CHANGING THE LANDSCAPE OF PROFESSIONAL LEARNING:
A PRACTITIONER INQUIRY STUDY OF TECHNOLOGY INTEGRATION
WITHIN LITERACY

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APPROVAL

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ABSTRACT

Practitioner Inquiry provided the framework for teachers (participants) and the teacher as researcher to work collaboratively engaging in a continuous process of planning lessons, reflecting on practice, systematically collecting data, and problem solving as they integrated technology within literacy curriculum. Three teachers (Trio Group) met weekly to discover how teachers learn about literacy technology integration, how they apply this in their classroom instruction, and how they share their ideas about literacy/technology integration with other teachers. These teachers shared their learning with a larger group of teachers (Technology Team) who then hosted a professional development session for the entire faculty to teach them how to integrate technology within instructional practice. Data was gathered from faculty surveys, lesson plans, the Trio Group's blog posts, videotaped collaboration, audio recordings of all meetings, researcher's field journal, and the final reflections of faculty. Data was analyzed using "in vivo coding" (Saldana, 2009), looking at each data source independently, and then creating larger categories that led to a descriptive view of the data in themes. Key findings that positively impacted teachers' ability to learn how to integrate technology were: acknowledging teachers' perceptions, providing time for collaboration with colleagues, application of practice, scaffolding the learning, and job embedded reflection. Implications include considering a broader view of literacy, technology, and instructional knowledge to include digital literacy and the TPACK framework (Kohler & Mishra, 2009). Implications also include re-envisioning the roles of educators as well as traditional professional development. Collaborative Inquiry Circles were suggested as an alternative to the traditional methods of professional development that could lead to meaningful and sustainable learning opportunities for teachers.

Chapter One: Introduction

Research Problem and Rationale

During the summer of 2013, a small group of teachers and I attended an iPad institute, held in Chicago, that was sponsored by the Bureau of Education and Research (BER) entitled “The Best Use of iPads and iPad Apps to Enhance Learning”. Our principal sent interested members from the school technology team to the training because of the new technology provided for our teachers by our PTA. Our district also purchased iPads for every teacher that year. Therefore, teachers in our building had access to two iPads in their classrooms on a daily basis.

Prior to attending the iPad Summer Institute, we registered for different sessions in an attempt to diversify our learning. Although we had good intentions, this was not the best plan. The iPad Summer Institute introduced us to a plethora of ideas on how to use iPad apps in both our instructional and professional practice. We were overwhelmed with information during those three days. The presenters focused the majority of their teaching on how to use iPad apps rather than on how to integrate the apps within curriculum. In addition, we were not provided time during the sessions to apply our learning or make connections with the curriculum we were required to teach. Because we attended most sessions in isolation, it was difficult to discuss our learning with each other. We left the institute with good intentions of implementing what we learned; however, because we did not schedule a specific time to meet and discuss our learning, it did not happen. When we returned from the conference, we did not share our learning with each other or our colleagues. We were in summer mode, and since there wasn't a specific expectation that we share our learning with faculty, we did not. Once the school

year began in August, we were faced with the whirlwind of beginning school, and the iPad conference was long forgotten.

More significantly, we did not remember nor implement what we learned during the Institute. Later in the school year, one of the teachers who attended the iPad Summer Institute wanted to use podcasting as a way for students to tell their stories about the creative place they imagined and wrote about on their blog. Both the teacher and I had learned about podcasting at the iPad summer institute, yet neither of us remembered the training. We also forgot that we received a book during the institute that contained step – by- step directions for many iPad apps, including how to use Voice Record to create podcasts. Because we did not remember this guide, we wasted time looking for apps that would support our curriculum objectives. As I was researching, I happened to come across the book, which included information on how to create podcasts with students. This was exactly what the teacher and I had needed. However, because we had forgotten the training we received from the iPad Summer Institute, we spent valuable time researching and learning how to use the Voice Recorder app for a second time.

A similar instance occurred when teachers in our school wanted to use Pic Collage and 30 Hands for projects with second and fifth grade students. We spent time learning these apps on our own, when steps by step directions were located in the book from the iPad Summer Institute. I shared with our Technology Team, "There were so many ideas in the book, many we had tried this year, like TodaysMeet, Pic Collage, Sock Puppets, yet we completely forgot they were in the book or that we had attended training on these apps. The unfortunate part was the time we wasted searching for information on how to use these apps when the information was right at our fingertips. Even more

humiliating, we forgot we attended the training!” (Tech Team Video, 4/23/14). Three Technology Team members attended the Institute, had the book and still did not remember or apply the learning. In fact, it is questionable whether any learning occurred at all.

A third example occurred during the mandatory professional development sessions teachers were required to attend prior to the first day of school. The school district adopted an online reading program called MYON reader. Teachers were required to attend professional development to learn the features of MYON reader. MYON is an interactive digital library with over 4,000 books geared for children pre-K through 12th grade. Even though several teachers from our school attended this professional development session, we did not remember how to use the features of MYON reader because we did not apply our learning right away or have an immediate use for it. We were only taught the basic features of the program, not ways to integrate it with our curriculum. We were not given time in the session to discuss integration. Kate lamented as we began this inquiry project in January, “I still have not had time to explore the teacher features on MYON reader, and I definitely want to do that so that our use of MYON can be more purposeful” (reflection journal, p.5). We wanted to learn how to make book lists in MYON reader to go with social studies and science units so students could read online books during their independent reading time. Stephanie stated, “I would like to explore more about the teacher management part of MYON. I would like to use the additional technology with my reading groups” (reflection journal, p.1). Unfortunately, that never happened.

These experiences made me question the relevance of professional development.

What changes need to happen so that the professional development teachers attend is not only relevant but also applicable to their daily teaching practice? I wondered how teachers learn, not only to use the technology but, more importantly, how to apply it within their instructional practice. It was disconcerting to me that we had spent time and money attending training and had little to show for our efforts. Therefore, the purpose of this study was to discover how practicing teachers learn to integrate technology within their literacy curriculum and then share their learning with other teachers.

Rationale

In the past decade, research has shown that computer technology is an effective means for widening educational opportunities, yet few teachers integrate technology into their curriculum (Bauer & Kenton, 2005). Literacy teachers are charged with developing all mainstream aspects of literacy, including those involving information and communication technologies (ICTs) (Hutchinson & Reinking, 2011). They have a significant responsibility to not only foster students' ability to read and write but also to incorporate technology into their classrooms (Baker, 2000). However, Bauer and Kenton (2005) found that even teachers who were educated and skilled with technology did not integrate technology on a consistent basis as both a teaching and learning tool.

This perceived lack of adequate integration is the implicit rationale behind several prominent professional organizations that stress the necessity of integrating ICTs with literacy instruction (Hutchinson & Reinking, 2011). For example, the International Literacy Association adopted a position statement recognizing the importance of technology- based instruction:

“...to become fully literate in today’s world, students must become proficient in the new literacies of the 21st century technologies. ILA believes that literacy educators have a responsibility to integrate information and communication technologies (ICTs) into the curriculum, to prepare students for the futures they deserve” (ILA, 2009, n.p.).

The National Education Technology Standards (NETS) suggest that teachers facilitate and inspire student learning and creativity by developing digital-age learning experiences and assessments as well as model digital-age work and learning (ISTE, 2008).

Likewise, the Common Core State Standards Initiative that many states have adopted recommends that teachers provide research opportunities that involve reading both print and digital texts and that require writing in response to reading. Specifically stated:

“They (students) use technology and digital media strategically and capably. Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. They tailor their searches online to acquire useful information efficiently, and they integrate what they learn using technology with what they learn offline. They are familiar with the strengths and limitations of various technological tools and mediums and can select and use those best suited to their communication goals” (Common Core State Standards Initiative, 2010).

Thus integrating digital technologies into literacy instruction and equipping students with the literacy skills necessary for reading, writing, and communicating in digital environments is no longer a choice but an essential instructional practice for literacy teachers. Yet, teachers struggle to efficiently and effectively integrate technology with the requirements of traditional literacy curriculum in a limited time frame (Hutchinson & Reinking, 2011).

Most teachers neither use technology as an instructional delivery system nor integrate technology into their curriculum (Bauer & Kenton, 2005). Many teachers recognize the necessity of technology integration but lack the knowledge to do so. As Girod and Cavannaugh (2001) suggest, “The fact remains that many educators only use technology to amplify what is currently being done” (p.1). Often teachers’ instructional practice reflects a context of teaching as usual. Despite intensive research over the last 20 years, digital technologies have not permeated the everyday practices of schooling (Honan, 2008). When teachers described their classroom practice they focused on teaching technical skills rather than teaching the literacy resources needed to create or make meaning from texts. Teachers were concerned with teaching how to use the technology rather than using the technology in their daily practice as a tool to promote meaningful learning (Honan, 2008).

One challenge teachers face is defining the term technology because it is constantly evolving. Throughout history, technology has impacted our views and beliefs about what it means to be literate. It began when oral speech was transformed into print with the simple technology of a pen. Eventually this led to the printing press, which provided the ability to mass-produce books. The impact of the printing press on society was unprecedented. The success of the printing press made books cheaper and more accessible to all instead of only the elite. This invention led to the spread of literacy and progressively people saw the importance of becoming literate (Ament, 2007).

Currently, the Internet has become our new technology. It has much the same impact as the printing press did over 500 years ago. Today, more than 500 million people around the world are connected to the Internet (Arment, 2007). This technology has

provided an avenue for millions of people to gain access to information, communicate with people from around the globe, and have instant access to major events that impact their lives. Leu, Leu & Coiro (2004) believe this technology is greatly impacting literacy skills as well as our current views on how to teach literacy. They consider the Internet an important technology for literacy. Just as literacy skills are required to use book, paper and pencil, they suggest that new literacy skills are necessary to effectively use the Internet.” (Leu, Leu & Coiro, 2004).

The teachers involved in this study also struggled with defining technology. Many researchers refer to technology as information and communication technologies or ICTs (Hutchinson & Reinking, 2011). This encompasses technologies that provide access to information and opportunities to communicate with others. After collaborative discussions with teachers, we defined technology as any tool or device, program or app, including the Internet that is used to support learning and communication. This is the definition we used for the purposes of this inquiry study understanding the evolving nature of the term. Ultimately, we see technology as the tools that enhance and support learning.

Many researchers suggest that teachers have made little progress with technology integration because of the ineffective professional development opportunities they have been afforded (Allington, 2012; Hutchinson & Reinking, 2011; Liebermann, 2008). Cole and Knowles (2000) found that most professional development opportunities are ineffective because they are conceptualized and designed for teachers and delivered to teachers without considering the teachers’ voice. Educational planners think in terms of knowledge created outside of schools and disseminated or diffused into schools where it

is implemented or utilized by practitioners. They seek professional development opportunities that are often implemented not by those who work in schools but by those deemed as “experts” on a current trend in educational practice (Anderson, Herr & Sigrid, location 1231). Privileges associated with knowledge, how it is defined and by whom, are given to those who “know” (Cole & Knowles, 2000). Similarly, Cochran-Smith and Lytle (2009) allege that those without authority, teachers for example, have knowledge but do not participate in the development of knowledge. Mistakenly, teachers have often been betrayed as “childlike creatures who foolishly resist attempts to bring about changes based on research done in universities” (Anderson et al., location 1231).

Although researchers are considered “knowers” of knowledge by society in general, teachers often question this knowledge because from their perspective, researchers lack the practical side of “knowing.” When researchers enter a school setting that they are not a part of, they are often seen as persons who do not experience the real world of teaching. Their legitimacy is questioned because they are not living the daily life of teaching. Some of them never have. Therefore, teachers are ambivalent about academic research and the field’s lack of information about classroom life (Cochran-Smith & Lytle, 2009). As these authors succinctly state:

“The knowledge needed for teachers to teach well and to enhance students’ learning opportunities and life chances could not be generated solely by researchers who were centrally positioned outside of schools and classrooms and imported for implementation and use inside schools” (p. vii).

They propose the essential questions should be about generating deeper understanding of how students learn from the perspective of those who do the work

(Cochran-Smith & Lytle, 2009, p. 58). While understanding how students learn is a necessary and worthwhile goal, I suggest looking at this from a different viewpoint.

What happens when we shift our focus of how students learn to how teachers learn?

Often professional development focuses on student learning. While this is a necessary endeavor, what about how teachers learn? Lieberman (1995) calls for a radical rethinking of professional development and argues that teachers and students learn in similar ways, yet those who provide professional development seldom recognize this.

According to Lieberman (1995), “What everyone appears to want for students, a wide array of learning opportunities that engage students in experiencing, creating, and solving real problems, using their own experiences and working with others, is for some reason denied to teachers when they are learners” (p.591). Similarly, several researchers agree that school systems need to consider alternatives to the traditional “one shot, talking head” workshop approach (Allington, 2012; Anderson et al., 2007; Sparks & Hirsh, 1997). Fullan (2008) states, “there is far too much going to workshops, taking short courses and the like, and far too little learning while doing the work” (p.13). He suggests personalizing education to the people we are actually teaching. Because human talents are so diverse, he suggests moving away from conformity and creating a movement in education where teachers can develop their own solutions with support and guidance. Schrum and Levin (2009) state, “It is important to remember that one type of learning does not meet everyone’s individual needs” (p. 108). In their study, they found providing a variety of ways to learn (small group, demonstration lessons, just-in-time learning) was effective (Schrum & Levin, 2009). Allington (2012) laments that teachers repeatedly complain about the ineffectiveness of this approach, yet schools continue the same

pattern year after year. In order to integrate technology in meaningful and sustainable ways, as Allington (2012) states, “It is time to rethink professional development” (p.160).

Purpose of the Study

In light of these assertions, the purpose of this research is to ascertain what happens when a small group of three teachers learn to integrate technology within their literacy instruction. Not only will the study investigate how teachers learn to use the technology but also how they integrate the technology within their instructional pedagogy. Ultimately, it is the teachers who have the greatest impact on student achievement, not the technology (Allington, 2012).

Therefore it is imperative that teachers are afforded opportunities to learn in meaningful ways. By meaningful, I mean learning that is active, constructive, intentional, collaborative, and authentic to teaching practice (Howland, Jonassen & Marra, 2012). Specifically, I wanted to know what happens as teachers learn in small groups rather than the “traditional” methods of professional development mentioned previously. What happens as a small teacher group inquires how to integrate technology with their literacy curriculum and then shares this knowledge with their colleagues? What happens when we “rethink professional development” as Allington suggests (2012, p.160)?

Research Questions

The questions that emerged from previous experiences with professional development and that served to guide this practitioner inquiry study are as follows:

What happens when a small teacher group explores how to integrate technology within their literacy curriculum?

A. How do teachers learn about literacy technology integration?

- B. How do they apply this in their classroom instruction?
- C. How do they share their ideas about literacy/technology integration with other teachers?

Methodological Procedures

To answer these questions, this inquiry was conducted as a practitioner inquiry study. I chose to conduct this study using the tenets of practitioner inquiry because it provided a way for me to be a part of the inquiry process instead of an outsider. Practitioner inquiry is inquiry that is done by or with insiders in an organization or community but never to or on them. It is a reflexive process done deliberately and systematically. It requires some form of evidence to support assertions (Cole & Knowles, 2000). Like Cochran-Smith & Lytle (2009), I believe that those who bring about significant changes in practice are the teachers closest to the day-to-day work of teaching and learning. Anderson (2007) suggests that practitioner inquiry has the potential for empowerment and inclusion of a greater diversity of voices in educational change. As do Cochran-Smith and Lytle (2009), he sees this type of research as an opportunity to make the voices of those who work closest to the classroom heard. Exploring this relatively new paradigm has the potential to bring about social change from the bottom up. It has the potential to give teachers ownership in their learning, as well as a necessary voice in the educational community (Anderson et al., 2007).

To conduct this study, I worked with two teachers from my school. Together we formed a small teacher group that explored and shared ways to integrate technology within our instruction. We then shared our learning and experiences with a larger group of teachers, the school technology team. The Technology Team learned how to use and

integrate technology within their literacy curriculum. They in turn shared their learning with the faculty members they represented. Based on our learning, the Technology Team hosted a professional development session for the entire faculty to teach them how to integrate technology with their instructional practice. Finally, all faculty members participated in a final reflection about their own learning and experiences with technology integration.

I collected data for four months from February through May 2014. During these months, I met weekly with the small group of teachers and bi-monthly with the Technology Team. The small group of teachers reflected on their learning and experiences with technology in their weekly reflection journals. I also audio taped and transcribed our weekly and monthly reflection meetings. I videotaped the Technology Team meetings and transcribed relevant portions of our conversations. We also collected data through participation in technology surveys and through informal interviews conducted in focus groups with our faculty. Throughout the study I kept my own researcher journal to note observations and my own thinking. The data was kept in shared folders on Google Drive so that participants had equal access to the data and the opportunity to comment, question, and make suggestions throughout the inquiry process.

Theoretical Framework

Several theories informed and guided our thinking as we conducted this study; however, constructivism, social constructivism, social learning theory, and andragogy played prevalent roles and were the foundation for our work. I will briefly describe the theories here and will elaborate further in the following chapters.

Constructivism/Social Constructivism

Constructivism is based on the idea that people actively learn from their environment by reflecting on the experiences around them. Active learning requires the learner to continually assimilate new information to construct knowledge. Dewey suggested that students were active learners who could achieve their own learning with the teacher serving as a guide; students learned by exposure to real world problems that were of interest to them and by reflecting on their learning (Archambault, 1964). Technology integration provides access for teachers to be involved in solving real-world problems and broadens their learning experiences by allowing them to interact and collaborate with teachers from around the world. Like Dewey (2008), Vygotsky (1978) believed in social constructivism. Social constructivism is a theory of knowledge wherein groups construct knowledge for one another, collaboratively creating a small body of artifacts with shared meanings. Similar to constructivism, the idea of social constructivism centers around collaborative, social interactions that encourage the teacher to become a facilitator and for students to take ownership in their learning (Vygotsky, 1978). Emphasis is placed on learning through social interaction. Pairing teachers with someone who has more knowledge or skills allows them to enter the Zone of Proximal Development (ZPD). This is an area in which teachers maximize learning through collaboration with a more knowledgeable colleague or perhaps their students. While in the zone, teachers make sense of what they are being introduced to, work through the concept with another person who understands it, and ultimately emerge with comprehension of the topic. From the beginning, the small group of teachers with whom I worked acknowledged their beliefs in social constructivism as a theoretical foundation for learning. Working with a more knowledgeable peer, as Vygotsky (1978) refers to it,

occurred throughout the study as teachers collaborated with each other and their students to learn how to use and integrate technology.

Social Learning Theory

While there are similar components, social learning theory differs from social constructivism in that social constructivism focuses primarily on the interactions between individuals rather than on their observations of each other. Social learning theory draws heavily on the concept of modeling or learning by observing others. Bandura (1977) suggests there are three kinds of modeling that impact learning: live model, verbal instruction, and symbolic instruction. The kind of information gleaned from observing is influenced by the type of model used (Bandura, 1977). During the inquiry study, modeling how to use technology and observations of both students and teachers integrating the technology were important components as teachers learned how to integrate technology.

Andragogy

Andragogy, popularized in the United States by Malcolm Knowles (1984), is based on the theory that adults are self-directed, autonomous learners who benefit from facilitated learning rather than direct instruction. Knowles (1984) theorized that for adults to learn, they need to know the reason for learning something, to experience the learning, to be responsible for their learning, and to understand the immediate relevance to their work or personal lives. Adults respond better to internal motivators therefore, their learning needs to be problem centered rather than content oriented (Smith, 2002). Knowles (1984) provided an example of applying andragogy principles to learning how to use technology. He believed that to learn how to use technology, there is a need to

explain the reasons specific things are being taught (e.g., certain commands, functions, operations, etc.). Instruction should be task-oriented instead of geared toward memorization- learning activities should be grounded in the context of common tasks to be performed by the others. The instruction should take into account the wide range of different backgrounds of learners; learning materials and activities should allow for different levels/types of previous experience with devices. Since adults are self-directed, instruction should allow learners to discover knowledge for themselves without being dependent on others. However, it is important that support and guidance are available when learners have questions.

It is interesting to note the commonalities among these theories. They emphasize that learning is an active process and that the responsibility for learning is a shared experience with others, including the teacher. Learning is seen as a social, interactive process that gives the learner ownership of learning instead of the traditional view where the teacher is seen as the one with the knowledge to impart to his or her students. As we conducted this inquiry study, we found that sharing responsibility for learning was an important component as we learned how to integrate technology with our curriculum. These theories provided the foundation for our inquiry as we sought to discover how teachers learn to use and apply technology with their instructional pedagogy.

Organization of the Study

This dissertation is organized in the following manner. Chapter one provides a brief overview of the inquiry project. It explains the rationale for the study, the research questions, and significant theoretical underpinnings, as well as the methodological limitations of the inquiry project. Chapter two provides an in-depth review of the

literature that influenced this study. It addresses technology integration within literacy instruction, teacher perceptions, andragogy, teacher collaboration and reflection and professional development. Chapter three explains my methodology and the procedures I used to conduct this practitioner inquiry study. It includes my research design, a description of the participants and site, as well as my data sources and data collection procedures. I also include the initial analysis procedures, and the steps I took to ensure the trustworthiness of the study. Chapter four provides the rationale behind this inquiry study, a brief overview of the phases of inquiry, and an analysis of the themes that emerged during the phases of the practitioner inquiry study. Chapter five presents my conclusions and interpretations as well as implications for teachers, administration, and further research.

