feedback or comments about your experience over the past six weeks related to PLNs, Twitter, and self-directed informal professional development opportunities. Include suggestions for improving the use of Twitter for professional development purposes.

# Appendix C: Current Survey for Study

#### TWITTER/PLN SURVEY -

Please answer these questions to the best of your ability by indicating your level of agreement with each statement.

1. I have made significant progress toward my professional development goal via my PLN on Twitter.

Strongly disagree Disagree Neutral Agree Strongly agree 2. My PLN on Twitter has been a valuable part of my professional development. Strongly disagree Disagree Neutral Agree Strongly agree

My PLN on Twitter has had a positive impact on my classroom practice.
Strongly disagree Disagree Neutral Agree Strongly agree

4. I have obtained resources from my PLN on Twitter that I use in my classroom.

Strongly disagree Disagree Neutral Agree Strongly agree

5. I have obtained strategies from my PLN on Twitter that I use in my classroom.

Strongly disagree Disagree Neutral Agree Strongly agree 6. Twitter is an effective platform for developing a PLN.

Strongly disagree Disagree Neutral Agree Strongly agree 7. I plan to continue with my PLN on Twitter for professional development. Strongly disagree Disagree Neutral Agree Strongly agree

### Second page of survey.

8. How long have you worked in education?

a. Less than 1 year

- b. 1 to 5 years
- c. 6 to 10 years
- d. 11 to 15 years
- e. 16 to 20 years
- f. 21 or more years

9. Please indicate your position in the district.

Teacher \_\_\_\_\_ Administrator\_\_\_\_ Other: please specify \_\_\_\_\_

3. Please indicate the grade level at which you work.

PK-5\_\_\_\_ 6-12\_\_\_\_ Other (please specify) \_\_\_\_\_

### Third page of survey.

If you are willing to be interviewed for the qualitative portion of my research project for my doctoral dissertation at Baker University, please respond to me, Emily Yoakam, at this email address <u>yoakamemily@gmail.com</u>. You will remain anonymous and all of your personal information will be kept confidential when I report the interview data.

Appendix D: Permission Granted for Study



#### **Dissertation Topic**

2 messages

**Emily Yoakam** <yoakamemily@ To:

Hey,

So I met with my advisor last night and have a general idea for my dissertation topic.

I would like to look at the use of social media for professional development in education.

I am still working on narrowing down the specific research questions and methods for research. Would I be able to use teachers and administrators in the District?

Right now, I am looking at both quantitative (through a survey) and qualitative (most likely focus-groups/ possibly interviews) for gathering data.

Hope your dissertation is coming along!

Happy Almost Friday! Emily

To: Emily Yoakam <yoakamemily

Tue, Mar 6, 2018 at 2:34 PM

Thu, Feb 22, 2018 at 11:47 AM

Sorry, it took me so long to respond. You can definitely use the Neosho staff. I am excited to hear about your research. That is a great topic. I haven't done much on mine. I am hoping to work on it over Spring Break. Things at school have kept me busy and I keep putting the dissertation on the back burner.

[Quoted text hidden]



# Appendix E: IRB Approval



Baker University Institutional Review Board

August 27th, 2018

Dear Emily Yoakam and Susan Rogers,

The Baker University IRB has reviewed your project application and approved this project under Expedited Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

- Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
- Notify the IRB about any new investigators not named in original application.
- When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
- If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
- If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.

Please inform this Committee or myself when this project is terminated or completed. As noted above, you must also provide IRB with an annual status report and receive approval for maintaining your status. If you have any questions, please contact me at <a href="mailto:npoell@bakeru.edu">npoell@bakeru.edu</a> or 785.594.4582.

Sincerely,

Nathan D. Par

Nathan Poell, MA Chair, Baker University IRB

Baker University IRB Committee Scott Crenshaw Jamin Perry, PhD Susan Rogers, PhD Joe Watson, PhD

# **Appendix F: Survey Cover Letter**

Dear \_\_\_\_:

You have been selected to participate in a study of staff members' perceptions of the usefulness of their personal learning network on Twitter. In this study, the perceived value of your personal learning network on Twitter's ability to assist in meeting professional development goals will be studied. Additionally, the study seeks to determine if these perceptions are dependent on an educators' number of years of education experience, level of employment, and staff position.

I appreciate your participation in this study. To obtain a valid measurement, please complete found by clicking on the link at the end of this email by September 15, 2018. Your participation in this research is voluntary and you may choose to withdraw at any time without penalty or repercussion. You may choose not to answer some or all of the questions. There are no risks from your participation and no direct benefit from your participation is expected. There is no cost to you except your time. The survey will take about ten minutes for you to complete.

You may be assured of complete confidentiality. Your name will never be used. Under no circumstances will individual data be shared or reported.

If you have any questions or concerns about your rights as a research participant, contact me, Emily Yoakam. Should you have any other questions, please contace me (<u>yoakamemily@gmail.com</u> or 913-775-2924) or my major advisor, Dr. Susan Rogers (<u>srogers@bakeru.edu</u> or 785-230-2801. Thank you for your time and cooperation.

https://goo.gl/forms/ea4qk7uRfHMQQ71r1

Sincerely,

Emily Yoakam Baker University Doctoral Candidate

# **Appendix G: Interview Consent Form**

Consent Form for Interviews

You are invited to participate in research conducted by Emily Yoakam related to staff members' perceptions of the usefulness of their personal learning network on Twitter. Your participation will take approximately 45 minutes.

The purpose of this study is to determine staff members' experience with a Twitter supported personal learning network as it relates to their professional development goal.

I am asking your permission to conduct and record an interview with you as part of the research. The recording will be used to assist in writing field notes. The recording will include only your gender, number of years of education experience, level of employment, staff position and a pseudonym, not your actual name. The recordings will be stored in a secure digital file and will be destroyed after the dissertation has been defended. I will not use the recording for any other purpose than those stated in the consent form.

Your signature on this form grants me, as the investigator, permission to record you as described above during participation in the above-referenced research.

If you have read this form and have decided to participate in this project, please understand your participation is voluntary, and you have the right to withdraw your consent at any time. You have the right to refuse to answer particular questions. Your individual privacy will be maintained in all published and written data resulting from this study.

If you agree to participate in this research, please sign your name on the line below along with filling out the other information below.

Sign your name

Date

Print your name

Email Address

Phone Number