Chapter 2 Review of Literature

Often technology has been seen simply as a set of tools that extend current pedagogical practice (Girod & Cavannaugh, 2001). However, technology is no longer a supplemental teaching tool, rather it is essential to student learning and has the potential to radically change what teachers do and how they do it (Ertmer & Ottenbreit-Leftwich, 2010). Technology integration pushes views of instructional pedagogy to new levels and challenges teachers to rebuild pedagogical practices, routines and thinking in ways that reflect the changing sociological and technological climate in which our students learn (Girod & Cavannah, 2001). This is especially true in the area of literacy, where new literacy skills are necessary to successfully navigate the Internet (Leu, 2006).

Teachers need support and training to integrate technology within their literacy practice. However, traditional methods of professional development have largely been

ineffective in teaching teachers how to use and integrate technology. There has been much research and exemplary practices supporting the use of digital technologies in instructional practice, yet they have yet to infiltrate the everyday practices of schooling (Honan, 2008). Teachers have the greatest influence on student learning; therefore educating them well positively impacts student achievement (Schmoker, 2006). Often school structures make learning for teachers unlikely at best and almost impossible at worst (Ferriter, 2009). Most teachers are frustrated by professional development that has little effect on improving their practice or student learning. A history of inadequate professional development experiences has left many teachers “jaded and groaning” when given the opportunity to learn (Ferriter, 2009, p. 35).

Therefore, the primary purpose of this inquiry project has been to discover important components that will support teachers as they learn to integrate technology within their literacy curriculum. The areas explored in my literature review are focused on technology integration, teacher learning and professional development. This chapter outlines critical aspects that provide the framework for my study. These include: 1) technology integration within literacy, 2) teacher perceptions of technology, 3) teacher learning or andragogy, 4) teacher collaboration, 5) teacher reflection, 6) school leadership, 7) issues with professional development, and 8) alternatives to professional development.

Technology Integration

The Internet has quickly become the defining medium for information, reading, communication, culture and learning (Baker, 2010). Because of this, our definition of literacy and what it means to be literate in the 21st century has broadened. Don Leu

(2006), Neag Endowed Chair in Literacy and Technology, suggests that the Internet has changed the nature of literacy. The nature of literacy has become deictic in that we live in an age of rapidly changing information and communication technologies, each of which requires new literacies (Leu, 2006). In other words, literacy is new every day because of our encounter with new technologies such as Google, Skype, Dropbox, Chrome, Facebook, etc. To be literate tomorrow will be defined by even newer technologies that have yet to appear. To account for the continuous changes taking place, the term New Literacies has been framed based on the following common elements (Leu, 2006):

1. New Literacies include the skills, strategies, dispositions and social practices that are required by new technologies for information and communication.
2. New Literacies are central to full participation in a global society.
3. New Literacies regularly change as their defining technologies change.
4. New Literacies are multifaceted and our understanding of them requires multiple points of view

Simply put, a central principle of New Literacies is that the Internet has become this generation's defining technology for literacy and therefore requires additional skills to fully access their potential (Leu, 1999). New technologies require additional skills, strategies and dispositions to take advantage of the affordances each new technology contains. This does not mean the fundamental skills of reading and writing are no longer necessary. On the contrary, new literacies build upon the foundational skills of word recognition, vocabulary, comprehension, writing processes, inferring and others that are required to read and write.

What are some of the skills necessary to be fluent with new literacies? Leu, Kinzer, Coiro, Castek and Henry (2004) suggest that new literacies demand new forms of critical literacy, new forms of informational literacy, new ways of reading online research, new strategies to effectively comprehend the literacies we encounter when using the Internet and new ways of communicating in a digital environment. New literacy skills are necessary to help students successfully navigate the Internet. Students can quickly get lost amid the barrage of information they find simply by clicking (Leu, et al., 2004). Students use information on the Internet to conduct research, solve problems and answer questions. According to Leu, et al., (2004), there are five processing practices that occur during online research and comprehension. They are (p. 1165):

1. Reading to identify important questions- understanding how a question is framed
2. Reading to locate information- generate effective keyword searches, infer which links will answer the question, scan for relevant information on websites
3. Reading to evaluate information critically- ability to read and evaluate the accuracy, reliability and bias of the information found
4. Reading to synthesize information- bring together information from multiple sources
5. Reading to communicate information- ability to share what one has learned

Within these practices are the informational literacy skills that are important for both online and offline reading comprehension. Ultimately, information literacy provides the skills for students to learn how to learn. They understand how knowledge is

organized, how to find information and how to use information so that others can learn from them. They become lifelong learners because they know how to access information they need for any task or decision they need to make whether it is offline or online (American Library Association, 2006).

In addition to reading skills, students will also need to learn how to communicate efficiently and effectively online. Composing and creating online makes the task of writing both engaging and relevant. Because of access to the Internet, writing can be creating a website on Weebly, sending an email, participating in a blog or creating a digital story. To have a finished product that potentially can be read world- wide puts a whole new perspective on the task of writing. Using the computer as a writing tool changes the way students see writing, especially for struggling readers and writers. Tasks involving grammar and conventions can be handled with word processing software, leaving the writer to focus on higher-order tasks like clarity and meaning-making (Mulligan & Geary, 1999; Raynie, 2005). However, in order for teachers to incorporate a digital component into the writing process, they must explore how to change traditional mind-sets in literacy practices (Hicks, 2009).

Hicks (2009) addresses the challenge of integrating technology within writing workshop through his online blog, Digital Writing Digital Teaching (hickstro.org/). He integrates new literacies into the teaching of writing. Hicks (2009) offers insight into what is new and being discussed politically and academically in the area of writing online. Hicks' ning (digitalwritingworkshop.ning.com/) allows interaction between a multitude of writing teachers' blogs and websites. It provides an online space for teachers to read about what others are doing in their classrooms and to gain expert input and

insight into those ideas. He incorporates the principles of writing workshop: student choice, active revision, studying author's craft, publishing students' digital writing, and assessing the process and the product. He even tackles the practicality of copyright in the cyber world. Using online resources, he provides ideas and practical examples of how to teach writing in a digital environment (Hicks, 2009).

As the evolution of literacy continues, it dramatically impacts teaching and learning. Using technologies to engage in meaningful learning assumes that our conceptions of what it means to teach students will change (Ertmer & Ottenbreit-Leftwich, 2010; Howland, Jonassen & Marra, 2012; Leu, 1999). Leu et al., (2004) suggests that because we live in a world of rapidly changing literacies, teachers will increasingly become "orchestrators of learning texts rather than dispensers of literacy skills" (p. 1163). Technology integration challenges traditional views of teaching and learning and requires teachers to rethink the educational process. Access to the Internet and a wide range of technologies has forced educators to think about teaching literacy in new and different ways. Traditionally teachers' primary responsibility has been instructing students where teachers were the transmitters of information and students the recipients. Howland et al., (2012) suggest that the ways we use technology in schools should change from "technology as teacher to technology as partner" in the learning process (p.11). Teachers will need to give up some of their authority as purveyors of knowledge. If teachers constantly determine what students should know, there is no need for students to develop their own understanding of the world, they simply learn to understand it from their teacher's perspective (Howland et al., 2012). Therefore, it is imperative that the teacher's role changes from dispenser of knowledge to helping

learners construct their own learning. As teachers relinquish authority, students begin to assume responsibility for their learning. They begin to develop the skills in articulating, reflecting on, evaluating what they know and begin to construct their own understanding using technology based tools. As Howland et al., (2012) suggest, “When learners are allowed to assume ownership of the product, they are diligent and persevering builders of knowledge” (p. XIV).

Hsu (2010) conducted a research study evaluating the relationship between teachers’ use of technology and their ability to successfully integrate technology within the curriculum. Hsu (2010) used two different scales to collect data: a technology ability scale and a technology usage scale. Both scales were created using the National Educational Technology Standards for Teaching as a guide. The scales were then administered to 4,911 first through ninth grade teachers from Taiwan. Then, the researcher analyzed the correlations between the data from the two scales. Results of this study found a “moderate positive correlation ($r=.56$) between ability and usage” (Hsu, 2010, pg. 318). This positive correlation found teachers who had a high ability to integrate technology used it more in their classrooms.

Similarly, Honan (2008) conducted a study to investigate the teaching of digital literacy practices in one school in Australia. Four teachers were released from their classrooms for five day- long meetings over a period of three months to learn about using digital texts within the Four Resources Framework. The framework is based on literacy practices such as code breaking, participating in the meaning of texts, using texts functionally, and critically analyzing and transforming texts (Honan, 2008). The meetings involved discussions, arguments, and reflections on teachers’ current and future

literacy practices. The initial meeting involved the recognition and validation of their current teaching practice along with exploring new approaches to teaching using digital texts. Between each meeting, teachers worked in their classrooms to try new strategies they had discussed. A significant finding was that teachers struggled with differentiating between teaching students how to use the technology itself and how to use technology as a tool for learning. For example, teachers viewed teaching PowerPoint as technology integration. They found it difficult to see a place for digital texts within their literacy instruction. Teachers spent their time teaching students about the operation of the program rather than thinking how PowerPoint could be used as a presentation tool to share meaningful learning (Honan, 2008).

While possessing relevant knowledge of how to use technology provides a starting point for many teachers, having a supportive school culture is key for technology integration (Ertmer & Ottenbreit-Leftwich, 2010). When teachers witness their peers using technology in their daily practice and the overall school vision involves technology integration, this can provide the extrinsic motivation some teachers need to try things they otherwise would not. Somekh (2008) conducted a study with three different schools regarding how school-wide innovation enabled teachers to adopt technology in meaningful pedagogical ways. She found that the “principal’s vision and motivation,” along with “teacher relationships based on collaboration and support” were of central importance to enable teachers’ integration of technology (pp. 457-458).

Leu (2014) and the New Literacy team have been involved in many technology integration projects involving literacy. Leu (2014) found that when students are using devices such as laptops or iPads to learn with, teachers have about a 15 second attention

window before students are off on their own. Therefore, based on studies his team has conducted in classrooms, he developed a process he called Internet Reciprocal Teaching (Leu, 2014). Internet Reciprocal Teaching (IRT) allows both teachers and students to use online information effectively to learn. IRT consists of three phases that allows teachers and students to learn not only from each other but also from others around the world. During the first phase, students learn the vocabulary and fundamentals of conducting research using the Internet. They learn how to locate information, evaluate the information they find, synthesize the information from several different sources and finally communicate their learning in effective ways. Phase two is a collaborative stage in which teachers and students participate in think aloud discussions and mini-lessons on practicing research skills using the Internet. During the final phase, students conduct an online collaborative project with students from another part of the world. They work both individually and in small groups using strategies and skills from the previous phases to develop lines of inquiry around curricular topics. The final project requires clear questions, multiple reliable sources, citations, and a final product that communicates that information to others. Throughout the process, students and teachers work together and learn from each other. (Leu, 2014; McVerry, Zawillinski & O'Byrne, 2009).

Baker (2000) conducted an ethnographic study that sought to understand the impact of technology integration and literacy instruction. During the study, the teacher taught using both an inquiry method and a process approach to teaching writing. These two methods provided students ample opportunities to collaborate and share their work with peers. Through the analysis of the field notes, theoretical notes, methodological notes, personal notes, videotapes, and artifacts, the researcher confirmed the successful

implementation of the inquiry and process approach to teaching writing (Baker, 2000).

When analyzing the inquiry projects, “over 70 percent of the reading and writing activities that included technology occurred while the students researched or reported their findings within inquiry units” (p. 5). The teacher successfully integrated technology into her inquiry units throughout the year. Use of the process approach to teaching writing also allowed for multiple opportunities to incorporate technology. The students published their completed work using word-processing software on the classroom computers. Students typed their stories and then inserted graphics to help illustrate their writing. In the end, both of these instructional approaches successfully provided the teacher with multiple opportunities to integrate technology within the context of literacy instruction.

In Hutchinson and Woodard’s (2014) study on how digital tools empower and constrain learning, they found that the teacher’s lack of technological knowledge proved detrimental to instruction. For example, Mrs. Smith, a teacher in the study, was unable to unite her objectives with the knowledge of the digital tools available to her and therefore became overwhelmed by the technology. When she attempted to integrate Evernote notebook, into her persuasive writing unit, the bulk of her time was spent helping students troubleshoot. Had she been more familiar with the technology as well as the purpose of the task, she would have been able to revise the instruction to fit the learning purpose (Hutchinson & Woodard, 2014).

Hutchinson and Reinking (2011) suggest that more research be done to address the critical issue of how the integration of ICTs into literacy instruction can be efficiently and authentically increased (p. 328). Technologies can become tools of meaningful

learning and have the potential to act as a change agent in teacher practice. However, technologies in and of themselves are just that, tools. It is the teachers using these tools that make them powerful instruments for student learning. For teachers to use technology to support learning, they must be trained not only on the features of the technology but also on how to integrate the technology within in their literacy practice. They also must understand a broader view of literacy, and be aware of the new literacy skills students need to comprehend and communicate in a digital environment. Moving to a more systematic study of how technology integration occurs within classrooms, understanding what increases the adoption by teachers, and assessing the long-term impacts that these investments have on both teachers and students will be beneficial in supporting technology integration in our schools (Hutchinson & Reinking, 2011).

Because technology changes faster than our ability to evaluate its utility through traditional approaches, Leu (1999) suggests that classroom teachers, not researchers, may define the most effective instructional strategies for literacy and learning. Teachers integration of technology, tested in the realities of the classroom are likely to provide relevant information for other teachers to use as they attempt to integrate technology into their own practice. According to Leu (1999), the most important work takes place in the classroom. Teachers who develop effective ways to integrate technology may serve as the central informants for effective instructional practice. Teachers can evaluate the effectiveness of technology within their own classrooms, and quickly spread the word about a useful tool to their colleagues much faster than researchers who require substantial time before their results are published. In other words, teachers learning how

to integrate technology from other teachers in their natural context (classroom) can be a meaningful, albeit different, form of professional development (Leu, 1999).

In summary, these studies provide a picture of the impact technology has on teaching and learning. Because of the unlimited opportunities technology and the Internet provide, a broader view of literacy and teaching must be adopted to include the new literacies students need to navigate the digital world. Both Baker (2000) and Leu (2014) suggest inquiry units as a powerful way to integrate technology within literacy curriculum. In addition to a broader view of literacy, teachers also must reconsider their roles as teachers in the classroom. Instead of teachers seen as the expert, technology provides opportunities for teachers and students to learn together. To do this, these studies suggest that adequate training in not only how to use technology but also how to integrate technology be provided. Providing opportunities for teachers to explore and use technology within the context of their own classrooms may provide an avenue for these changes to take place.

Teachers' Perceptions

Several studies have noted the impact teachers' perceptions regarding technology have on their ability or willingness to choose to integrate technology with their instruction. Information and communication technology (ICT) integration depends largely on teachers' personal feelings, skills, and attitudes to instructional technology in general (Mumtaz, 2000). ChanLin (2005) conducted a study of 407 elementary and secondary teachers, grades 1-9, from Taipei County, Taiwan. Teachers were given a questionnaire containing 28 items focusing on environmental, personal, social, and curricular factors affecting technology integration. Teachers reported that on-going

support from colleagues is definitely an important incentive in developing and building teachers' experiences and competence in integrating technology into classrooms. The results of the study showed that teachers must be supported in collaborating with other educators for educational changes to occur. It was also noted that teachers isolated from support by their colleagues might be less willing to use technology and less capable of managing the social issue. For technology to become successfully integrated into teaching practice, faculty members should be exposed to group interaction supported by technology. An open atmosphere within a school society may inspire teachers to employ innovative teaching approaches. ChanLin (2005) concluded that teacher beliefs are an essential component of ICT integration, and contend the positive attitudes towards social, curricular, and environmental support, as well as teacher need can enable teachers to gain more interest and experience in technology integration.

Ertmer and Ottenbreit-Leftwich (2010), in their study on the characteristics that enable teachers to use technology resources as meaningful technology tools, found that the following three factors; lack of relevant knowledge, low self-efficacy, and teachers' existing belief system, impact teachers' ability to integrate ICTs with their curriculum.

First, they suggest that teachers' knowledge of how to use and integrate technology has a significant impact on their instructional practice as well as their self-efficacy. In order to integrate technology, teachers must expand their knowledge of how to use technology to build their confidence in using the tools to support student learning. Based on their research, Ertmer and Ottenbreit-Leftwich (2010), suggest using Technological Pedagogical Content Knowledge (TPACK) as a framework to identify the nature of knowledge required by teachers for technology integration (Koehler & Mishra, 2009).

TPACK encompasses the relationship among three core components: content, pedagogy and technology. Content knowledge is the subject matter or curriculum teachers are required to teach. Pedagogical knowledge is teachers' knowledge about the processes and methods of teaching and learning. It includes understanding how students learn, management skills, lesson planning, assessment and techniques used in teaching. Technology knowledge is understanding technology so that one can apply it productively at work and in everyday life. The diagram below provides a visual representation of the TPACK framework.

Figure 1. TPACK Diagram (Kohler & Mishra, 2009) illustrates the connections between pedagogical knowledge, content knowledge, and technological knowledge.

Ertmer and Ottenbreit-Leftwich (2010) propose that teachers' knowledge of technology, content and pedagogy has a significant impact on their instructional decisions. Teaching with technology requires teachers to expand their knowledge of pedagogical practices across planning, implementation and evaluation processes.

Teachers must have knowledge of the content they are required to teach, instructional methods that facilitate learning and knowledge of the specific ways in which technology can be used as a tool to support these methods. As teachers expand their pedagogical knowledge to include ideas of technology integration, they will gain confidence in their abilities to use technology as a means to develop students' ability to work collaboratively and take control of their own learning. Integrating technology within content and pedagogical practice provides opportunities for the teacher's role to change from that of expert, to one of facilitator, as they teach students to access and evaluate information themselves (Ertmer & Ottenbreit-Leftwich, 2010; Howland, et al., 2012).

In addition to knowledge of how to use and integrate technology, teachers must feel confident in using technology to facilitate learning (Ertmer & Ottenbreit-Leftwich, 2010). In a survey of 764 teachers, Wozney, Venkatesh and Abrami (2006) found one of the greatest predictors of teachers' technology use was based on their confidence that they could meet curricular objectives using technology. They found one significant strategy to help teachers gain confidence was to have successful experiences with using the technology with their students. When teachers witness how technology facilitates student success, their confidence in using technology within their instructional practice increased (Ertmer & Ottenbreit-Leftwich, 2010).

Finally, Ertmer and Ottenbreit-Leftwich (2010) propose that teachers' beliefs or perceptions of technology must include the idea that the appropriate use of ICTs are necessary resources needed to facilitate student learning. In a study by Haney, Lumpe, Czerniak, and Egan (2002), teacher beliefs were found to predict future classroom action for five of the six teachers observed. Teachers with traditional beliefs about technology

seldom used technology, whereas teachers with more constructivist beliefs implemented more student-centered use of technology. Teachers who valued technology as an instructional tool were more apt to integrate it within their curriculum. Ertmer and Ottenbreit-Leftwich (2010), suggest educators adopt a definition of teaching that facilitates student learning by integrating ICT resources as meaningful pedagogical tools. Including technology within the definition of teaching propels both administrators and teachers to move forward with increasing their knowledge of technology as well as increasing their confidence as they use this tool within their instruction. For this to happen, teachers should be participants in the visioning process and witness for themselves examples of what integration of ICT looks like in practice as well as see how these pedagogical changes benefit their students (Ertmer & Ottenbreit-Leftwich, 2010).

Hutchison and Reinking (2011) explored literacy teachers' perceptions of integrating information communication technologies (ICTs) into literacy instruction.

They surveyed 1,441 literacy teachers in the United States regarding the types and availability of ICTs, beliefs about the importance of integrating ICTs into literacy instruction and perceived obstacles to doing so. They used descriptive statistics, an exploratory factor analysis and a path analysis to test the relationship between teachers' perceived importance of technology integration and their actual levels of integration.

They discovered low levels of curricular integration, consistent perceptions about obstacles to integration and characteristics associated with higher levels of integration and use. It is important to note that even though literacy teachers considered technology integration as called for by the International Literacy Association (ILA) and the National Council of Teachers of English (NCTE) position statements important, these same

teachers were not integrating ICTs into their literacy instruction. The primary obstacles teachers reported regarding technology integration were 1) lack of understanding of how to integrate technology into their instruction, 2) lack of professional development related to technology integration, 3) lack of understanding about how to evaluate students' understanding of ICT use, 4) Internet texts being too difficult for students to read, and 5) lack of time due to high stakes testing (Hutchison & Reinking, 2011). Teachers reported that the professional development they received on technology use and integration was not sufficient or appropriately focused. The professional development experiences focused on using the technology not on integrating it with curriculum. To truly change instructional practice teachers need to have knowledge of how to use technology, confidence to try new ideas with their students, believe that technology has the potential to positively impact student learning, and have support along the way (Ertmer & Ottenbreit-Leftwich, 2010).

As these researchers have noted, teachers' beliefs and attitudes are fundamental elements in the integration of technology; however, seldom have these beliefs been acknowledged when providing professional development opportunities. These studies found that lack of knowledge about how to use and integrate technology; lack of confidence using technology, and teachers' beliefs about technology integration impacted their ability to use technology in their classrooms. Teachers need support, such as on-going collaboration with colleagues, to make the change from traditional teaching methods towards pedagogical approaches that help students incorporate ICT into the curriculum (ChanLin, 2005). Likewise, when teachers are supported in developing effective strategies to recognize and overcome their trepidation of using technology, they

will be prepared to both initiate and sustain effective technology integration practices (ChanLin, 2005; Ertmer & Ottenbreit-Leftwich, 2010; Hutchinson & Reinking, 2010).

Teacher Learning: Andragogy

An important aspect to providing meaningful professional development for teachers is understanding how adults learn. Andragogy is the methods and practice of teaching adults to learn. Malcolm Knowles, often referred to as a “champion” of andragogy, believed that adults learn through the following principles (Smith, 2002):

- **Involvement:** Adults need to be responsible for their decisions on education; involvement in the planning and evaluation of their instruction. As a person matures he/she moves from being a dependent learner to a self-directed learner who takes initiative in identifying personal learning needs.
- **Relevance:** Adults are most interested in learning subjects having immediate relevance to their work and/or personal lives. They need to know the reason for learning something.
- **Orientation:** Adult learning is problem-centered rather than content-oriented.
- **Experience:** Experience (including error) provides the basis for learning activities.

Knowles believed in self - directed learning where adults take the initiative in identifying their learning needs, formulating learning goals, identifying the resources for learning, implementing strategies and evaluating or reflecting on the learning outcome. He argued that people who took initiative and were proactive in their learning learned more and learned better than those who sat passively waiting to be taught. He believed that self-directed learning was more in tune with adult psychological development. Knowles (1975) states, “An essential aspect of maturing is developing the ability to take increasing

responsibility for our own lives – to become increasingly self-directed” (p.18). He recognized the rapid changes in society and believed it was” the work, they are much more likely to retain their learning.

Similarly, Darling-Hammond (2009) believed that active learning opportunities encourage teachers to learn and transform their teaching. Teachers reported in a national survey, that their knowledge and skills grew when they received professional development that was coherent, focused on content and involved active learning (Darling-Hammond, 2009). Active learning involves teachers applying their learning by attempting new teaching strategies within their classrooms. Teachers first observe others modeling the new instructional strategy, and then have an opportunity to practice the strategy, and afterwards, reflect on their experience. Darling-Hammond states (2009), “The most useful professional development emphasizes active teaching, assessment, observation and reflection rather than abstract discussions”(p.47).

Bandura’s (1977) social learning theory posits that people learn from one another through observation, imitation and modeling. He proposed that learning is transferred through different types of modeling; the live model, verbal instruction and the symbolic model. In regards to technology integration, the live model occurs when the instructor models how to use the technology. Verbal instruction occurs when the presenter describes how to use the technology, step by step. The symbolic model occurs when teachers learn to use technology by means of the media, including movies, television, Internet, literature, radio and various forms of social media. As Vygotsky (1978) proposes, teachers learn from interacting with and observing others who have more knowledge or experience than them.

Reeves (2010) found, in a study of over 300 teacher and administrators from urban, rural and suburban schools, that direct modeling by colleagues was by far the most influential factor in teacher learning. Internal factors such as personal experience, direct collaboration with colleagues, students and families had a greater influence on teacher learning than external factors such as professional development (Reeves, 2010). He found it beneficial to “provide examples not policy mandates” to support teacher learning (p. 85). By examples he meant using outstanding teachers to influence the practice of peers. It is often more credible when teachers observe others who experience the daily realities of teaching. He recommended providing opportunities for teachers to observe each other, videotape teachers conducting mini-lessons, and providing time for effective teacher collaboration. As Reeves (2010) states, “Authenticity beats slick professionally produced videos every time” (p. 85). Creating a bank of authentic best practices can be a valuable resource for teacher learning.

To deepen their knowledge of the impact of modeling on teacher learning, Lunenberg, Korthagen and Swennen (2007) conducted an exploratory research study into the practices of ten teacher educators in four Dutch teacher education institutions. From their review of literature, the authors noticed three common themes of modeling by teacher educators: modeling by teacher educators can contribute to the professional development of student teachers, can provide an avenue for teacher change in practice and can improve the teaching of teacher educators themselves (p. 589). Their research focused on the ways the teachers did or did not model instructional practice. The following types of explicit modeling were observed: 1) journal writing, reflection on pedagogical practices that occurred, 2) thinking aloud, explaining the reasons behind the

teaching decisions made, and 3) co-teaching, one teacher models instructional practice followed by debriefing by the other. The results of their observations revealed that explicit modeling is not common among teacher educators. Many of the teacher educators did not have the knowledge or skills to make their own teaching explicit or to connect their instructional decisions to public theory. The teacher educators did not make use of public theory when making teaching decisions relying more on their own common sense. There appeared to be little or no recognition of modeling as a teaching method in teacher education. The authors suggested that self-studies, observations, and discussions of each other's practice could encourage modeling in teacher education. Working in small groups, sharing ideas and reviewing personal beliefs about teaching and learning provide learning opportunities for teachers. In summary, modeling has the potential to influence individual teachers' beliefs and behavior as well as change education as a whole (Lunenberg et al., 2006).

Vygotsky believed that modeling by a more knowledgeable person plays a significant role in learning (Lee & Smagorinsky, 2005). Knowledge isn't handed down from one person to the next; rather learning is constructed through joint interaction between teacher and learner. He proposed the concept of the more knowledgeable other (MKO). The MKO is anyone who has a better understanding or higher ability level than the learner. Traditionally, the MKO is thought of as a teacher, coach or adult, however, the MKO can also be a student, peer, or even technology (McLead, 2007). For instance, who is likely to know more about winning the newest PlayStation game, a child or a parent? The MKO may also be an electronic tutor who has recently been used in educational settings to facilitate and guide student learning (McLead, 2007). Regardless,

the MKO is the one who has more knowledge about a topic at that moment in time. However, the MKO is not a static figure, rather the MKO can change throughout the learning process. Because of the deictic nature of technology, the teacher may initially serve as the MKO when introducing the technology however, as students use the tool for learning, they may become the MKO as they discover new ways of using the technology. In other words, learning is reciprocal and occurs through the mutually constructive process between teacher and learner (Lee & Smagorinsky, 2005).

Vygotsky (1978) also proposed that the more knowledgeable other support learning within a person's zone of proximal development (ZPD). According to Vygotsky (1978), new learning does not occur at the actual level of development, but rather it occurs in the zone of proximal development—the distance between the actual developmental level as determined by individual problem solving and the level of potential development as determined through problem-solving under adult guidance or in collaboration with more capable peers. A more knowledgeable individual (teacher, peer, student) works within this zone to support the learner until she/he is able to internalize and demonstrate independent ability or ownership of new learning.

Antonacci (2000) found guided reading offered a viable alternative approach to the direct instruction approach of teaching reading. Guided reading is an example of teachers working within students' ZPD in order to improve their reading ability (Antonacci, 2000). For the teacher, this means knowing the students' current reading ability and shaping their instruction slightly beyond their development. As students read, the teacher mediates and scaffolds the performance of the students until they can function independently. The teacher may use instructional techniques such as modeling,

questioning and thinking aloud. These strategies will change depending on the needs of the students, therefore it is important for teachers to scaffold their instruction throughout the learning process (Antonacci, 2000).

Burch (2007) conducted a case study to explore the implementation of scaffolding in literacy learning within the classroom setting with young learners. The recurring theme she observed in the study revealed that the students who were learning to read and write benefited greatly from instruction that scaffolded their present competencies and supported them to acquire and learn to manipulate new literacy concepts. This literacy case study supported the premise that altering the method of instructional delivery and providing scaffolding for students improved their abilities in reading and writing (Burch, 2007).

Bruner (1960) also believed that scaffolding provided a necessary support system that helped learners achieve success on tasks that would be too difficult for them to achieve by themselves. Scaffolding occurs when the teacher brings the student to new levels of skill and understanding by breaking up a task into smaller and more comprehensible steps. Some steps are more complex than others and require more support (intellectually and emotionally). Similar to Vygotsky's (1978) zone of proximal development, with scaffolding the teacher's task is to determine students' current levels of knowledge and skill, and then develop activities that guide these students to higher levels of practice. Unfortunately, most professional development offered to teachers has focused on learning certain skills or programs with little regard to the experience or knowledge that teachers bring with them. Rarely is professional development provided that considers the needs of teachers or scaffolds instruction to meet the needs of diverse

learners. Instead, most school systems rely on the “talking head” workshop approach to professional development (Allington, 2012, p. 161).

Huebner (2009) suggested that as teachers learn, they go through a phenomenon identified by Coburn (2001, 2004), as “sensemaking” (p. 89). This process occurred when teachers noticed and selected certain messages from their environment, interpreted them and then decided whether to act on those interpretations to improve their professional practice. Coburn (2001, 2004) discovered in his research that teachers enacted their revised understandings of policies and practice through a continuum of action. The continuum started with rejection on one end and accommodation on the other end. Coburn (2001, 2004) discovered that as teachers understanding of a strategy grew, they moved on the continuum from rejection to accommodation. Huebner (2009) uses an example of “sense making” when she described the implementation of the word wall in classrooms to promote literacy. The word wall consisted of a series of words posted on a bulletin board for students to build fluency in vocabulary. At one end of the continuum, a teacher chose not to put up the word wall or put it up but did not use it in her instructional practice. Some teachers used the word wall with some students but not all, or they used the word wall in a way that made sense to them, but was not the intended use. For a teacher to use the word wall in the intended way (accommodation), the teacher has to understand and make sense of the strategy.

The same holds true when learning to integrate technology. Accommodation occurs when teachers understand how to use the technology within their curriculum and value it as a beneficial learning tool. Huebner (2009) suggested ways to support teacher

learning and help teachers move on the continuum from rejection to accommodation.

She (2009) suggested the following:

- Provide learning in multiple formats to teachers, scaffold their learning
- Provide the information in print form as well as online
- Provide the information in step by step directions
- Provide small group settings or even one-on-one interactions so teachers feel comfortable asking questions when they don't understand
- Make the new learning a part of the school environment by reinforcing it in multiple ways to increase the opportunities for teachers to absorb, understand and apply the information.

Huebner (2009) stressed the importance of grounding teacher learning in relevant examples of practice. It is necessary to provide opportunities for teachers to apply their new learning and observe others who have had success implementing the new learning. She recommended providing teachers with descriptive feedback on the effectiveness of their teaching in a supportive environment, and using information to engage in the important work of self-reflection.

In summary, these researchers ascertain that teacher learning involves active learning, modeling, peer observations, and scaffolding of instruction. Modeling instructional strategies by more knowledgeable peers and providing opportunities for teachers to apply their observations in their own classrooms was an effective process that supported teacher learning (Banduras, 1977; Reeves, 2010; Vygotsky, 1978). In addition, scaffolding learning opportunities was an often neglected but necessary component for teachers to learn (Bruner, 1960; Burch, 2007; Huebner, 2009). Not everyone brings the

same skill set to professional development, especially in terms of understanding how to use technology. Acknowledging this and addressing the various needs of teacher learners is important for teachers to learn in sustainable ways.

Importance of Talk and Collaboration

Collaboration with colleagues about teacher beliefs and practice is an important element of teacher learning (Darling-Hammond, 2009; Huebner, 2009; Pierce, 2006; Reeves, 2009). Vygotsky (1978) theorized that language is the major bridge between human beings' social and mental worlds. He viewed language as the vehicle to integrate knowledge and facilitate thought. Language was the primary avenue to communicate with others, and the means through which people learn to communicate thoughts, represent their ideas in words, and share their experiences (Vygotsky, 1978).

Collaboration begins with finding time to connect with colleagues, to share thoughts, and provide support. Likewise, Dewey (2010) suggested that a teacher's desire to learn and improve in his or her profession must be accompanied by a natural desire to communicate one's knowledge with others. He stated, "There are scholars who have [the knowledge] in a marked degree but who lack enthusiasm for imparting it. To the 'natural born' teacher, learning is incomplete unless it is shared" (Dewey, 2010, p. 35). For Dewey, it was not enough for classroom teachers to be lifelong learners of the techniques and subject matter of education; they must aspire to share what they know with others in their teaching profession.

Goddard, Goddard, and Tschannen-Moran (2007) conducted a study to determine the effects of teacher collaboration in regards to student achievement. They surveyed 452 teachers in 47 elementary schools to determine the extent to which they worked

collectively to influence decisions related to school improvement, curriculum and instruction, and professional development. They found a positive relationship between teacher collaboration and student achievement in mathematics and reading achievement. Clark (2001) suggests, “One of the best ways to come to understanding of what one believes is to talk it through with others who understand the challenges of being a good teacher in uncertain times” (p.173). Teacher talk, conversation, dialogue and narrative can work to promote teachers’ learning to teach in new ways (Clark, 2001). In other words, collaboration matters.

An unexpected outcome of Honan’s (2008) research (described previously p. 20) was the importance of teacher talk when learning about technology. Teacher conversations and collaboration were used as the primary methodology to integrate digital texts within instructional practice. Through their discussions, they worked through the following issues: 1) lack of awareness of students’ knowledge of digital technologies, 2) understanding their own beliefs, competence and expertise with technology, 3) their struggle with teaching computer skills rather than using technology as resources to create meaning, and 4) learning how to integrate digital literacy into their daily practice. It was through the discussions in their meetings that teachers recognized and worked through the barriers they faced in using digital texts (Honan, 2008).

On the job experiences such as collaborative teacher meetings can shape how educators grow professionally, however, it is important to provide a structure to enhance the efficiency and effectiveness of these meetings (Porter Kuh, 2012). Porter Kuh (2012) conducted a qualitative cross-case analysis study at three different schools to determine how on-site professional development could promote conversations that lead to

improving practice in the classrooms. She found that claiming collaborative meetings are crucial to learning does not imply that the process is effective. As Porter Kuh (2012) stated, “The act of meeting does not directly translate to better teaching or stronger organizational structures” (p. 34). This study indicated that teachers who work collaboratively can impact student achievement but these groups must build an atmosphere of trust, adopt a systemic approach and involve teachers in the process.

The Bread Loaf Teaching Network (BLTN) serves as a model for collaboration between teachers and university professors. BLTN uses web based “Breadnet” links to provide opportunities for rural and urban teachers to study literacy as well as teaching with technology. It was created by students in Dixie Goswami and Shel Sax's Bread Loaf class "New Media and the Teaching of Writing" in 1984. These teachers recognized that teaching in isolation is hard and they needed a network of collaborators over an extended period of time (Goswami, 2015). Thus the BLTN was created. The primary purpose of the BLTN is to provide a space for teachers to collaborate with each other about issues and problems they encounter in their day-to-day teaching. It is unique in that it connects teachers, professors, and graduate students from various locations and provides opportunities for them to share their expertise in an online, collaborative format. Goswami (1987) recognized the potential for collaboration among teachers with the explosion of the Internet and realized that social networking provided teacher researchers and their students with a space to have collaborative conversations surrounding their instructional practice.

Clark (2001) has collected research studies that provide several examples of groups of educators who improved their professional practice through conversations with

each other. Through these conversations, teachers made sense of their work, their interactions with students, their attitudes towards administration, and made sense of the ways they saw themselves in their professional community. Clark (2001) synthesized the accounts of these teachers and identified commonalities found in “good conversations” that lead to improvement in professional practice (p. 176). According to Clark, “good conversations” demand good content or something worth talking about. They are invited not commanded or required. The participants want to be there. These conversations thrive on common ground in an atmosphere of safety, trust and care. They develop over time and become an avenue for participants to develop connected personal and professional relationships because of the work they accomplish together.

By analyzing these varieties of conversations, Clark (2001) discovered that good conversations could provide a relevant form of professional development for teachers.

Through conversation groups, teachers were:

- Articulating implicit theories and beliefs about teaching and learning.
- Acknowledging different perspective by seeing the world through the eyes of others.
- Developing a sense of personal and professional authority.
- Reviving hope and relational connections as an antidote to isolation.
- Reaffirming ideals and commitments.
- Developing specific techniques and solutions to problems.
- Learning how to engage with students in learning conversations.

Conversation groups can become a “genre” for learning and professional development (Clark, 2001, p. 18). They give participants autonomy over their learning and promote

long-term, relevant, developmentally appropriate learning and support for teachers. As Clark stated (2001) conversation groups provided “a room of our own” that gave teachers autonomy and efficacy (p. 181).

Several prominent researchers suggest that there are different kinds of conversations that enhance learning. For example, Vygotsky (1978) acknowledged the role of talk in organizing our understanding of the world. He posited that our ability to talk and think begins within a social context and only later becomes individual. By participating in activities and talk, teachers come to make sense of their own learning. Barnes (2008) believed that people learn through conversations he called “exploratory talk” (p. 28). Exploratory talk is the “rough draft” talk that occurs when the speaker is trying to clarify his or her thinking, trying out new ideas to see what others think of them, and trying to arrange information and ideas into different patterns. This kind of talk is important in that it is the means by which teachers explore the relationship between what they already know and new observations or experiences. It often sounds hesitant or incomplete as the person struggles to sort out his or her own thoughts. Exploratory talk is a form of thinking aloud that helps us to process new information, make connections with previous knowledge, and eventually to construe new ideas or knowledge.

Baird and Mitchell (1986) conducted research into how highly intelligent and successful adults learned. They discovered that adult learners did not simply memorize new information. Instead, through conversations they learned by actively trying to make sense of their learning and connecting new learning to what they already knew. These adult learners related new ideas, experiences and information to their existing knowledge and experiences; looked critically at these relationships, made comparisons and asked

questions; and realized which parts of the new information they had not fully grasped and thought through the implications (Baird & Mitchell, 1986).

Another kind of talk that impacts learning is “teacher instructional talk” (Johnston, 2004, ix). According to Johnston, talk is the central tool of teaching. The conversations between student and teacher provide the building blocks for learning and help to shape individual identities. Through talk, teachers can help students make sense of their learning, life and of themselves. The words teachers choose to use and the kinds of questions they ask invoke certain responses and feelings from students that can shape their opinions of their abilities as learners. Johnston discusses the importance of using explicit language at the appropriate times. He states, “We often assume that students know things, or know them in particular ways, when they do not” (2004, p. 7). Deciding when to use explicit language requires that the teacher know his or her audience. For example, if students can figure out things on their own, explicitly providing the information limits students’ opportunity to build their confidence as learners. However, if students’ knowledge and experience are limited about a subject, then providing explicit information supports their learning.

Research conducted in conjunction with the Trends in International Mathematics and Science Study (TIMSS) revealed how different approaches to questioning can promote or diminish a culture of inquiry within classrooms (Stevenson & Stigler, 1991).

The TIMSS studies noted an important difference in instructional practices and questioning methods used in the United States and Japan. In the U.S., the purpose of asking questions was to get an answer. In contrast, Japanese teachers posed questions to stimulate thought. They posed questions to get students involved in thinking and

discussing the material rather than simply recalling information. How a teacher positions him or herself through the use of instructional talk can exert considerable power over conversations and thus over a student's achievement and identity as a learner (Johnston, 2004).

Researchers agree that teachers acquire new knowledge through reflective conversations with others (Allington, 2012; Clark, 2001; Cole & Knowles, 2000; Darling-Hammond & Richardson, 2009; Sparks & Hirsch, 1997). Talk provides a pathway for teachers to try out new ideas, new ways of knowing, and clarification of what they know. Through various kinds of talk such as exploratory talk, questioning, and instructional talk teachers make sense of their learning and make connections to previous learning (Barnes, 2008; Dewey, 2010; Stevenson & Stigler, 1991). However, it is important to provide a systemic approach to conversations in order for talk to be productive. Building trust and having an agreed upon structure are necessary tools for meaningful conversations (Clark, 2001, Porter Kuh, 2012). Clark (2001) suggests that conversations are like an "exploratory, wandering walk around a mutually interesting place rather than a direct journey from one place to another" (p. 181). Conversations with our colleagues remind us that we are not alone in our frustrations, doubts, and confusions about teaching. Collaborative conversations provide a support system that prevents teaching in isolation. Engaging teachers in thoughtful conversations about their practices, encouraging them as they try out new learning, and providing opportunities for collaboration and self- reflection are important elements for teachers to change and improve their practice (Huebner, 2009).

Teacher Reflection

Teacher learning requires reflection. Adults don't learn solely from experience, they learn from processing the experience (Dewey, 2010; Schon, 1983; York-Barr, Sommers, Ghere & Montie, 2001). Reflection exists in multiple forms, is supported by various formats and occurs for different purposes. Schon (1983) believed that reflection-in-action and reflection-on-action were practices that led to the development of professional knowledge. He believed that teachers observe their thinking and action as they are teaching, making those moment by moment decisions necessary to meet the needs of their students (reflection-in-action). This type of reflection teachers do unconsciously while dealing with the innumerable judgments they make in their day-to-day practice. Reflection-in-action occurs when teachers make spontaneous decisions as they think on their feet (Schon, 1983).

Reflection-on-action is the process of looking back on and learning from instructional decisions in order to affect future decisions. It occurs after an action takes place, not during the moment. For example, reflection -on-action commonly occurs after teaching a lesson whereby the teacher and often mentor reflect on aspects of the lesson. This type of reflection gives teachers the opportunity to spend time exploring why they acted as they did, what was happening in a group and so on. In so doing, they develop sets of questions and ideas about their practice. Both types of reflection play an important role in teacher learning (Schon, 1983).

Reflective practice is an example of reflection-on-action in that it is a "deliberate pause" that provides the opportunity for practitioners to examine beliefs, goals, and practices to gain deeper understandings that lead to a personal commitment to continuous

learning (York-Barr et al., 2001, p. 6). By “deliberate pause” the authors mean a purposeful slowing down of life to find time for reflection. Pausing is not sedentary; rather it creates a quiet space, without interruptions or distractions, to think about one’s perspective and experiences. Reflection begins with a deliberate pause in action so that teachers can approach reflection with an open mind willing to honestly examine their personal beliefs, goals and practices. Through reflection teachers have the opportunity to gain new insights and understanding of their teaching practices, so that they can improve student learning.

Cole and Knowles (2000) suggest that teacher learning is “rooted in the personal” (p.2). Teaching is an expression of who teachers are as people, which encompasses their beliefs, values, perspectives and experiences developed throughout their life. They take a broader view of reflection by suggesting that teachers participate in reflexive inquiry.

Reflexive inquiry is reflective inquiry that is situated in the context of personal histories (Cole & Knowles, 2000). Reflexive inquiry challenges teachers to make connections between their personal lives and their professional careers and to understand how their personal lives influence their current practice. Cole and Knowles (2000) suggest that teachers participate in autobiographical (reflexive) inquiry as a form of self-directed learning. They see autobiographical writing as valuable because teachers gain insight to themselves as teachers and examining their past experiences, continuing into the present. Every day teachers learn on the job yet this learning is seldom recognized or valued.

Cole and Knowles (2001) contend that these informal opportunities to learn take place constantly in vibrant classrooms. Autobiographical writing becomes a powerful vehicle

to enhance informal learning opportunities. Reflexive inquiry provides a voice for informal learning.

There are several research studies that acknowledge the importance of using reflection as a conduit for learning. Shoffner (2009) analyzed pre-service teacher attitudes toward technology and the influence of those attitudes on the use of technology through reflecting on a weblog. In the study, pre-service teachers volunteered to use a weblog for their personal reflection while completing a teacher preparation program. Using the weblogs, nine pre-service teachers engaged in individual reflection on their actions and beliefs on teaching and learning. Of the nine pre-service teachers, eight revealed positive attitudes toward technology and using weblogs as a reflective practice. Of those eight, five maintained weblogs in the fall and spring semesters and of those five, only two maintained reflection weblogs during the entire eight-month study. However, even though participation in reflection was inconsistent, all nine pre-service teachers expressed a positive view of weblogs and advocated their use for reflective practice. They “valued reflection as a necessary practice for their own teaching” (Shoffner, 2009, p.158).

Shoffner discovered that the issue with reflecting was not a matter of value, but one of preference for the type of reflection used. Pre-service teachers wanted their reflective weblogs to integrate easily into their daily routine. Those who were able to integrate reflection into their daily routine were much more likely to engage in reflective practice.

Pre-service teachers also wanted the weblogs to provide a place for them to connect with other teachers. When the weblogs did not provide that space, pre-service teachers turned to other reflective outlets such as email, discussion boards, and talking with mentor teachers.

Shoffner (2009) suggested embedding numerous experiences for both formal and informal reflection within teacher preparation programs. Providing choice in the format to use to reflect made the process of reflection engaging. Shoffner (2009) suggested reflecting in various manners such as informal instant messages, chat forums, class discussion boards, and individual weblogs. She also stressed the importance of providing various opportunities for pre-service teachers to make connections with others such as whole class and small group reflective discussions, one-on-one reflective conversations with peers and mentor teacher, and participation in communal activities with others via discussion boards, email listservs and weblogs. Ultimately, it is important to provide opportunities for reflection to be integrated into the daily practice of teachers (Shoffner, 2009). Reflective practice offers a powerful way for teachers, both individually and collectively, to stay challenged, effective and passionate about the art of teaching.

Stover, Kissel, Haag, and Shoniker, (2011) served as literacy coaches and provided various opportunities for reflection as they worked with a diverse group of teachers to support their teaching. They used three different strategies, writing, surveys and videotaping, to help teachers reflect on their practice. Writing involved using daybooks and quick writes to help teachers understand their personal beliefs about teaching, their effectiveness as a teacher and the influence they had on their students.

This strategy provided personal time for teachers to reflect on their practice before discussing their thoughts with peers. The authors also implemented a survey, which gave teachers the opportunity to reflect on their current teaching practices and determine what they needed to learn to improve their instructional practice in literacy. Information from the survey allowed teachers to form learning groups with common interests and gave

teachers the opportunity to take ownership in their professional development.

Videotaping was the final strategy used to help teachers become reflective practitioners. Teachers recorded their teaching practice a few times throughout the year to help them see growth in their teaching. Overall, the authors found that using these reflection strategies gave teachers tools to participate in learning that was nonthreatening, driven by their needs and resulted in effective teaching practices. As they state, “Teacher reflection can be a catalyst for change and professional growth” (p. 498).

Reflective practice has the potential to improve teaching and learning when it is embedded as a cultural norm within schools (York-Barr et al., 2001). The authors suggested that teachers who participate in reflective practice create opportunities for 1) continual learning, 2) have a variety of perspectives to draw from, 3) gain new knowledge and understanding to apply to practice, 4) increase their self-efficacy, 5) assume personal responsibility for their learning, 6) strengthen relationships and make connections with colleagues, and 7) build bridges between theory and practice. Using reflective practice is a powerful and effective way for educators, both individually and collectively, to expand their repertoire of instructional practice.

Unfortunately, because of the constant, hectic pace in their daily profession, few teachers participate in reflection-on-action. The culture in many schools is not conducive to reflection and learning (York-Barr et al., 2001). Teachers constantly juggle multiple tasks, process information on many levels and make on the spot decisions to meet the changing demands of the teaching environment. This is especially true in regards to technology integration. These researchers suggest that reflective practice should be job embedded, a cultural norm with a school. Various formats should be provided for

teachers to reflect so that they use a method that is meaningful to them (Shoffner, 2009, York-Barr et al. 2001). Reflective practice cannot be done in the fast lane. As the saying goes, “If you are always racing to the next moment, what happens to the one you are in?” (n.d.).

School Leadership

In terms of professional development, school leadership plays a vital role in determining the kinds of learning opportunities provided to teachers (Leu, 2014; Ertmer & Ottenbreit-Leftwich, 2010; Sparks & Hirsch, 1997). Currently, administration and policy makers are largely in charge of arranging for professional development aimed at specifically learning how to integrate ICTs into curriculum (Hutchison & Reinking, 2011). However, the classical model of leadership has failed to lead schools through systemic, meaningful change. True leadership mobilizes schools to new effective levels of performance (Donaldson, 2001). Schrum and Levin (2009) suggest that school leaders provide support and encouragement to improve technology integration in schools. Administrators seeking to change school culture regarding technology integration should allow teachers to select ways to learn how to integrate technology as well as provide opportunities for long term professional development and collaborative conversations with others. While these components are necessary, Schrum & Levin (2009) found building trust and empowering teachers as they learn technology integration to be key in implementing change and adopting something new and innovative. Fullan (1991) agreed and stated, “The best way to deal with change is to improve relationships” (p. 13). Donaldson (2001) suggests that a leader’s first step when implementing change should be focused on relationship building, forming “us” not a “me and you” relationships (p. 56).

In addition to building trusting relationships with staff, it is also necessary to adopt a shared leadership model that provides the opportunity for all stakeholders to have a voice in the school's vision. Fullan (1991) defined leadership as the "mobilization of people to adapt a school's practices and beliefs so that it more fully achieves its mission with all children" (p.2). He posits that shared leadership is a necessary element for change in high performing schools.

Practitioner inquiry provides an avenue to develop shared leadership as teachers and administration work together to problem solve and improve their instructional practice. In practitioner inquiry, participants simultaneously share the role of learner and leader. All participants are seen as knowers and learners without one person serving in an authoritative role. Sparks & Hirsh (1997) suggest that for teacher learning to be meaningful as well as sustainable it must encompass more than teachers. It must include all stakeholders (administration, school board, community, families, students) involved in educating students. (Sparks & Hirsh, 1997, p. 4). The key is to create a shared vision by building a supportive school culture that values innovation, experimentation as well as shared decision making (Ertmer & Ottenbreit-Leftwich, 2010).

Ertmer & Ottenbreit-Leftwich (2010) found one of the primary roles of school leadership is to create a "shared vision for technology use" (p. 276). They go so far as to say that the definition of "good teaching" should include the ability to use and integrate technology. In regards to teaching the Common Core State Standards, Leu (2014) notes that school leaders can either view the standards through a lens from the past or they can view them through a lens towards the future. In other words, school leaders can continue to focus on traditional ways of teaching the standards or they can provide a wide-angle

view by including the teaching skills necessary to help students read, write and communicate in a digital world. He suggests considering how the Common Core State Standards play themselves out when it comes to reading and writing online; and then, how this impacts instructional strategies and the learning opportunities needed for both teachers and students (Leu, 2014). This can be accomplished by providing professional development that includes situated learning opportunities through peer coaching or partnership teaching and engaging teachers in setting goals specifically related to technology. Because teachers work within fixed contexts, situated professional development can target specific instructional needs, build self-efficacy and eliminate some of the fears or barriers related to using technology.

What should leadership look like in a purposeful learning community?

Donaldson (2001) suggests that we must see school leadership differently than in the past. He defines leadership as, “ a basic function for a group that mobilizes members to think, believe and behave in a manner that satisfies emerging organizational needs, not simply individual needs or wants” (p. 5). Notice that he defines leadership as a function, not a person. It is necessary to cultivate greater leadership in everyone, not just administration. This according to Donaldson, hinges on recognizing that leadership is a relational not an individual phenomenon. He developed the following model that posits that leadership occurs in three essential dimensions:

1. The Relational- building relationships based on mutual openness, trust, and affirmation so that members influence and are willing to be influenced by other group members.

2. The Purpose- marrying commitment to what individuals deem as important, relevant to their teaching practice

3. The Action-In-Common- establishing a shared belief that as a group they can act to accomplish goals more successfully than acting alone.

Schmoker (2006) agrees that teacher-learning teams are a powerful component for school improvement. He describes a study conducted by the Learning First Alliance that found successful school districts replaced conventional professional development with regular times for teacher teams to prepare and improve their lessons and develop ongoing formative assessments of student learning. These learning teams were the primary components that led to school improvement (Schmoker, 2006). In addition, the leaders of these schools understood that effective teamwork is fundamental to success. It was significant that both teachers and administrators in these districts worked on learning together (Schmoker, 2006).

It is necessary for school leaders to acknowledge the needs of teachers as learners and strive to support them as they grow professionally (Schmoker, 2006). Instead of spending time observing and advising teachers as an expert, administrators should embrace a facilitator role by spending time discussing and supporting teacher learning. Teachers learn more from working collaboratively with one another, than from a single “expert” (Schmoker, 2006, p. 127). Schmoker (2006) suggests that administrators consider the following questions as they work with teacher learning teams (p. 126):

1. To what extent are students learning the intended outcomes of each course?
2. What steps can I take to give both students and teacher the time and support they need to improve learning?

In addition to school leaders, those who are a part of developing larger educational policy also play a significant role in the kinds of professional development opportunities afforded teachers. Their decisions can either foster or impede teachers' ability to acquire new knowledge, skills and conceptions of instructional practice. An effort to redesign education requires rethinking the learning opportunities currently provided to teachers. New curriculum guidelines, testing or programs will not increase student achievement. Only investing in improving learning opportunities for teachers can we positively impact the learning for students (Darling-Hammond & McLaughlin, 2011). As Darling-Hammond & McLaughlin (2011) state, "Teachers learn by doing, reading, reflecting (just as students do); by collaborating with other teachers; by looking closely at students and their work; and by sharing what they see. This kind of learning enables teachers to make the leap from theory to practice" (p. 83). As policies are developed that impact teacher learning, Darling-Hammond & McLaughlin (2011) suggest considering the following questions (p. 90):

- Does the policy reduce the isolation of teachers?
- Does the policy encourage teachers to assume the role of learner?
- Does the policy provide a diverse menu of opportunities to learn?
- Does the policy link professional development to meaningful content?
- Does the policy establish an environment of professional trust and encourage problem solving?
- Does the policy make possible the restructuring of time, space, and scale within schools?

- Does the policy provide opportunities for everyone involved with schools to understand new visions of teaching and learning?

Honan's (2008) research provides an example of the impact school leader's decisions have on the instructional decisions made by teachers. She found that teachers struggled with seeing reading with digital texts as valuable largely because reading digital text and using technology was not a goal of their school. Honan (2008) discovered that, "teachers can only move forward in making pedagogical changes when the structures and organizations around them are also changed" (p. 42). Therefore, if the goal was to incorporate teaching digital literacy skills, then school leaders must place emphasis on digital literacy being used in daily practice, rather than only as an end product. She found that policy and curriculum largely dictate teachers' views of technology as well as their instructional practice (Honan, 2008).

In summary, research has shown that school leaders play a vital role in determining the kinds of professional development opportunities afforded to teachers. The decisions they make impact school culture and the school's vision of teacher learning and technology integration. In order to enact effective change within a school, a key component is cultivating shared leadership among all stakeholders. To do this, it is necessary to build trusting relationships through collaborative conversations between teachers and administration. Trusting relationships, shared leadership, and a shared vision of technology integration provide the foundation for sustainable teacher learning (Donaldson, 2001; Ertmer & Ottenbreit-Leftwich, 2010; Fullan, 1991; Schrum & Levin, 2009).

Professional Development

Allington (2012) suggests that the most powerful feature of schools in terms of improving students' literacy skills is the quality of classroom instruction. He states, "Teachers teach what they know and expanding what teachers know produces a substantial impact on students" (p. 159). In other words, as teachers' learn and improve their instructional practice, students benefit and show increases in learning. Dewey (2010) believed that teacher education should not focus on producing persons who know how to teach as soon as they graduate rather, teacher education should be concerned with producing what he called, "professional students of education" who have the disposition to learn more about the subjects they teach, the methods used, and the passion to be a lifelong learner (p.38). According to Dewey, such teachers are not superficially engaged with materials, rather, the professional student has a genuine passion for learning, knowing that doing so ultimately leads to improved teaching. Such students of education have the ambition to intellectually grow within the profession; that ambition can only be achieved by immersing themselves in the lifelong pursuit of the knowledge, skills and character linked to the profession of teaching. "No one," according to Dewey (2010), "can be really successful in performing the duties and meeting the demands of teaching who does not retain intellectual curiosity throughout her entire career" (p. 34).

Several studies have found the positive impact higher quality instruction has on student achievement (Allington, 2012; Bembry, Jordan, Gomez, Anderson & Mendro, 1998; Ferguson, 1991; Snow, Barnes, Chandler, Goodman, & Hemphill, 1991). In a study conducted by Scanlon, Gelzheiser, Vellutino, Schatschneider and Sweeney (2010), regarding ways to reduce the occurrence of reading difficulty for beginning readers,

researchers found that providing high-quality professional development for teachers was as effective as providing tutorial support for struggling readers. In order for teachers to use technology to facilitate student learning, they need the necessary knowledge and skills to successfully integrate technology (Ertmer & Ottenbreit-Leftwich, 2010). As stated earlier, Hutchinson & Reinking (2011) found one of the obstacles to technology integration was the lack of adequate faculty development. It is not that teachers don't believe in the importance of technology integration, rather, it is often that they lack the training and skills not only to integrate technology, but also to use the technology themselves (Howland et al., 2012; Hutchinson & Reinking, 2011;). Fullan (1991) suggests, "The problem today faced by schools is not resistance to innovation, but the fragmentation, overload, and incoherence resulting from uncritical acceptance of too many different innovations" (p. 197). Reeves (2010) points out, there are a multitude of professional development opportunities available.

The International Literacy Association [ILA] (www.reading.org), the International Society of Technology Education [ISTE] (www.iste.org), and the Association of Supervision and Curriculum Development [ASCD] (www.ascd.org) are just the beginning of an endless list of organizations that have established clear frameworks for professional learning (Reeves, 2010). It isn't that we need a new theory of professional learning; it is that we need to apply what we know. As Reeves (2010) succinctly notes, "there is a difference between what we know about (effective professional development) and what we actually do" (p. 23). For example, a report by The Milken Exchange on Education and Technology (1998) found that teachers from 21 states surveyed received only 5.1 hours of training on technology integration over a 12-

month period. This training followed the traditional model of technology-based training, which consisted of one-session workshops that were disconnected from practical applications in the classroom. The traditional model of professional development lacked appropriate time, support, and a link to content and learning. Teachers' instructional practice was not impacted. Continuing to conduct professional development in the traditional way, didn't transform instructional practice.

Reeves (2010) discussed how current professional development is inconsistent, unfocused and ultimately ineffective. A key issue is the difference between what teachers know and what they actually do in their classrooms. He offers suggestions on how educators can improve implementation of professional development by:

- Taking specific steps to move from vision to implementation
- Focusing on teaching, curriculum, assessment and leadership
- Implementing action research- move beyond the traditional train the trainer model
- Using performance assessment for teachers and administrators

In order to make meaningful learning sustainable, professional development needs a “radical” transformation from simply transmitting ideas to providing deliberate practice and support. Unfortunately, deliberate practice is far from the professional learning model provided teachers. Instead, professional development is characterized by one-way transmission (Darling-Hammond & Richardson, 2009; Reeves, 2010). Reeves (2010) suggests educators need to see a demonstration of practical application in a local environment, because they have seen too many programs that claim to be research based and were colossal wastes of time. He also emphasizes the need for professional development to focus on the following; providing deliberate practice, opportunities for

teachers to observe and watch each other teaching, and providing feedback and support to improve instructional. Since the ultimate goal of professional development is to improve performance in students, teachers and the organization, Reeves (2010) encourages educators to ask themselves, “Is what I am doing working to improve student learning?” (p. 70).

Like Reeves (2010), Darling-Hammond (1997) agrees that the traditional models of professional development are ineffective. She points out that teacher learning cannot be developed only through traditional top-down teacher training strategies limited to teachers’ acquisition of new knowledge and skills. Sparks & Hirsh (1997) observe, “Gone are the days when educators (usually teachers) sit relatively passively while an “expert” exposes them to new ideas or “trains” them in new practices, and the success of the effort is judged by a “happiness quotient” that measures participants’ satisfaction with the experience...” (p.1). In other words, it is time for the landscape of professional development to change.

What really matters for teacher learning? Today professional development needs to provide opportunities for teachers to reflect critically on their practice and to fashion new knowledge and beliefs about content, pedagogy and learning (Sparks & Hirsh, 1997). Knight (2011) suggests using a partnership approach to professional development. He acknowledges, when adopting a partnership approach to professional development, leaders replace artificial power that is held by virtue of their position with authentic power that is gained through choice. Taking a partnership approach means relinquishing power and adopting a democratic approach to interacting with others. A partnership approach to learning gives teachers choices about how and what they will

learn and provides opportunities for back and forth conversations instead of one-way lectures. These collaborative conversations provide support to address real life issues in an atmosphere of mutual respect. Partnership is about “shared learning” as much as it is about “shared power” (Knight, 2011, p. 20).

Reciprocity is an essential component of partnership learning (Knight, 2011). Reciprocity is the belief that when learners interact with each other, everyone learns. Or as the saying goes, “When one teaches, two learn” (Knight, 2011, p.21). When we look at everyone as both teachers and learners regardless of their credentials; new ideas, strategies and passions come to light. This means that all participants are regarded as knowers, learners and researchers (Cochran-Smith & Lytle, 2009). It is about shared power as well as shared learning.

Professional development (PD) needs to provide a range of opportunities that allow teachers to share what they know, what they want to learn and connect their learning with their teaching. The challenge for policy makers is to redesign existing systems within our schools in order to provide alternative methods of professional development that support teacher learning. Wells (2007) conducted a study to identify which design factors were found to be most essential in providing effective professional development in regards to instructional technology integration. Wells (2007) ascertains that the traditional professional development format, “one-shot training opportunity,” is not conducive to teachers’ integration of new knowledge and skills to use technology (p.103). Therefore, teachers fail to modify their instructional practice in any meaningful way. Wells analyzed characteristics of professional development research over a ten-year period. His research revealed a set of 10 Key Design Factors (KDF) most often shared

by effective models of professional development. The KDF are as follows (Wells, 2007, p.106):

Key Design Factor	Description
Evaluation driven	designed around stated outcomes and employs short and long-term assessment
Contextual	relevant to teacher practice
Learner Centered	designed around learner needs and interests
Duration of Process	participants' instructional and content time, overall time span of PD process
Engagement	learner is actively experiencing new innovation during the PD process
Inquiry Based	promotes a spirit of inquiry, teaching and learning developed for immediate implementation
Theory/Researched Based	grounded in pedagogy that is logical to all participants
Collaborative	establish communities of practice based on collective reflection
Support	long-term pedagogical technical and social assistance
Sustainability	purposefully iterative PD process to ensure durability of change

Figure 2. Key Design Factors Table This table describes ten factors for effective models of professional development (Wells, 2007).

Wells describes a PD model called the Trek 21 project that was successful in promoting sustained change in teaching practice. The Trek 21 project consisted of a cycle of events that occurred within one academic year that incorporated the KDFs. The cycle of events included the following phases: Preparation (spring), Summer Institute (three weeks), Implementation (fall), and Postimplementation (following spring). Wells

(2007) concluded that both the quality and effectiveness of professional development was largely determined by the “extent to which the process aligns with and addresses the key design factors” outlined above (p.106). The purposeful incorporation of the Key Design Factors was seen directly contributing to promoting changes in teacher practice. The KDFs that seemed to have the greatest influence were: 1) duration of process, 2) learner centered, 3) engagement, 4) collaboration, and 5) support. A significant finding from Wells’ research revealed that durable change in teacher practice requires a significant change in teachers’ attitudes and beliefs, which occurred primarily when the new practice positively impacted student learning (Wells, 2007). Ultimately, Wells (2007) suggested that the results of this study provided a starting point for establishing PD structures that will prove successful in the diverse settings of school.

Researchers share similar views on what matters for teacher learning. They suggest that professional development is more effective when it has the following tenets (Allington, 2012; Darling-Hammond & Richardson, 2009; Sparks & Hirsch, 1997):

- Deepens teachers’ content knowledge
- Helps teachers understand how students learn
- Provides opportunities for active, hands on learning
- Enables teachers to acquire new knowledge, apply it to practice and reflect on results with colleagues
- Is part of the school reform effort (systemic thinking)
- Is collaborative and collegial
- Is intensive and sustainable over time

In addition, Darling-Hammond & Richardson (2009) found that professional development lasting 14 or fewer hours showed no effects on learning. The largest effects were for learning opportunities that lasted 30-100 hours spread over 6-12 months (p.49).

In other words, professional development that relies on the one shot workshop model is not effective, especially if it does not provide sustained teacher learning opportunities over an extended time period (Darling-Hammond & Richardson, 2009). Overall, researchers suggest the most useful professional development is job- embedded, emphasized active teaching, deliberate practice, time for collaboration, assessment of practice, observations of teaching and time for reflection (Darling-Hammond & Richardson, 2009; Reeves, 2010; Sparks & Hirsh, 1997).

Alternatives to Traditional Professional Development

We cannot expect to design a professional development process that will endure forever. Society is constantly changing and evolving. This is especially true with the influence of the Internet and other new technologies that have made current systems of learning antiquated and ineffective. Schon (1973) suggests that the process of learning is not a “stable state.” Therefore, our society and all of its institutions are in continuous processes of transformation. We must learn to understand, guide, influence and manage these transformations. We must, in other words, become adept at learning. We must become able not only to transform our institutions, in response to changing situations and requirements; we must invent and develop institutions which are ‘learning systems’, that are capable of bringing about their own continuing transformation. The goal for society as a whole should be to learn about learning. Schon (1973) argues that schools must learn

to become capable of transforming themselves without intolerable disruption. He suggests considering the following questions:

- What is the nature of the process by which organizations, institutions and societies transform themselves?
- What are the characteristics of effective learning systems?
- What are the forms and limits of knowledge that can operate within processes of social learning?
- What demands are made on a person who engages in this kind of learning?

(Schon, 1973, p.28)

Change is fundamental to modern life and it is necessary to develop social systems that can learn and adapt. The key is in understanding that learning is not something attained, accomplished and then finished. As Wells (2000) argues, "...learning is not an end in itself, but an integral aspect of participating in a community's activities, and mastering the tools and practice that enable one to do so effectively" (p. 9). Instead, it is an ever-evolving process that must continue throughout an entire lifetime (Schon, 1973).

Sparks and Hirsh (1997) propose ideas that have the potential to alter the professional development schools typically provide in order to sustain teacher learning and improved practice. These suggestions; results- driven education, systems thinking and constructivism, encompass a broader view of professional development. Results driven education judges the success of schools by what students know and can do as a result of their time spent in school. In a similar fashion, results driven education requires professional development whose success is measured by what teachers learn and are able to apply to improve instructional practice. Instead of measuring the success of

professional development on the number of workshops taken or courses completed, success is measured by whether it altered instructional practices in ways that benefit students (Sparks & Hirsh, 1997).

Systems thinking is based on the interconnectedness of all things. Therefore, changes in one part of the system may influence other parts of the system. As a result, improvements in one area may produce negative consequences in another. Often educators don't think systemically so professional development often occurs in piecemeal fashion. Schools jump on the current band -wagon instead of thinking about the implications of the newest trend on all aspects of the system of school. Teachers may learn a new instructional practice but find the use of it gradually diminishes because no one else in the school is using it or received the training. For example, a teacher attends a conference on technology integration, but if she is the only person in her school that attended, it will be a challenge to get colleagues on board; therefore, she implements new learning in isolation or not at all. Systems thinking must be a part of all levels of the organization of school (superintendent, school board members, principals, teachers, students) in order for meaningful change to occur.

Finally, Sparks and Hirsh (1997) suggest that professional development provide opportunities for teachers to learn in constructivist settings. Rather than receiving knowledge from "experts", teachers collaborate with peers, researchers and even their own students to create new learning. Professional development from a constructivist perspective includes activities such as collaboration with peers, reflective practices and action research. When professional development is based on results instead of numbers, systemic change instead of individuals learning in isolation and on constructivist

perspectives it has the potential to provide meaningful and sustainable learning for teachers (Sparks & Hirsh, 1997).

Action research (AR), a form of practitioner inquiry, is professional development that encompasses many of the attributes (previously listed) that researchers have found to be effective for teacher learning (Anderson, Herr & Sigr, 2012; Reeves, 2010; Sparks & Hirsh, 1997). Participants involved in action research discuss problems, issues, concerns, and observations emerging from their inquiry. The process can be never ending, actually job- embedded. Teachers continually plan, act, observe, reflect, and then plan, observe, reflect on their experiences in a continuous cycle until the culture of inquiry becomes a habit of teaching (Sparks & Hirsch, 1997). Herr and Anderson (2005) define action research as “inquiry that is done by or with insiders to an organization but never to or on them” (p. 3). Because AR is job- embedded, learning changes the transmission of knowledge by “experts” to the study of teaching and learning processes by teachers themselves. Teachers use action research to refine their instructional knowledge and skills (Sparks & Hirsh, 1997). Through action research learning becomes meaningful because it is linked to real life problems faced by teachers in their day-to-day teaching lives.

Bradley-Levine, Smith and Carr (2009), conducted a study that examined the impact of action research on teachers’ perceptions of practice. The study involved 12 teachers enrolled in a master’s level course on action research. The data sources consisted of field notes, interviews, and a review of email correspondence. Researchers found that the teachers’ experiences with action research led them to be more confident in their ability to conduct research. They also became more reflective about their teaching

and took pedagogical risks that they would not have tried in the past. They gained confidence and feedback through monthly meetings, found ways to bridge gaps between schools and were involved in policy decisions that affected their students (Bradley-Levine, Smith & Carr, 1997). Ultimately, these teachers reported becoming more comfortable and confident with their own skills in critically studying their instructional practices and making changes when necessary. This type of professional development was more meaningful than the traditional methods that are often not related to teachers' specific content and are episodic and fragmented. Based on this study, the authors believe that all teachers would benefit from engaging in ongoing action research to improve practice (Bradley-Levine, Smith & Carr, 1997).

In a similar fashion, Kathryn Mitchell Pierce (2006), writing specialist, author and educator for more than 25 years, routinely uses what she calls "professional inquiry" to improve her instructional practice. Pierce recognized an anomaly in her classroom. It is often through discovery of dissonance in our teaching when we learn the most (Cole & Knowles, 2000; Sparks & Hirsh, 1997). She realized that discussions with students in literature group and writers' workshop seldom addressed the "uncomfortable issues" of race and gender (p. 427). This led to a journey of self-discovery about her vision of literacy. Pierce wrote about her recognition of issues of race and gender that impacted the community of learners in her classroom. As she stated, "One key aspect of professional inquiry involves moving from recognition of and acceptance of an anomaly to naming the anomaly through focused questions" (p. 429). However, recognition was just the beginning. For deeper level change to occur, Pierce discovered that she had to critically reflect on her core beliefs and views of the world which involved a sense of

disequilibrium. She also could not do this work alone. She needed professional conversations with trusted colleagues and fellow teachers. Through conversations with others (teachers and her students), Pierce brought her beliefs and teaching practices to a conscious level. She was able to discover connections between beliefs and related practices that highlighted inconsistencies and led to further questions. Conversations with colleagues, her students, as well as reflecting on her own beliefs about how students become literate individuals led her to improve her teaching in meaningful and sustainable ways (Pierce, 2006). For her, professional development is a continuous cycle of inquiry. As Cole & Knowles (2000) succinctly state, “Teaching is inquiry” (p. 1).

The National Writing Project [NWP] provides a unique form of professional development that provides K- college educators opportunities to improve the teaching of writing across content areas. The program develops a partnership between teachers and university professors that work together to merge the theory and practice as they learn strategies to teach writing. NWP provides frequent and ongoing effective professional development programs for teachers to write, to examine theory, research, and practice together systematically. Teachers participate in summer institutes in the teaching of writing. Their learning continues as they return to their classrooms to apply their learning and receive ongoing support from other teachers and university professors.

A distinct aspect of NWP is that its foundation is based on teachers teaching teachers within their own context as well as maintaining partnerships with university professors. The Teachers Teaching Teachers (TTT) web radio program is an example of one project that was created by teachers of the NWP. This program began in 2006, by Paul Allison of the New York City Writing Project, in an effort to provide an online

conversation space for educators. TTT provides a place for teachers to puzzle through questions, share their work, or discuss implications of multimedia expression (Oh, 2012).

The National Writing Project funded a research-based professional development program called the Delaware Writing Project Technology Initiative [DWPTi] that influenced teacher knowledge, practices, beliefs and leadership skills with regard to integrating technology within the teaching of writing. Scott and Mouza (2007) conducted this study to determine the outcomes of using the DWPTi as a meaningful form of professional development. The DWPTi extended over a nine month period to provide teachers time for learning. Teachers from four elementary schools and one middle school participated in the study. The teachers used the principles of effective professional development as well as the principle design elements of the NWP to learn how to integrate technology within their writing curriculum. The main principles that were implemented were as follows: 1) focus on teacher knowledge, content and pedagogy, 2) collaborative group meetings (face to face and online), 3) scheduled meeting times, 4) learning activities based on teacher needs, 5) active learning opportunities to model teaching and reflect on practice, and 6) learning extended over time, not just one session. Findings of the study indicated that the program had a positive impact on teacher learning in the following ways: 1) acquisition of new knowledge, 2) application of technology into the teaching of writing, 3) beliefs toward using technology in writing, and 4) opportunities for exercising leadership roles. Scott and Mouza (2007) found that high-quality, content-focused technology professional development could influence teacher learning. Although teachers learned how to use technology during the project, not all teachers applied their learning into practice in equally powerful ways. Findings based on

interviews of the participants indicated that district policies, statewide mandated testing and school expectations influenced teachers' decision to integrate technology in the teaching of writing.

Lesson study also provides an alternative to traditional professional development. In lesson study, teachers work in small groups to systematically examine specific instructional practice with the goal of becoming more effective teachers (Ertmer & Ottenbreit-Leftwich, 2010). As a group, teachers establish one goal for their classrooms and investigate different methods that may help them reach their goal. Teachers then collaboratively develop lessons based on the methods they learned, apply the lessons in their classrooms and observe each other teach. After observations, the group reconvenes to discuss their observations. Teachers then either revise the lesson plan or begin working on a new lesson or teaching strategy. This approach is well suited for learning how to integrate technology because of the deictic nature of technology. Collaborating with fellow technology users has been recognized as beneficial experience for teachers (Ertmer & Ottenbreit-Leftwich, 2010).

Overall, continuous teacher learning should be an innate part of the job. As Dewey (2010) suggested, teachers should be immersed in the life long pursuit of knowledge, passionate about improving their instructional practice. Professional development should provide the means to support them in this endeavor. A few suggested alternatives to traditional professional development are actions research, professional inquiry, teachers teaching teachers through the National Writing Project model, and lesson study (Anderson, Herr & Sigr, 2012; Ertmer & Ottenbreit-Leftwich, 2010; Oh, 2012; Pierce, 2006; Reeves, 2010). Regardless of the professional

development model, teacher learning should be based on results that are measured by what a teacher learns rather than on the number of workshops attended (Sparks & Hirsch, 1997). As Schon (1973) suggests, the goal for society as whole should be to learn about learning.

Summary

The review of literature confirms the following: 1) defining what it means to be literate is constantly evolving especially with the advent of technology and the Internet, 2) teachers and students must learn skills to successfully navigate the Internet and use technology to support learning, 3) current professional development to educate teachers on technology integration has been largely ineffective, 4) alternative approaches are needed for teachers to learn how to integrate technology within their literacy practice.

As our definition of what it means to be literate continues to develop, so too will greater attention need to be placed on teacher education and professional development.

In order to integrate new literacies with traditional ones as well as with the Common Core State Standards, teachers need to learn effective ways to integrate technology within their literacy instruction. They need to consider what skills or strategies students will need to find, comprehend, evaluate and communicate online information. Since students now have unprecedented access to information, teachers will also need to re-define their roles as teachers.

Technology can provide the tools to enhance instructional practice and support student learning if they are used to learn with and not from (Howland et al., 2012). For this to happen, teachers need adequate and supportive professional development experiences to learn how to integrate technology within their literacy curriculum.

Because traditional methods of professional development have been largely ineffective, teachers have struggled to integrate technology effectively into their curriculum (Bauer & Kenton, 2005). Bauer and Kent (2005) found that even teachers, who were educated and skilled with technology, did not integrate technology on a consistent basis as both a teaching and learning tool. Alternative professional development opportunities are necessary for teachers to acquire the skills to integrate technology in significant ways (Leu, 2006).

Unfortunately, as several researchers found, teachers are often exposed to new teaching strategies but rarely apply or sustain those strategies (Allington, 2012; Ertmer & Ottenbreit-Leftwich, 2010; Reeves, 2007). How can it be that educators know so much about teaching and learning, believe in the importance of technology integration, yet rarely move past exposure to internalize and apply their learning? How can we better prepare teachers to meet digital learners in their world? More importantly, how can teachers integrate technology within their literacy curriculum to support students' literacy skills as they navigate in a digital world?

Chapter 3: Methodology

Introduction

This practitioner inquiry project primarily involved two groups of elementary teachers as well as myself working collaboratively to learn ways to integrate technology during the months of January through May 2014. Because I conducted a practitioner inquiry study, I was both a participant and researcher during the study. The focus of this study was on teachers as learners and how they share new information (technology integration) with each other in order to create new knowledge and understanding about

ways to use technology to teach literacy. More specifically, my research primarily focused on two teachers in the Trio Group and seven teachers on the Technology Team. Together we learned how to integrate technology with pedagogical practice, how to share our knowledge with other teachers, and most importantly, what we need as learners of technology.

Research Questions

The following research questions guided this study:

What happens when a small teacher group explores how to integrate technology with their literacy curriculum?

- A. How do teachers learn about integrating technology within literacy instruction?
- B. How do they apply this in their classroom instruction?
- C. How do they share their ideas about integrating technology within literacy instruction with other teachers?

I used the tenets of practitioner inquiry to find answers to these questions. Unlike traditional research, practitioner research provides compelling insider accounts of the complexities of teaching and learning in today's classrooms (Cochran-Smith & Lytle, 2009). I wanted to conduct practitioner research so that I could be a participant during the study, sharing in the learning process with the teachers. The primary purpose of this study was to generate deeper understandings of how to integrate technology with our literacy instruction in prevalent ways and then share this knowledge with other teachers. By "prevalent," I mean those teaching strategies that teachers use and that become automatic. Practitioner inquiry allowed a unique view as I worked alongside the participants in the study.

Theoretical Framework

Paradigm

My study emerges from a socio-constructivist perspective, meaning that I view learning as a social interaction that plays a vital role in new cognition. New instructional practices are developed when teachers are provided socially rich environments in which to explore knowledge domains with their fellow teachers or outside experts. Through discourse, reflection, collaborative writing, and problem-solving, as well as providing support systems to scaffold their evolving understanding and cognitive growth, teachers' views of instruction pedagogy have the potential to change as they are exposed to new technology, particularly in the area of literacy. Following the notion of Vygotsky's more knowledgeable other (MKO), teachers initially work with support from a more experienced individual, and gradually become more independent in technology integration (Lee & Smagorinsky, 2000). During this study, the role of "experienced individual" interchanged between the participants and myself. My role as a media specialist afforded me experiences using technology that provided opportunities for me to be the experienced individual. However, roles changed when it came to knowledge of the curriculum. In this instance, the teachers became the "experienced individual." Together the researcher (myself) and participants (teachers) worked to construct new knowledge about instructional practices involving technology.

According to Hatch (2002), constructivists view knowledge as something that is constructed, not fixed. Truth is determined by the co-construction of experiences. As a researcher, I believe there is not a clear version of "truth"; rather truth is deictic, constantly evolving based on the understanding of the individuals involved at that

moment. As Moll (2014) summarizes “...man has no fixed human nature but continually makes himself and his consciousness through productive activity” (p.4). We understand our world based on the mutual agreement that researcher and participants construct as they seek the answers to questions they pose (Hatch, 2002). Similar to Bruner (1960), I believe that learning is an interactive process in which learners construct new ideas or concepts based upon their prior knowledge or schema. Social interaction proceeds development whereby cognition is an end product of socialization (Lee & Smagorinsky, 2000). In other words, meaning is constructed through the transformation of existing knowledge with new information, experiences and interactions with others in authentic contexts.

From the beginning, the teachers and I brought our versions of “truth” regarding technology integration to the table. As we learned from each other through collaborative discussions, reflection in our online journals, and partner teaching; our versions of what we deemed as “truth” about our instructional practices changed. As we planned lessons, reflected on teaching, and participated in collaborative discussions about technology integration, new views of instructional pedagogy emerged. As Dewey (1940) suggested, we learned through actual experiences rather than from an authoritarian approach. We learned through the use of technology, not from it (Howland, et al., 2012).

Practitioner Inquiry

Practitioner inquiry is the systematic intentional inquiry by teachers about their own school or classroom work (McLaughlin, Black-Hawkins & McIntyre, 2004). It is inquiry that is done by or with insiders to an organization or community but never to or on them. According to Herr and Anderson (2005) the most important feature of

practitioner inquiry is that it shifts locus of control from professional or academic researchers to those who have traditionally been the subjects of research. Insiders to the study are the researchers. I chose to conduct this study using the tenets of practitioner inquiry because it provided a way for me to be a part of the inquiry process instead of an outsider. Practitioner Inquiry is more than an educational practitioner following a sequence of steps for solving a classroom or school problem based on assessment data. Practitioner Inquiry is a reflexive process, deliberately and systematically done, that requires some form of evidence to support assertions (Cole & Knowles, 2000). This reflexive process differs from reflection in that it considers both theory and process by melding one's own personal theory with general theories (Cole & Knowles, 2000). During the study, the teachers and I participated in small group discussions as well as used online journals to record our questions, ideas, and "ahas"; we reflected not only on technology integration but also examined our beliefs about teaching and learning. The tenets of practitioner inquiry allowed us to work collaboratively as "knowers" and learners with no one person serving in a dominant role.

Practitioner inquiry is a stance. It is so much more than simply finding answers to the questions we pose. Rather, it is a different way of thinking about teaching that challenges the traditional roles of conducting research and the inequalities perpetuated by the educational status quo. It is a habit of mind, a continuous way of thinking about and evaluating current practice. It involves a continual process of questioning the ways knowledge and practice are constructed, evaluated, and used (Cochran-Smith & Lytle, p. 121). It involves seeing teaching as inquiry, a continuous cycle of posing questions, seeking answers, and solving problems (Cole & Knowles, 2000).

Common Tenets of Practitioner Inquiry

According to Cochran-Smith & Lytle (2009), several common features lend “unity but not uniformity” to practitioner inquiry (p.41). Following I have listed common features of practitioner inquiry that I used as I conducted this study.

- **Practitioner’s role:** Practitioner simultaneously takes on the role of researcher.

This enabled me to participate in the inquiry process as a participant working with teachers instead of someone from the outside looking in as is often the case in traditional research. In addition, it provided the teachers with whom I worked to take on the role of researcher as well. Ultimately, this study was a collaborative effort whereby we shared leadership roles depending on the needs of the group.
- **Collaboration:** Instead of being the lone researcher working more or less by myself, I was able to work and learn collaboratively with teachers in small group settings as well as partner teach with them.
- **Shared Power:** All participants are seen as knowers, learners and researchers.

As the teachers and I worked and learned together, we were on equal footing. Each participant was viewed as a “knower and agent for educational and social change” without any person serving in an authoritative role (Cochran-Smith & Lytle, 2009, p.42).
- **Local Context:** The study is conducted on the site where participants interact with the problems or issues that arise within their local context. I, along with the other teachers who participated in the study, worked at the school where the research was conducted.

- **Systematicity:** The data are collected and analyzed in systematic and intentional ways during the inquiry process. A strength of practitioner inquiry is that multiple data sources are employed that either confirm or disconfirm one another. Analysis of the data is collectively constructed by practitioners through systematic observations as well as documentation of learners and how they make sense of the data collected.
- **Validity and Generalizability:** This is known as trustworthiness in traditional research. Validity is confirmed on concrete examples of actual practice presented in enough detail that the community can judge the trustworthiness and usefulness of the study. Generalizability occurs when the research is made public and readers of the research perceive ways to implement findings into their own contexts.
- **Publicity:** Most practitioner researchers emphasize making their work open to critique. Depending on the purpose of the inquiry, work is either reviewed by peers and other inside participants or made public for review by others beyond the local context. Schulman (2000) suggests that for practitioner inquiry research to become useful and credible to others, the research should be accessible or transformed into community property. Ultimately, what sets practitioner inquiry apart from traditional forms of research is that it generates knowledge from on-going problem solving in social settings as well as provides an insider view that traditional researchers don't see (Anderson, et al., 2007).

Using the tenets of practitioner inquiry, the teachers and I sought to identify ways of learning about technology integration. We also sought to share our learning with other teachers in a manner other than the traditional forms of professional development.

Looking through the lens of social constructivism, I found the methods used in practitioner inquiry to be an ideal umbrella for conducting this study.

Role of Participants in Practitioner Inquiry

The primary participants in this study included two practicing teachers and myself who all teach at Bright Start Elementary School. In addition, participants included members of the school's technology team and members of the faculty. Pseudonyms are used throughout this study to protect the privacy of the participants.

Primary Participants

Kate and Stephanie, two regular education teachers, were the primary participants in this study. Kate is a third grade teacher with 25 years of teaching experience. She has taught in both private and public schools but has spent the majority of her teaching career at Bright Star Elementary. I asked Kate to participate in the study because I knew of her interest in learning how to use technology with her students. She was open to trying new instructional approaches and serves on the school's Technology Team. In 2012, Kate and I participated in an EnTICE year-long technology integration course offered by our school district. EnTICE is a professional development program based on the eMINTS Instructional Model designed to help teachers develop instructional technology skills (Koster & Villasana, personal communication, March 12, 2012). During the class, we wondered how technology could be a tool that becomes a "natural" part of teaching, instead of a separate subject to teach or used as an end-of-unit project. By "natural," I mean using technology to support the day-to-day learning that happens in classrooms.

Stephanie currently teaches fifth grade at Bright Star Elementary. She has five years of teaching experience in third and fifth grades. Similar to Kate, she was interested

in integrating technology within her instructional practices. I asked Stephanie to participate in this inquiry because she was a member of the school's technology team who constantly sought innovative ways to use technology with her students. She also worked with a grade-level team that rarely used technology with instructional practice. Because of her belief in the importance of using technology with her instruction, she was interested in finding ways to involve her colleagues in technology integration. She, too, wanted to know how to teach literacy skills using technology so that the technology became a natural part of her teaching practice (Stephanie, reflection journal, p.1).

Additional Participants

The Technology Team (Tech Team) consisted of a teacher from each grade level, a teacher who represented the specialist team (art, music, physical education, special education) and myself. The Technology Team was previously established committee at Bright Star Elementary. At the beginning of each school year, teachers sign up for committees they wish to work on. The members of the Tech Team all volunteered because of their interest in technology. The following chart briefly describes the members of the Tech Team.

Tech Team Member	Grade	Teaching Experience	Specific Technology Experiences
Tami	Media Specialist K-5	26 years	eMINTS certification EnTICE training iPad Summer Institute (Chicago) Technopalooza (district professional development)
Joe	Physical Education K-5	4 years	
Erika	K/1	7 years	EnTICE training

Laura	K/1	2 years	
Edith	2nd	6 years	
Kate	3rd	26 years	EnTICE training iPad Summer Institute (Chicago) Technopalooza (district professional development)
Sally	4th	11 years	
Stephanie	5th	8 years	Technopalooza (district professional development) iPad Summer Insitute (Chicago)

Figure 3. Technology Team Members. This table describes the members of the Technology Team at Bright Star Elementary School during the 2013-2014 school year.

My Role: Practitioner as Researcher

One common feature of practitioner inquiry is that the practitioner simultaneously takes on the role of researcher and participant (Cochran-Smith & Lytle, 2009). This duality of roles allowed me as the researcher to participate in the inquiry project along side Kate and Stephanie. At times, I served as the “experienced individual” or the “more knowledgeable other” (Gladwell, 2002; Lee & Smagorinsky, 2000). My work as a media specialist provided me with additional experiences using technology that the teachers did not have. Because of this, there were times when I participated in this research as what Gladwell terms a “Maven” (2002, p.59). Mavens play an important role in the process of change because they not only have information but also have the ability to share information with others so that they, too, can understand and use the knowledge.

Because I worked full time as the media specialist for Bright Star Elementary, I knew the students and teachers as well as the school's culture prior to beginning the study. Therefore, a sense of trust and an open, honest relationship were already established between the teachers, the students, and myself. During this study, I participated as a member of the Trio Group and as a member of the Tech Team at our school. On the Tech Team, I represented the specialist group, Kate represented third grade, and Stephanie represented fifth grade. As a member of the Trio Group, I planned and team-taught lessons with Kate and Stephanie, assisted with technology issues, and informally learned with both teachers and students. Outside the classroom, I worked collaboratively with Stephanie and Kate to plan lessons that integrated technology within their literacy curriculum. Because of my job as media specialist, I was viewed by teachers as being responsible for technology integration in our building; therefore, I was often the person responsible for establishing the agenda and facilitating discussions. However, the agendas were posted on Google Drive, so Kate, Stephanie and members of the Tech Team were invited to contribute at any time. Throughout the study, we shared our learning, ideas and suggestions with each other via Google Docs.

Primary Participants' Role in the Inquiry Project

As insiders to our own setting, Stephanie, Kate, and I had a complex set of perspectives and relationships with which to navigate. In our initial meetings, we discussed our individual perceptions and experiences about learning, technology, and technology integration. Although we were all teachers, we each served a different role in our school setting. To maintain trustworthiness within teacher research we not only reflected on the research question but also acknowledged how our positionality

impacts the lens through which we view reality (Anderson, et al., 2007). For example, my job as a media specialist and researcher allows me a different perspective because I work with all the teachers and students in our building instead of only a certain grade level. I have also been an administrator and classroom teacher and can view the world through these lenses as well. Thus, my positionality on educational issues may be broader because I have experiences with the entire school population. Kate's positionality was that of a third grade teacher with 25 years of teaching experience as well as technology training through the EnTICE program. Stephanie was a fifth grade teacher with five years of teaching experience. Anderson et al., (2007) suggest acknowledging our roles because "one's location in an organization makes for varying vantage points or differing lenses of reality" (location 503). Throughout the inquiry project, we shared the role of researcher. Even though this was my dissertation; Stacy, Kate and I shared our reflections with each other and posed questions and suggestions during our meetings. We worked together to discover how teachers learn to integrate technology within their literacy practice. Often it was through our discussions about our self-reflections that we learned the most.

Since Kate, Stephanie and I were all three female elementary teachers, we viewed our work through this lens. We discussed how our learning might have been different if one of the male teachers in our building had been a part of our group. We also recognized that we were coming from an elementary teaching perspective rather than that of a secondary teacher. We recognized that teaching in the elementary world is different than teaching at the secondary level primarily because scheduling is different and also because

subjects are taught individually. We wondered how our learning would impact teachers who came from a secondary perspective.

Kate, Stephanie and I occupied multiple positions related to our teaching experiences, ages, and social classes. For example, our age differences and experiences with technology impacted our abilities to learn how to integrate technology. Stephanie is younger than both Kate and I. Unlike us, she grew up with access to computers and had more experience using electronic devices; therefore, her learning abilities in regards to technology were different from ours. In addition, our personal lives also impacted the time we spent learning and experimenting with technology. Stacy and I spent additional time exploring technology on our own time. Kate did not want to spend a lot of time with technology while at home. She had different values and beliefs about how to spend her personal time than did Stacy and I. There was not anything right or wrong about these choices. However, it was an important difference to recognize and discuss for our team to work collaboratively together.

It was important to be open and honest with each other throughout the inquiry project. The fact that we were colleagues working in the same school impacted our discussions. For example, one issue we faced was staying on task and on topic during collaborative discussions. Because we work in the same school and know each other well, it was easy to have side conversations about various school issues that did not pertain to our study. We used the Success Analysis Protocol, also known as Think Alouds, developed by the Critical Friends Group as a guideline for our discussions (National School Reform Faculty, 2014). Kate, Stephanie, and I reflected on our

individual perspectives through online reflection journals and through collaborative discussions with each other (See appendix A).

Role of the Tech Team members

The main role of the Tech Team members was to learn and share ways to integrate technology with each other and our faculty. During meetings, the Tech Team members shared ways to integrate technology in our classrooms, and we discussed ways to share our learning with the grade-level teams we represented. Our team was also responsible for providing professional development with our faculty at the end of the year. Jacob, a member of the Tech Team, videotaped our meetings; however, he was unable to tape two of the meetings because of unforeseen circumstances (limited space, loss of power). After our meetings, I transcribed the main points from the videotapes and shared this information with the Tech Team. We used information from these conversations about learning technology to plan the end-of-year professional development session with our faculty.

Collaborative Nature of Practitioner Inquiry

Unlike other forms of research where the researcher is seen as the knowledge generator, participants of practitioner inquiry work together to generate knowledge that pertains to their local context. All participants are seen as having significant knowledge about the contexts in which they work on a daily basis. In other words, no one participant serves in a dominant role. Roles are reciprocal, binding all participants equally. In this study, the Trio Group (Kate, Stephanie and I) and members of the Tech Team worked collaboratively to learn how to integrate technology with our instructional

practice. Following I describe more specifically how we worked together in our perspective groups.

Collaboration with the Trio Group

The Trio Group consisted of Kate, Stephanie, and myself. We met weekly for approximately an hour and a half to plan lessons, discuss how previous lessons went, and determine our next steps to integrate technology (Planning Sessions). We also met monthly on the weekends for two to three hour sessions to discuss our readings, share ways to integrate technology, and review our online reflection journals (Reflection Meetings). We also determined what to share with the technology team during these meetings. During the study, our roles in the Trio Group were reciprocal. Regarding technology, I was the more knowledgeable peer, but that would change when it came to knowledge of the curriculum. In this instance, the teachers were the experienced individuals. Throughout the inquiry study we all took on the role of researcher. We were researchers of both our teaching practice and ourselves as learners.

Collaboration with the Technology Team (Tech Team)

The Tech Team met bi-monthly to learn strategies, programs, or apps that would support technology integration with our curriculum. Our roles on the team were reciprocal. We shared responsibility for sharing ways to integrate technology. Sometimes I brought ideas to the team, but often ideas came from other members. Because of my job as media specialist, initially members assumed I would facilitate the meetings. However, all team members gave their input on the agendas in Google drive. Prior to each meeting members could add their own ideas or suggestions. Each member of the Tech Team had a specific role. My role was typically facilitator of

the meetings, but in our meeting norms we made sure everyone had a voice by using the strategy called Thumbs Rule. This is a strategy whereby members give their opinion when making decisions by voting with their thumbs. By using norms, we made sure all voices were heard. I collected data by videotaping our Tech Team meetings. I decided to videotape these meetings because several people typically talked at once, and the visual component would make the meetings easier to transcribe. I transcribed each video but not word for word. Instead, I transcribed only the parts relevant to our study.

Local Context as Inquiry Site

In practitioner inquiry, the local context is the site for the inquiry project. Bright Star Elementary is one of 19 elementary schools in our school district. Even though it is part of a large school district, it is located on the northeast edge of the city in a rural area. It serves students in grades K-5 and has a population of approximately 320 students. The student body has little diversity, consisting mainly of middle-class Euro-American students who live mostly in rural areas.

This inquiry project primarily took place in the teachers' classrooms or the Media Center at Bright Star Elementary. The classrooms are located in trailers adjacent to the school building. The trailers have wireless access, although it is not always functional. Sometimes only 10-12 students can use the wireless network without it crashing. However, tech support is provided when access is down. Teachers may check out additional technology such as cameras, laptops and iPads from the Media Center. The Media Center has 30 laptop computers with headphones, 20 iPads, a smart board, copy machine, a scanner, and one desktop computer available for student use. The Media Center has fairly reliable wireless connectivity. Access to the Media Center is limited

because in addition to serving as a library, it is sometimes used for district assessments and used for teaching classes. Bright Star Elementary also has a wireless computer lab that contains 30 laptop computers, headphones, keypads, and a smart board. Although the computer lab is open for anyone's use, it is primarily used for students to complete district assessments online. Because of the assessment requirements, scheduling time in the computer lab can be a challenge.

Since iPads were seldom used in our building, we divided the iPads from the cart in the Media Center so that Kate and Stephanie would each have daily access to 10 iPads with the understanding that if another teacher in our building wanted to use them for a project, he or she could have access to the iPads. For the most part, Kate and Stephanie had access to at least 10 iPads on a daily basis. In addition, Stephanie's students had access to devices brought from home. She agreed to pilot the BYOD (bring your own device) project with her fifth grade students. This was the first year the school board implemented the BYOD policy, and our administration agreed to try it in fifth grade and grow from there. Therefore, Kate's students did not have the option to bring their own devices during our inquiry project.

Implementation of Study

The problems or issues that arise within professional practice become the focus of study in practitioner inquiry. Within local context, questions emerge from day-to-day practice and from discrepancies between what is supposed to happen and what actually happens within professional practice (Cochran-Smith & Lytle, 2009). For example, at Bright Star Elementary School, the PTA purchased an iPad for each teacher to use for instructional purposes in the classroom. In addition, the school district purchased an iPad

for each classroom as well. Therefore, each teacher had two laptops, a smart board, a desktop computer, and two iPads for classroom instruction. However, even with access to technology, few teachers were using these devices within their daily instruction. This discrepancy was a primary reason for conducting this study.

Following is an overview of the implementation of this study. This study was conducted in four main phases, which I describe in more detail below.

Implementation of Study	January- May 2014
January 2014	IRB approval, school district consent, committee review, participant consent forms
February- May, 2014	Implementation of study and data collection
May-December, 2014	Analysis of data
February 2015	Presentation of findings

Figure 4. Timeline of Inquiry Project. This table describes the timeline followed for the implementation of this study.

Prior to beginning the study, it was necessary to obtain permission to conduct the study in my own school. Therefore, I met with the principal of Bright Star Elementary and the Chief Academic Officer of our school district to obtain permission to conduct the research. I met with members of my doctoral committee to gain insight and feedback on my research proposal and obtain their approval. I also submitted a request for research approval through the Institutional Review Board (IRB). I met with the teachers from both the Trio Group and the Tech Team to gain their permission to participate in the inquiry project. The teachers and I established dates and procedures to hold meetings, collaborate with each other, reflect on our learning, and share our insights with our colleagues. Even though students were not the focus of this research study, I also sent

permission forms home with students in both Kate's and Stephanie's classes to inform parents of our research project.

To conduct the study, I implemented four main phases that were not necessarily hierarchical. The phases consisted of the Trio Group, the Technology Team, Prairie Palooza professional development, and the final reflection phase. Following is a chart of the flow of the main phases in the inquiry project. Each phase is described in more detail following the chart.

Figure 5. Phases of the Technology Inquiry Project. This diagram is a visual representation of the four phases of this study. The diagram is not meant to be hierarchical.

Description of Phases

Phase 1: Trio Group

The Trio Group consisted of Kate, Stephanie, and myself. Since there were three of us and our focus was on technology, we called ourselves, “The Trio Group.” All three

of us had previous experiences with and professional development on using technology. In addition to the district training on iPad implementation, the three of us had attended a summer institute in Chicago focused on iPad integration sponsored by the Bureau of Education and Research (BER). Kate and I also completed an EnTICE (Enhancing Technology Instruction in Classroom Environments) class designed to help teachers develop technology instruction skills. Even though we had training, we were not applying the training with our instructional practice. We had little to show for the time and money spent in professional development. Kate stated, “When PTA spends so much money on iPads, you want to use them. And the three of us (Kate, Stephanie, Tami) don’t want it to just be a final presentation. We want to be using technology all the way through.” Stephanie agreed, “We want to be using technology, not just as an end product. So it becomes natural part of teaching for us and for others” (planning session, 2/10/14, p.16). We wondered why, even though we had attended several training sessions, it was such a challenge to integrate technology.

Since we worked in the same building, it was easy to establish relationships and trust within our group. We met once a week after school to plan ways to integrate technology, report on what we tried during the previous week, and reflect on our own learning as we integrated technology with our instruction. We called these weekly meetings our planning sessions because the primary purpose was to plan what we would try with technology for the following week. During the week, we applied the technology we discussed in our planning sessions and reflected on our learning in our online reflection journals located on Google Drive in our Tech Trio shared folder. We also met one weekend a month to discuss our readings, share and explore new ideas, reflect on our

learning and to discuss what we wanted to share with the Technology Team. We called these meetings our reflection meetings. Since we were conducting practitioner inquiry research, my role was that of participant instead of leader. Even though I usually wrote the agenda, each member had input as to what we would learn and discuss at our reflection meetings and planning discussions. We contributed ideas and suggestions about technology we used to teach the curriculum. At the end of our inquiry project, we reflected on the overall experience, how our group worked together, and how we learned to integrate technology by completing a questionnaire created by Nancy, peer de-briefer, and me. We then discussed our answers at our final meeting in May. (See appendix B).

Phase 2: The Technology Team (Tech Team)

The Technology Team consisted of a teacher from each grade level and a teacher who represented the specialist team (art, music, gym, media). The following chart describes each member and their role of the Technology Team.

Tech Team Member	Grade	Role	Shared with
Tami	Media Specialist	Facilitator, shared ideas from Trio Group	Special education teachers
Joe	Coach	Time keeper, video taped sessions	Specialists: art, music, counselor
Erika	K/1	Participant	Shared with K/1
Laura	K/1	Recorder, took notes during meeting	Shared with K/1
Edith	2nd	Participant	Shared with 2nd grade team
Kate	3rd	Participant, shared ideas from Trio Group	Shared with 3rd grade team

Sally	4th	Participant	Shared with 4th grade team
Stephanie	5th	Participant, shared ideas from Trio Group	Shared with 5th grade team

Figure 6. Roles of Technology Team Members. This table describes the roles and responsibilities for each member of the Technology Team.

The Technology Team met bi-monthly after school to learn ways to use technology in the classroom. Kate, Stephanie and I were members of both the Trio Group and the Technology Team. The Trio Group shared their learning with the Tech Team; however, the team also learned by exploring apps and programs that were offered by our district (e.g., MYON Reader, Learn 360), as well as by exploring ideas from social networking sites and our colleague's ideas. For example, Laura shared a poster she found on the social networking site, Pinterest (reflection journal, 1/7/14). The Tech Team thought this poster provided an important visual reminder for our team that technology is a tool to learn with, not a subject to teach. As one Tech Team member stated, "Technology becomes a tool, almost like a pencil, that we (teachers and students) automatically use to read, find information, compose, create, solve problems, etc. It isn't a separate thing but a natural part of instruction"(anonymous response from Tech Team member, Teach Team Survey, 2/8/14).

Figure 7. Technology Chart. This chart represents the goal of technology integration for members of the Technology Team.

During Technology Team meetings, members determined what technology to learn. That learning was then applied in their classrooms and shared with grade-level teams so that they could integrate technology within their curriculum to support student learning. We also posted our learning on a blog site we called, “Start the Spark” to provide a resource for teachers interested in trying technology. Through reflective discussions, we determined ways to share technology that would be relevant to our grade level teams, and not seen as simply one more thing to do. For example, Edith shared, “I want to try things in my classroom in small chunks” (Tech Team reflection, 1/7/14). Therefore, we chose to share only one thing at a time with teams, keeping it simple. Summing up our goals for Tech Team, Stephanie stated, “Our goals are to learn, collaborate, support and share with each other and our faculty, ways to use technology” (reflection journal, p.42).

Phase 3: Prairie Palooza Professional Development

In addition to sharing our learning with grade-level teams, the Technology Team was also responsible for providing professional development to our faculty. The Technology Team planned and led a professional development session on technology integration in May, the final month of school. As Stephanie stated, “It was kind of dumb to have it the very end of the year, we need to schedule PD throughout the year.” (final reflection, 5/18/ 2014). Though members had mixed feelings about the timing, we were pleased we had the opportunity to share our learning with our faculty (final reflection, 5/8/2014).

The Tech Team decided to name this learning opportunity Prairie Palooza because it was a catchy name, did not sound like traditional professional development, and it was related to the location of our school (on a prairie). The purpose of Prairie Palooza was to increase faculty members’ excitement about using technology, to teach them technology they could use in their own classrooms, and to build their confidence in technology integration. The team felt it was important to build teacher confidence in learning technology and giving it a try (Tami, reflection journal, p. 20). Kate shared the team’s intent, “We were hoping to expose our faculty to technology that would be purposeful, easy to use with their curriculum and allow the beginners to gain confidence with their devices. We want to keep it in an hour time frame yet offer several options for the faculty and give them time to actually work with each app or website” (reflection journal, p.10).

We chose to share technology that we used with students and found relevant ourselves. Based on our previous discussions about what we needed as learners of technology, we

taught the sessions in small groups and worked in pairs so that there would be an additional teacher in the room to help anyone who got a “click behind.” Kate commented, “I appreciate being able to buddy up to present since I am not feeling like an expert with any of the things we are presenting. It takes the pressure off and we are better able to answer questions that come up from the audience when we have two heads” (reflection journal, p.12).

Because of Tech Team members’ past experiences with professional development, and our conversations with each other and members of our grade-level teams, the Tech Team recognized the importance of providing choice within our professional development (Tech Team video, 4/23/14). Therefore, we decided to offer a variety of opportunities to learn technology integration so that teachers or grade-level teams could sign up for sessions they deemed most useful. Prior to attending Prairie Palooza, we asked teachers to sign up for sessions in the teacher’s lounge. The Tech Team members provided information about the sessions offered during grade-level meetings and helped teachers download apps they would need in the sessions so they would be ready to learn.

The Tech Team also wanted to ensure that Prairie Palooza was relevant and that we kept it simple. Prairie Palooza consisted of two 20 minutes sessions and time for reflection at the end. Each session provided three options for teachers. Teachers could go to the same session as a grade level team or attend sessions individually. After the sessions, all teachers returned to the Media Center to complete a short online survey that allowed them to reflect with their grade-level teams. (See appendix C for Prairie Palooza survey questions)

The chart below explains the curricular offerings for the Prairie Palooza Professional Development.

Introduction and snacks (10 minutes)	Mike (Instructional Technology Trainer) shared technology opportunities for summer Tami: explained the format for learning during Prairie Palooza Sally & Tami: support, took pictures
Session 1: (20 minutes)	Joe: Siri, Splashtop Kate & Edith: Kidblog Stephanie: TodaysMeet, Poll Everywhere
Session 2: (20 minutes)	Kate & Edith: Pic Collage Erika & Laura: Sock Puppets, Puppet Pals Stephanie: Popplet, 30 Hands
Reflection	Participants return to Media Center to reflect with other teachers about the sessions they attended and complete short online survey

Figure 8. Prairie Palooza Professional Development. This chart describes the technology sessions offered to teachers. The Prairie Palooza occurred for one hour after school.

Phase 4: Collective Reflection

The Trio Group, the Tech Team, and our faculty participated in a final reflection about our learning during the inquiry process. The Trio Group and Tech Team reflected individually in their online journals and in a final group discussion. Our faculty reflected at the end of Prairie Palooza and through focus groups conducted by members of the Tech Team. When the Tech Team informally interviewed their colleagues about their experiences during Prairie Palooza, they asked them about their experiences with technology integration, what worked well during Prairie Palooza, what the Tech Team should do differently for future professional development sessions, and what supports they needed to integrate technology. At our final Tech Team meeting for the year, the Tech Team members discussed what we learned from the focus group conversations. We

then completed a final Tech Team reflection about the structure of our team, how we worked together, and how we learned to integrate technology in our reflection journals on Google Drive. (See appendix D)

Systematicity in Practitioner Inquiry: Data Collection and Analysis

Systematicity refers to the systematic ways in which data is collected and analyzed in practitioner research. The forms of data collected are similar to those collected in traditional qualitative studies (e.g., observations, interviews, documents, and artifacts) that either confirm or disconfirm one another. The analysis of the data is collectively constructed by the practitioners.

Anderson et al., (2007) offer the metaphor of putting together a jigsaw puzzle without first seeing the final picture to describe the process of systematicity. When putting together a jigsaw puzzle, one knows that the different puzzle pieces will result in a picture but you must carefully analyze each piece to discover the picture. Similarly, all the pieces of data collected during an inquiry project will eventually result in a picture; however, to discover the picture, one must collect and organize the pieces of data in consistent and organized ways. A significant difference in practitioner inquiry is that the researcher documents from an insider's perspective his or her own questions, changes in views over time, dilemmas and recurring themes (Cochran-Smith & Lytle, 2009). For example, I was not only a researcher listening from the outside; I was also a participant involved in the conversations in both the Trio Group and the Tech Team. This is a key difference from traditional forms of research. Sometimes what "counts" as data collection in practitioner research can also be different from data collection in traditional research. For example, often in practitioner inquiry, autobiographical and narrative inquiries are

often interpreted and counted as data (Cole & Knowles, 2000). The primary data sources in this study came from the narratives teachers and I shared through reflection journals, transcripts from our discussions during meetings, and the informal interviews of our faculty. Specifically, I collected several sources of data: recorded conversations (between teachers in the Trio Group and the Tech Team), technology surveys, online reflection journals, my personal journal, lesson plans, videotaped conversations, and informal interviews, all of which are commonly gathered in practitioner inquiry research. The chart below outlines the data collection process and timeline for the study.

Data Collection	February	March	April	May
Technology Survey	February 6th			
Teacher lessons plans	1 per month	1 per month	1 per month	
Videotaped Tech Team meetings	February 19th	March 12th	April 9th and April 23rd	May 7th
Trio Group teacher reflection journals	Weekly	Weekly	Weekly	Final reflection
My personal reflection journal	Weekly	Weekly	Weekly	Final reflection
Transcribed weekly planning sessions (Trio Group)	Mondays 3:00-4:30	Mondays 3:00-4:30	Mondays 3:00 - 4:30	Monday 3:00-4:30
Transcribed Reflection Meetings with Trio Group	February 17th 8:30 am	March 15th 8:30 am	April 19th 8:30 am	May 18th 8:30 am
Met with two critical friends to peer debrief	Feb. 10: Nancy Feb. 27th:	March 10: Nancy March 13:	April 14: Nancy April 24:	May 5 & Summer: Nancy

	Helen	Helen	Helen	May 8: Helen
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Figure 9. Data Collection Timeline. This chart represents the timeframe and types of data collected during the study.

Data Collection

According to Hatch (2002), the quality of research is improved by beginning the formal data analysis early and continuing throughout the study. I collected data in systematic ways through a technology survey, audio recordings of the Trio Group's discussions, reflective online journals and lesson plans, videotaped conversations of Tech Team meetings, and informal interviews of our faculty. A strength of this process was that the data collected did not only come from one individual's observations; but both the Trio Group and the Tech Team systematically documented our own questions, perceptions, and dilemmas from insider's perspectives. Data was analyzed throughout the study and used to provide guidance for collaborative discussions and lesson planning.

Following I describe the ways in which I collected data throughout the study and how the data collected relates to my inquiry questions. Following the chart, I describe in more detail the data I collected as it relates to the inquiry questions of my study.

Question	Data Collection	Timeframe	Participants	How collected
How do teachers learn to integrate technology?	Technology Survey	February 6th	Trio Group Technology Team	Results posted in shared folder in Google Drive
	Collaborative Online reflection journals	Weekly	Trio Group	Individual reflective journals posted in shared folder in Google Drive
	My personal	At least once	Myself	Private journal

	reflection journal	weekly		posted in folder in Google drive
	Audio taped conversations of weekly planning sessions and reflection meetings	Planning: weekly Reflection: monthly	Trio Group	GarageBand used to record conversations, then sent to transcriber, posted transcription in shared Dropbox folder
How do teachers apply their learning (integrate technology within pedagogy)?	Audio taped conversations of planning sessions and reflection meetings	Planning: weekly Reflection: monthly	Trio Group	GarageBand used to record conversations, then sent to transcriber, posted transcriptions in shared Dropbox folder
	Teacher lessons plans	Once per month	Trio Group	Lessons posted in shared folder in Google Drive
	Videotaped meetings	Twice per month after school	Tech Team	Video recorder on iPad, transcribed conversations that applied to the study
	Online reflection journal	Final reflection	Tech Team	Used Google docs to reflect on learning for year, suggestions for improvement
How do teachers share their learning with colleagues?	Blog called Start the Spark	After lesson completion	Tech Team	Teachers posted examples of integrating technology with their students
	Quick Share Conversations	Instantaneous conversations held at random,	Trio Group, Tech Team, Faculty	I made note of these in my personal journal.

		lunch, hallway, etc.		Some were noted in Tech Trio reflection journals.
	Prairie Palooza Survey	After Prairie Palooza Professional Development	All faculty members	Survey created by Tech team using Google Forms
	Videotaped meetings	Bi-monthly	Tech Team	Video recorder on iPad, I transcribed conversations that applied to the study
	Focus Groups (informal interviews with faculty)	After Prairie Palooza Professional Development	All faculty members	Tech Team members informally asked grade-level teams about technology integration and Prairie Palooza

Figure 10. Data Collection by Inquiry Question. This chart provides a summary of data collected for each question in the study.

Surveys:

Two surveys were conducted during this study. The first survey was given to both the Trio Group as well as the Technology Team at the beginning of the study to gain insight into members' individual perspectives on technology integration. The purpose of the survey was to reflect on teachers' usage of technology in their classrooms, and to be a conversation starter for the examination and discussion of what teachers believed about technology integration. Several of the questions were adapted from a survey created by Amy Hutchinson and David Reinking (2011), which they used, in a national study to determine teachers' perceptions of technology integration within literacy instruction. (See appendix E for Technology Survey)

Our faculty also completed a brief survey after their participation in Prairie Palooza (technology professional development). The purpose of this survey was to ask the faculty what support they needed with technology, and how they would apply their learning from Prairie Palooza. The Tech Team used this information for future planning.

Audio Recordings (Trio Group):

As stated previously, during our weekly planning sessions and our reflection meetings, the Trio Group used a process called Think Aloud as a way for us to reflect on our successes, notice “aha” moments and stay on task. Researchers use Think Alouds, as a way to study thinking (Crutcher, 1994). This process helps teachers to increase their meta-cognitive awareness. Hatch (2002) describes this type of reflection as “special kinds of conversations” that are used in qualitative research to explore a participant’s experiences and interpretations of the experience (p.91). These informal discussions helped us to reflect on our overall experiences with technology integration and our own learning. For example, as we reviewed data from our reflection journals, we noticed that we were focusing more on our students’ learning and not our own learning. This caused us to modify our questions to help us focus more on how we learned (See appendix F for Think Aloud/Analysis Protocol process).

I audio taped both our planning sessions and our reflective meetings using GarageBand on my computer. I then posted the audio taped discussions in a shared folder in Dropbox and a professional transcriber transcribed the sessions and sent the transcription back to me in the Dropbox folder. I then transferred these to the shared Google Drive folder so that Kate and Stephanie also had access to them. Throughout the study, I read the transcripts and highlighted comments that stood out to me in some way,

comments I found unique or that I found helpful in answering our inquiry questions. I used information from the transcripts to plan our meetings together and referred back to comments that I wanted to discuss further. Since the transcripts were located in our shared folder on Google Drive, Kate and Stephanie had access to read them, however they preferred that I summarize highlights from the transcripts. They opted not to read them mainly because of time constraints.

Online Reflection Journals

Trio Group

In addition to using transcriptions from our discussions, I created a folder on Google Drive for the Trio Group to share their reflection journals, technology information, and post lesson plans. Each week we would use the online journal to reflect on our lessons, readings, and thinking about ourselves as learners of technology integration. Journaling on Google Drive allowed us to participate in online conversations with each other by using the comment feature in Google Docs. We did this well in the beginning but eventually found it more productive to have verbal discussions when we met rather than comment online. I wrote in my reflection journal about my experiences and observations with using technology with students in the Media Center and when I taught with either Stephanie or Kate. I read Kate's and Stephanie's journals weekly. As I read them, I made comments using the comment feature in Google Docs or I made my own notes in my personal journal. From reading the journals, I noticed that our initial reflections were focused on student learning instead of our own learning. I shared this observation with Nancy, my critical friend, who suggested I revise the questions. I rewrote the reflection questions and discussed this with Kate and Stephanie in our

meeting. Revising the questions helped us to think about our own learning instead of student learning (See appendix A for revised questions).

My Personal Online Journal

In addition to the collaborative online journal I kept with the Trio Group, I also kept a personal journal of my observations, noticings, impromptu quick share conversations, frustrations, surprises, and thinking as I participated in the research study. I also used my journal to keep track of the research decisions I made along the way. I reflected in my journal at least once a week.

Technology Team Online Journal

Each member of the Tech Team also had an online reflection journal in a shared folder in Google Drive. We created online reflection journals when our district implemented Google Docs as a means of promoting communication and collaboration amongst teachers and faculty. The goal of the reflection journal was to reflect on how we had used technology within our instructional practice. Although the plan was to reflect at the end of our Tech Team meetings, we often ran out of time and written reflection seldom happened. Members of the Tech Team preferred collaborative discussions as a way to reflect during the meetings instead of reflecting online (Tech Team video, 4/23/2014). Therefore, we mainly used their reflection journals for their final reflection at the end of the year. Ultimately, the Tech Team used the online reflection journals at the end of the year for the following purposes (See appendix D):

- To reflect on our learning as a Tech Team
- To reflect on the Prairie Palooza professional development that we hosted

- To share the informal interviews we conducted with our grade-level teams about Prairie Palooza and technology in general

Lesson Plans

I collected data from conversations about the lesson plans the Trio Group created as we integrated technology. It was not the lesson itself but instead I used the conversations about how Kate, Stephanie, and I learned to integrate the technology within our literacy instruction. We posted the technology integration lessons on Google Drive so Kate, Stephanie, and I had access to the lessons and the opportunity to edit, revise and collaborate as necessary. We used the following questions to guide our discussions about our technology lessons:

- How did you learn to use technology this week?
- How did you apply this into your classroom instruction?
- What successes did you have?
- What are your next steps for this week? What do you want to work on?

For our first lesson, we used Schrum & Levin's (2009) Considerations for Evaluating a Technology –Enhanced Lesson rubric (p.114), and Grappling's Technology Spectrum (1995) to determine where we were with technology integration and to use as a guide for the lessons we wanted to teach. It was never used as an evaluation tool. We used student work to guide further lessons or make improvements to our instruction (See appendix G for Grappling's Technology Spectrum).

Although we used the TPACK (Koehler & Mishra, 2009) lesson plan template as a guide to create lessons, Kate and Stephanie chose to use their own lesson plan books because this was more practical and efficient for them. The TPACK questions served as a

reminder to start with the curriculum objective first, not the technology (See appendix H for lesson plan template).

Videotaped Collaboration (Tech Team)

The Tech Team met for an hour after school bi-monthly. The purpose of the Tech team was to learn ways to use technology either for professional purposes or instructional practice and then to share that information with grade-level teams. Because it would be challenging to transcribe audio taped conversations of the Technology Team meetings, I chose to videotape these conversations. Joe, a member of the Tech Team, videotaped the sessions. I then transcribed highlights that pertained to our inquiry project. I shared comments from the video that were relevant to how teachers learned to integrate technology. The Tech Team used this information along with information from the technology survey to plan our final professional development session for our faculty.

Blog: Start the Spark (Tech Team)

The Tech Team also started a technology blog called “Start the Spark” as a place to showcase our learning and as a resource for other teachers interested in learning ways to use technology in their own classrooms.

Focus Groups: Informal Interviews (Faculty)

One of the responsibilities of the Tech Team was to share ways to integrate technology not only with our grade-level teams but also with the faculty of Bright Star Elementary. We chose to share technology that we used with students and found relevant in our teaching practice. To do this, the Tech Team organized a “Prairie Palooza” professional development for the entire faculty. Prairie Palooza consisted of two 20-minute learning sessions and time for reflection at the end. After the sessions, all

teachers returned to the Media Center to complete a brief online survey that allowed them to reflect with their grade-level team about how they would integrate technology and to describe the support they needed from the Tech Team.

The following week, members of the Tech Team informally interviewed their grade-level team to gather feedback on Prairie Palooza so that we could make improvements on future professional development and to record teachers' experiences with technology in general. Members of the Tech Team used a list of questions as a guide as they informally interviewed their colleagues in small focus groups (Gilflores & Alonso, 1995). A few conversations were held on an individual basis because of scheduling conflicts or because the faculty member was not part of a team (e.g., administrator, mentor teacher, counselor). After Tech Team members conducted their focus groups, they shared the responses in their online reflection journals (See appendix I for focus group questions).

Final Reflections

Both the Trio Group and the Tech Team participated in a final reflection at the end of the year. During the final reflection meeting, both teams took time to answer reflection questions posted in the shared folder on Google Drive. I developed these questions through collaboration with my advisor and my peer de-briefer. After writing our responses and thinking about our overall experience individually, we then shared our thinking collectively. We discussed how our team worked together, improvements we could make for future learning, and our overall experience as learners of technology integration. The Trio Group's session was audio taped and transcribed; however, I did not

videotape the Tech Team's last meeting because we met off-site. (See appendix D for Tech Team final reflection questions)

Data Analysis

Data gathering and analysis go hand in hand. Similar to formative assessment used with students, the data analysis served as a guide to show me what to do next in terms of data collection. I reviewed the data continually throughout the inquiry project and used the information (teacher comments) to guide our meeting discussions. For example, Stephanie wrote about her motivation to integrate technology. I used this comment as a conduit for further discussion into what helped Kate and Stephanie "get over the hump" and take the risk to integrate technology. I also used the data I was collecting to answer the inquiry questions. As stated previously, I noticed that I needed to revise my reflection questions for the Trio Group to help us focus on ourselves as learners rather than our students. I changed one reflection question from; "How do you integrate technology?" to "How do you *learn* to integrate technology?" Adding a single word, "*learn*," helped us to focus on ourselves as learners rather than on how our students learned.

Those who conduct research suggest reading the data set in its entirety to get the grand tour of the data (Anderson et al., 2007; Saldana, 2009). As I began to analyze my data, I took a "tour" by organizing my data in chronological order and rereading it. I made paper copies of the transcripts, my own personal journal, and the online reflection journals. My primary goal was simply to describe what I noticed. My inquiry question was "What happens when a small group of teachers learn to integrate technology and

share their learning with others?” Therefore, as I read through my data, I asked myself the following questions:

- What *did* happen as the Trio Group learned to integrate technology?
- What did I notice in the data?
- What was the data saying?

In Vivo Coding

As I read through my data the second time, I conducted my initial coding of my data using a process that Saldana (2009) refers to as “in vivo coding” (p.74). This method of coding is often used in studies that wish to honor the participant’s voice. Since the majority of my data comes from the voice of teachers, I felt this coding would be appropriate. The purpose of in vivo coding is to “frame the facilitator’s interpretation” of terms using the words that participants use in their everyday life instead of terms used in academic disciplines or professional practice (Saldana, 2009, p.74). I assigned in vivo codes in the margins of my data by writing a one- or two-word summary for notes I had made or, on occasion, a phrase that captured the sense of what I had observed (Saldana, 2009; Anderson et al., 2007). I looked for words or phrases that gave meaning to our experience as we integrated technology and wrote those in the margins of the data. I also underlined passages that stood out to me, what Saldana (2009) calls those “codable moments worthy of attention” (p.16). For example, Stephanie wrote in her reflection journal, “I have to take the reading in small doses because I would get overwhelmed”(reflection journal, p. 26). I jotted down *teacher learning* next to her comment because she was describing what she needed as a learner.

Categorical Coding

The initial coding of the data allowed me to look at each of the data sources independently and form an overall picture of my data. I also noticed the strategies teachers used to learn about and apply technology. Basically, the initial coding provided a descriptive analysis of what happened as we conducted the study. Following the first two rounds of coding, I organized the in vivo codes in a spreadsheet based on their similarities. I used the suggestion from Anderson et al., (2007) to organize the codes into “families of codes” or categories (location 3898). For example, situation codes explain participant’s thoughts on their worldview of particular topics. Therefore, I sorted teachers’ perceptions about technology integration and learning as situation codes, but to clarify the category, I used the term “Perceptions.” Strategy codes refer to tactics; methods and techniques people use to accomplish a task. I sorted the codes that referred to how teachers applied technology within their instructional practice under this category, which I termed “Application of Technology.” Relationship and social structure codes refer to the patterns of behavior. I sorted codes based on teacher relationships and interactions as “Reciprocity.” To enter data into the spreadsheet, I went through each data source and pulled out the necessary information for each code. I continued this process for all the codes written on the transcripts, reflection journals, and informal interviews until all the codes from each of the three phases of study were compiled into one spreadsheet. (See appendix J)

The next step consisted of matching each individual code with the inquiry questions. I went through each line of code and identified the inquiry questions(s) I felt best matched that code. For example, the code of “having goal or purpose” would be

categorized under the application research question. Some of the codes fit in more than one category. Since I was not sure which was the better fit, I put the data in both categories. However, not all the codes fit under the research questions so I incorporated two additional pages, one entitled “Barriers to Integration” and the other “Outliers.”

Once the like codes were grouped together by question, I began to develop larger ideas (or themes) for these sections of data. In order to do this, I looked at a group of codes and developed a statement or phrase that best represented what those codes were describing. For example, there were several codes that described teachers’ perceptions about integrating technology. These codes were grouped together and incorporated into the theme “Acknowledge current Beliefs and Perceptions about Technology.” Another code described teachers’ partner teaching. This code was incorporated into the theme, “Reciprocity”. Once I had broader themes, I then organized the “Outlier” and “Barrier” data into these themes. For example, one group of codes described teachers’ fears of integrating technology. I put these codes under the umbrella of “Acknowledging current Beliefs and Perceptions.” These statements or phrases then became the findings (or themes) for the research questions. Based on the commonalities I discovered, I organized the codes into these broad themes:

- Beliefs and perceptions teachers acknowledged about technology
- Strategies teachers deemed important to integrate technology
- Reciprocity: interactions between teachers and students
- Reflection: teachers thinking about their learning
- Motives teachers reported led to change in instructional practice

Trustworthiness: Validity and Generalizability

In Practitioner Inquiry the conceptions of validity and generalizability have to do with issues of trustworthiness. Are we conducting “good” research? (Anderson, et al., 2007). The main purpose in establishing validity and trustworthiness in a study is to demonstrate that the researcher, in good faith, has done his or her best to conduct a credible study. Without these components, the study may be seen as “flawed” and the decision-making process as compromised (Anderson et al., 2007). More detrimental may be that others in the educational community may not see the results as useful or transferrable to other contexts. Because the notion of validity and generalizability are different from traditional research they are often challenged by those conducting “regular” or “real” research because of the basic assumptions about the nature of inquiry and knowledge and the role they play in improving practice (Cochran-Smith & Lytle, 2009). According to Cochran-Smith and Lytle (2009), the main points of contention revolve around knowledge, methodology, and ethics. Critics challenge the notion that knowledge gained from teachers conducting their own research will transfer to other settings. Critics of this method contend that it is not “scientific” and does not permit cross-site generalizations. The underlying debate is: when teachers conduct research about their own schools, classrooms, programs, or courses, are they generating knowledge or simply describing experience? Like Dewey (1940), my contention is that it is through experience that knowledge is generated. As teachers study and write about their own work, they create distinctive ways of knowing about teaching and learning that are visible not only to themselves but also those with whom they work (Cochran-Smith & Lytle, 2009). Intrinsic questions that promote inquiry, like ours regarding technology

integration, are the fuel that can alter what we know about teaching and learning. It is discovering the answers to questions that are relevant and meaningful to the educator that leads to change in instructional pedagogy.

Establishing Validity in Practitioner Inquiry

As stated previously, to establish validity in practitioner inquiry, concrete examples of actual practice are presented in enough detail that those in the community can judge trustworthiness and usefulness (Cochran-Smith & Lytle, 2009). Anderson et al., (2007) makes a distinction between practitioner inquiry intended to produce knowledge to be shared with the community and research intended to transform practice. When research is meant to be shared beyond the research setting, he suggests considering additional criteria to establish validity. I used democratic validity (honoring the perspectives of all stakeholders), process validity (using appropriate research methods and inquiry processes), and dialogic validity (monitoring the analyses through critical and reflective discussions with peers). We sought democratic validity by giving all participants a voice in the study and access to the data collected. For example, we used the Thumbs Rule process to make decisions within the Trio Group and the Technology Team. Also, we kept the meeting agendas in a shared folder on Google drive so that all participants had access to the data. All members of the Technology Team could place items on the agenda prior to each meeting. The Trio Group also shared a folder on Google Drive where we kept our reflection journals, lesson plans and other relevant data. Because our roles were reciprocal, no one person held an authoritarian role. Process validity was established through a systematic collection of data and deliberate scheduling of implementation. After audio and video recordings were transcribed, I gave participants

the opportunity to review them. However, teachers opted not to read transcripts primarily because of lack of time. Dialogic validity was established through the conversations held by participants during all phases of the inquiry study. Following I describe the methods I used to establish validity.

· **Triangulation:** To maintain trustworthiness in my study, I triangulated my data sources. Triangulation is the process of using multiple sources of data or multiple methods to confirm emerging findings (Hatch, 2009; Merriam, 1998). Triangulation decreases the possibility of researcher bias influencing findings because data is being confirmed by multiple data sources. Mathison (1988) suggests a broader definition of triangulation by considering a “holistic understanding” of the situation to construct plausible explanations of what occurred during the study (p.17). When I began analyzing my data, I first read through all the information (transcripts, reflection journals, interviews) to get an overall sense of what the data was saying. I then triangulated my data by comparing the data from all three phases of the study. I compared transcripts of discussions from the Trio Group and their online reflection journals, the videotaped meetings of the Tech Team, my own personal reflections, the final reflections of the Technology Team, and information from the Technology survey. Triangulation of data occurred as I found connections between what teachers said on the survey, online reflection journals, video and audiotapes and my own personal notes. Commonalities emerged between the Trio Group, the Tech Team, and our faculty regarding how they learned to integrate technology. In addition to looking for common patterns within the data, I also looked for anomalies or things that did not fit. For example, the notions of a

presumption of knowledge and assuming an “elitist view” with teaching technology came from looking for differences in my data that did not fit the status quo.

· **Critical friends:** Critical friends, also known as a peer de-briefers in traditional research, are often used in practitioner research because practitioners become so involved in their research they may overlook emerging patterns in their data. However, when I refer to critical friends, I am not referring to the Critical Friends Group (CFG) which is part of the National School Reform Faculty (NSRF) that defines itself as a professional development initiative that focuses on developing collegial relationships, encouraging reflective practice and rethinking leadership in schools in order to increase student achievement (Lieberman & Miller, 2008). When I refer to critical friend, I am referring to a person who is willing to push a researcher’s assumptions, ideas, biases and understandings (Anderson et al., 2007). This person’s role is to pose questions regularly throughout the study to determine how the researcher “knows what it is he or she knows” (Herr & Anderson, 2005, p. 78). A critical friend pushes the researcher to another level of understanding by asking the researcher to make explicit what he or she understands on a tacit level. Essentially a critical friend becomes a sounding board to help researchers step back from their study enough to see what is happening (Herr & Anderson, 2005).

I had the support of two critical friends during this inquiry project. Nancy was a mentor teacher in our school who was familiar with action research. I also met with Hannah, a STEMS (science, technology, engineering and math) teacher who had recently graduated with her doctoral degree in literacy. I asked Hannah because it was important to have a person who was not a part of our school culture to provide a “balcony” view of our inquiry project. Both Nancy and Hannah agreed to periodically review my research.

Because I was familiar with the setting, I had to consider that I might overlook something, or have certain expectations concerning what I might see. Therefore, I used critical friends not only to build trustworthiness in my study but also to gain new insight to the data. They provided an outside lens through which to examine the emerging data. I met with both of these teachers monthly to review and discuss data collected, answer questions, and provide insight to our study.

· **Member checking:** Member checking involves taking the data and the tentative interpretations of the data back to the participants from whom they were derived and gaining their feedback. It is important in establishing the credibility of one's findings and can validate a researcher's capacity to comprehend the voices of the participants (Hatch, 2009; Lincoln and Guba, 1985; Merriam, 1988). I conducted a member check on the data collected and on my reflection notes with teachers to get their feedback and insight into the picture our data showed us. The Trio Group had access to the data throughout the entire study. I used member checking during the study to get their insight and feedback on the credibility of the information (Hatch, 2002). At monthly reflection meetings, the Trio Group and I discussed the data collected to that point.

Halfway through our study, we spent one of our reflection meetings re-reading our reflection journals. Reading the journals helped us realize how often we were actually integrating technology. We had not realized the extent to which we were using technology because it was becoming automatic. Reading our journals helped us to notice how teaching practices were changing and how using technology was becoming more intuitive.

I gave both Stephanie and Kate the opportunity to read the transcripts from our discussions and my initial data analysis, but they opted not to read them mainly because of time constraints and end-of-the-year responsibilities. However, they had access to the data throughout the inquiry project in our shared folder on Google Drive. I also shared some of the transcripts with them earlier in the study. Finally, as I began writing, my peer de-briefer read my initial analysis of my data and provided feedback.

Generalizability

In practitioner inquiry transferability is referred to as generalizability. It is the notion that the information gained from a particular study is representative of the event and can be replicated in other situations. Similar to trustworthiness in traditional research, generalizability rests on concrete examples of actual practice presented in enough detail that the relevant community can judge its' usefulness (Cochran-Smith & Lytle, 2000). Those conducting practitioner inquiry seek to describe and explain the world as those in the world experience it. They seek to distinguish between inquiry that is meant to produce knowledge that is descriptive and inquiry that is meant to produce knowledge that is transformative. Practitioner inquiry research becomes generalizable in the sense that it generates "knowledge of practice" when it is made public instead of being contained within the local context. Local knowledge may be useful publicly and generally in that it may suggest new insights about teaching and learning (Cochran-Smith & Lytle, 2000). However, generalizability to other settings or people is dependent upon a clear description of the inquiry project and upon those who seek the knowledge. Louise Rosenblatt's reader response theory focuses on the engagement between reader and text and serves as a metaphorical example of generalizability (Holland, Hungerford & Ernst,

1993). Just as reading is dependent upon the interaction between the reader and the text, the generalizability of a study is dependent upon the engagement between the study and the people who are attempting to replicate it in a specific context. Education is multifaceted and highly contextual. No two educational settings are exactly the same nor are the teachers within the setting. Therefore, in order for practitioner inquiry research to be generalizable, engagement between the study itself and the meaning and purpose that each reader brings to the study must take place. Anderson et al., (2009) suggest that for a study to be transformative, it should include additional forms of validity such as democratic validity, outcome validity, process validity, catalytic validity and dialogic validity. The phases of inquiry in this study are clearly described. The criteria for validity, as described by Anderson et al., (2007), were used in order to share our learning with others and to facilitate the replication of the process of how we learned to integrate technology. However, because the context of each school and the teachers who work there are unique, whether this study is transformative in the sense that the phases of inquiry used to learn to integrate technology could be replicated by other schools remains questionable. That would need to be determined by readers of this study.

Limitations

One of the ethical challenges of conducting practitioner inquiry is the dual role of researcher and participant. As Hatch (2002) says, “the inquirer and the object of inquiry interact to influence one another, knower and known are inseparable” (p. 26). Hatch discusses the role of reflexivity in qualitative research, suggesting that the ability to keep track of one’s influence on a setting, to identify one’s biases, and to monitor one’s emotional responses are the same capacities that allow researchers to get close enough to

human action to understand what is going on (Hatch, 2002). My belief that new knowledge is gained or created through the collaboration of two or more people makes me as a researcher a part of the discussion instead of an outside observer having a balcony view. This dual role proved both limiting and liberating. My insider's view of the day-to-day issues that teachers face as they integrate technology within their literacy curriculum was helpful. Because of my pre-established relationships with these teachers, I was given a unique opportunity to have reflective, open, and honest conversations about teacher views on learning technology that may not have happened otherwise. I do not think some of the teachers I interviewed (Lois, Loretta, Nancy) would have been as open and honest about their fears of using technology if I were an outside researcher. Nor do I think the conversations we had as a Trio Group would have been as informative or revealing to someone who had not developed relationships with these teachers prior to the study.

Nonetheless, as Cochran-Smith and Lytle (2009) point out, the boundaries between inquiry and practice blur when the practitioner is a researcher and conducting research within his or her own setting. During the inquiry study it was sometimes difficult to serve in the dual role of researcher and teacher. Challenges revolved around juggling different roles during the study (researcher, teacher, colleague), scheduling, and acknowledging my own bias towards technology integration.

I found it challenging to assume the dual roles of researcher and colleague. Anderson et al., (2007) describe an example of the challenges of the dual roles of teacher/researcher. One of his former students described her harried day and her inability to take notes in class while she taught. She also found it difficult to find time to

transcribe videotaped classroom data. I experienced similar challenges. For example, when the Trio Group struggled with reflecting in our online journals, I wondered if it was my responsibility to hold them accountable. Since I was the one in charge of the inquiry project, was it my responsibility to remind them to write in their journals? I also found it challenging during the school day to maintain my job responsibilities while at the same time keeping notes on what I witnessed as I team-taught with teachers involved in the study or kept track of the quick share conversations that would occur at a moments notice. It was also hard to find time to transcribe the Trio Group's audio taped conversations therefore, I hired a person to transcribe the audiotapes. This worked well for the most part; however, there were a couple of times when I did not receive the transcripts in a timely manner. This made it difficult to plan Trio Group reflection meetings when we did not have a transcript to review.

Both the Trio Group and the Technology Team found it challenging to manage our time so that we would follow through with conducting the inquiry study. Even though we established clear meeting dates and times prior to beginning the study, there were still disruptions to our well-intended plans such as required assessments, assemblies, snow days, teacher illness, and additional required school meetings. For example, we had seven snow days during the inquiry project, which forced us to reschedule meetings for both the Trio Group and the Technology Team. Also, Kate became ill during the study and missed over a week of school. This impacted her ability to keep up with her weekly reflections because absences left her behind in several areas, in addition to our inquiry project. The snow days and teacher illness forced us to reschedule some of our meetings. In an attempt minimize disruptions, both the Trio Group and the Technology Team

scheduled time to meet outside of the regular school day. Because of the relationships we had with each other, both groups were more than willing to reschedule the meetings we missed instead of canceling them.

At times, our relationships with each other also proved to be limiting. Because we knew each other and understood the day-to-day challenges of school, it sometimes made it easier to opt out of scheduled meetings. One would think that scheduling within one's own context would make conducting research easier. And it does in most cases, but it also made it comfortable to "un-schedule" meetings as well. For example, Nancy (critical friend) and I had pre-determined meeting dates to review data, but when things came up on a busy school day, it was easy to stop by and cancel the meeting with the intent to reschedule later. Because we knew each other, we were also able to have open and honest discussions about the scheduling issue. Nancy and I asked ourselves if we would have canceled meetings as easily if an outside person was coming to our school to meet with us. We both agreed we would not have canceled the meetings. Because of that conversation, we did not miss another meeting.

Using human instrumentation also provides limits due to inherent beliefs and biases of the researcher. For example, Kate, Stephanie, and I are ardent believers in the importance of technology integration. This belief impacted our perceptions as we conducted the study. Yin (2009) suggests the researcher should be unbiased by preconceived notions. Because of my experiences as a media specialist as well as my coursework in technology integration, I have strong beliefs about the necessity of technology integration within our curriculum. Acknowledging these perceptions helped us to better understand those we were trying to help integrate technology and who may

view technology integration differently. I also utilized critical friends to debrief with me and ask questions to challenge my assumptions and beliefs about the themes seen in our data (Herr & Anderson, 2005).

It was necessary to acknowledge these beliefs as both the Trio Group and Tech Team worked with our colleagues in our building. Our colleagues were at different skill levels and came with their own perceptions about learning and technology integration. Just because we believed in the importance and necessity of technology integration did not mean that everyone had the same perceptions. Acknowledging our perceptions was necessary so that they did not negatively impact our ability to work and support one another as we learned how to integrate technology. Empathy for those we were sharing information with was necessary as we learned how to integrate technology.

Another limitation to our study was that our Prairie Palooza professional development session was held during the last month of school. We could not witness the impact of the professional development as teachers only had three weeks left of school when Prairie Palooza was held. Teachers were thinking about the end of the school year, not about trying something new with their instruction.

Anderson et al., (2007) acknowledge that there is not a “miracle” solution to these challenges (location 543). However, the authors suggest that by conducting practitioner research, one can find solutions and insight to problems deemed “hopeless.” They suggest through refining our own practice, systematizing observations, and sharing practices that work with other teachers, we can transform “hopelessness” into an exciting learning adventure (Anderson et al., 2007, location 545). Therefore, acknowledging the challenges of conducting research within our own setting from the beginning, holding

each other accountable, maintaining a schedule, and having collaborative discussions about issues that arise are necessary to maintain the trustworthiness of the study.

Conclusion

This study was based on practitioner research that is oriented to the action teachers take to address a particular problem or concern. The methodological framework of practitioner inquiry provided a unique structure for teachers (participants) and me (researcher) to work collaboratively engaging in a continuous process of planning lessons, reflecting on practice, collecting data and problem solving as we integrate technology within the literacy curriculum as well as seek to understand ourselves as learners. The main intention of this study was to understand what happens as teachers integrate technology within their literacy curriculum (descriptive) and then to determine how can they share their knowledge with their colleagues (transformative). This study was transformative within our context because knowledge of how to integrate technology was shared with teachers in our building who were not a part of the study. That being said, it is imperative that practitioner inquiry research be made accessible to the community at large, which makes possible both peer scrutiny and generativity. Both are important for teachers to continually improve their practice. Practitioners' work generates local knowledge that provides new insights into teaching and learning that make important contributions to the field of education (Cochran-Smith & Lytle, 2009).

Chapter 4

In this chapter, I first offer the context for how my colleagues and I became interested in exploring technology integration within our literacy curriculum and sharing the process with others. I then describe the four-phase structure for the inquiry project

and explain the themes that emerged during the phases using examples, quotes from participants' reflection journals, and excerpts from video and transcriptions.

Context for Inquiry Project

Our school implemented a Technology Team (Tech Team) two years ago because we had several teachers interested in technology integration. In our initial year, members of the Tech Team made a request to the Parent-Teacher Association (PTA) to purchase iPads for each classroom teacher. We then made a presentation to our PTA of ways we could use iPads for instructional purposes in our classrooms. After the presentation, our PTA was supportive of technology integration and purchased an iPad for every teacher in our building.

The following year, our school district purchased an iPad mini for each classroom teacher and provided monthly whole-group training sessions on iPad use. Even though teachers had access to two iPads in their classrooms and attended required training, few teachers were actively using them. One teacher even admitted that his had been lost somewhere in a box in his garage (personal communication, May, 2014).

Although members of the Tech Team were eager to learn about technology integration and now had access to some devices, we found applying technology in our classrooms a challenge. Several members shared their frustrations with technology integration during one of our meetings (Tech Team video transcription, 2/19/2014).

Edith shared honestly, "I am afraid to take the plunge alone. I feel like I need to know the technology well before I can use it with my students."

Erika, a K/1 teacher, shared her frustrations, "The hardest part about integrating technology is troubleshooting. Sometimes things don't go as planned or a kid hits a

button and all of a sudden groups of kids need help and you are the only one to help them.”

Laura, a K/1 teacher, agreed. She shared, “Hardest part of integrating technology is being one person. Some students aren’t independent and have trouble problem solving when something goes wrong with the app so I was constantly being interrupted and that makes me not want to use the technology.”

Kate, third grade teacher, shared, “Lack of knowledge, time and access to devices continue to be my greatest struggle to integrating technology. There are so many resources out there and I only know a handful.”

These perceptions of members of the Tech Team showed their feelings of inadequacy in using technology, and their frustrations with integrating technology in isolation. As a team, we noticed how our perceptions about technology integration impacted our ability to integrate technology with our curriculum. It was easy to talk about technology but much more challenging to actually apply our ideas. (Tech Team video transcription, 2/19/14).

Several studies have found that educational technologies are not yet well integrated into instruction in most K-12 classrooms (Levin & Wadmany, 2008; Russell, O’Dwyer, Bebell & Tao, 2007). Based on discussions with the Tech Team, I realized this conundrum also existed in our school. Teachers had access to technology and were provided professional development on using the devices, yet few teachers were using technology within their instructional practice. I wanted to know how to support teachers so that they could integrate technology within their curriculum, so that technology wasn’t an end product or another subject to teach but instead a natural part of their instruction. I

wanted to move past talking about using technology, to applying the ideas discussed on the Tech Team. I asked two members of the Tech Team, Kate, a third grade teacher, and Stephanie, a fifth grade teacher, to join me in this inquiry project.

I asked Kate and Stephanie to participate in the inquiry project for several reasons. First, as the media specialist in our building, I had worked with both teachers on projects using technology with students. I knew these teachers were excited about using technology in their classrooms. As Stephanie stated, “I am excited to have access to iPads and learn how to use them with my students as I teach literacy” (reflection journal, p.1). Kate, too, was passionate about technology integration and eager to learn with colleagues. She reflected in her journal, “There is so much power in collaboration, sharing ideas, splitting up the workload, reflecting and brainstorming ideas for changes or using the technology more effectively. I am looking forward to working together” (reflection journal, p.10). Because of our previous work together, I also knew Kate and Stephanie believed in the importance of teaching students the skills to use technology in productive ways to learn, communicate effectively, research and solve problems. As Kate stated, “Technology is an integral part of their [students’] world and the more experience and knowledge they gain about using these tools, the more they will achieve”(reflection journal, p.6). Finally, both Kate and Stephanie had expressed interest in acquiring additional ways of using technology to support learning on a daily basis. Stephanie believed, “Simply adding technology to the classroom won’t improve learning. What’s more powerful is how technology is used to help students develop knowledge and skills.” (reflection journal, p.17).

Therefore, we began this inquiry project to learn how to apply technology ourselves, to understand the supports teachers need to learn to integrate technology with their instructional practice, and to use this information to help colleagues learn technology integration. These discussions with my colleagues led to my dissertation topic.

Phases of the Inquiry Project

To find answers to the research questions, I conducted this study in four main phases. During the first phase, the Trio Group learned ways to integrate technology with their instructional practice. In phase two, they shared their learning with members of the Technology Team, and the Technology Team shared with their grade-level teams. In the third phase of the inquiry project, the Tech Team hosted a professional development session called Prairie Palooza for the entire faculty sharing ways to integrate technology with colleagues. In the final phase, every faculty member in our school participated in some type of final reflection about their learning with technology. Although this study consisted of four phases, the Trio Group devoted the most time to learning and reflecting about technology integration. (These phases are described in more detail in chapter three).

In the following sections, I will briefly describe the four phases of our inquiry project, and highlight the main themes that emerged throughout each phase. I will weave data excerpts from multiple sources (teacher reflection journals, transcripts of meetings, surveys, focus groups, and video recordings of Tech Team meetings) to provide evidence supporting each theme.

Four Phases of Inquiry

Phase 1: The Trio Group learned ways to integrate technology within literacy curriculum and shared learning with the Technology Team.

Phase 2: The Technology Team members shared learning with grade-level teams via grade-level meetings and quick share conversation. Quick share conversations occur through informal unscheduled conversations that happen often in the hallways, over lunch or briefly before or after school. Cole and Knowles (2000) describe these opportunities as “informal development opportunities that take place at the hand of a living, vibrant, interesting life” (p.23).

Phase 3: The Technology Team led a professional development session on technology integration with the faculty entitled Prairie Palooza.

Phase 4: The Trio Group, Technology Team, and our faculty participated in a final reflection about how they learn to integrate technology.

Interwoven throughout the phases, the data revealed five themes that describe what happened as teachers learned to integrate technology within their curriculum: (a) teachers acknowledge current perceptions about technology; (b) strategies teachers deem important to integrate technology; (c) reciprocity- interaction with others; (d) reflection-pausing to think about learning and applying technology; and (e) motives that caused change in pedagogy. Through collaborative discussions, reflection journals, our readings, and quick share conversations, the Trio Group, the Tech Team, and our faculty explored how teachers learn about technology integration. The following chart summarizes the ways in which we integrated technology within our curriculum. Much of this information is explained in detail as I discuss the themes; however, this chart offers an initial visual representation of the range and

scope of technology integration.

Grade	Reciprocity: Who Taught Who	Curriculum Objectives Addressed	Kinds of Technology Used	Description of the Integration
5th grade	Tami taught Stephanie	Historical fiction writing	iMovie	Write script, create movie about an event during Revolutionary War
5th grade	Tami & Stephanie learned app together	Creative writing	Voice Record app	Create Podcast of fictional place
5th grade	Trio Group: Stephanie, Kate, and Tami learn from each other	Reading fluency, comprehension	Overdrive, MYON reader, non-fiction websites Tween Tribune, Scholastic news, computers/iPads	Students independently read books/articles on devices
5th grade	Mike (IT) taught Trio Group	Written response to questions posed	Poll Everywhere, TodaysMeet	Gave every student the opportunity to respond simultaneously
5th grade	Stephanie learned from social media (Twitter)	Reading discussion	Padlet, QR codes	Graphic organizer
5th grade	Tami & Stephanie learned together	Writing for purpose: thank you videos, summarizing	30 Hands app	Created videos to thank businesses for participation in Bizz Town
5th grade	Trio Group (Stephanie) taught Tech	Variety of subjects	Popplet	Graphic organizer to organize ideas

	Team who taught faculty			
5th grade	Trio Group taught Tech Team	Variety of subjects	YouTube, Google sites, Google forms	Research and share information
5th grade	Trio Group (Stephanie) taught Tech Team	Interview, summarizing, writing	Blogger	Summarized news of day in class and posted on blog
3rd	Trio Group members learned together	Reading fluency, comprehension	MYON reader, non-fiction websites like Tween Tribune	Students read books/articles on devices with partner and independently
3rd grade	Trio Group members learned together	Writing, summarizing presentation	Wordle	Book Covers, synthesizing information in subject areas
3rd grade	Trio Group (Kate) taught 3rd grade team	Health habits	Microsoft Publisher	Health brochures
3rd grade	Trio Group (Kate) taught 3rd grade team	social studies identify facts about states	Kidblog/ Microsoft Publisher	Travel Photo albums
3rd grade	Trio Group taught Tech Team taught Grade-level teams	Writing	Kidblog	Speeches, editorials, letters
3rd grade	Kate taught Trio Group members	Math: area, perimeter, shapes, skip counting	YouTube	Listened to and learned songs to help remember key concepts

3rd grade	Kate taught Trio Group members	Variety of subjects	Smart board strategies using Smart Exchange	Word sorts, t-charts, sharing explanations, grammar lessons
3rd grade	Kate taught Trio Group members	Variety of subjects	Senteos	Access for students to respond to questions simultaneously
2nd grade	Trio Group taught Tech Team who taught grade- levels then 3 rd grade students taught 2nd grade students	Writing	Kidblog	Note taking, question of day, creative and persuasive writing
2nd grade	Trio Group (Tami) taught 2nd Grade team	Reading/Writing/Science	Microsoft PowerPoint	Animal Research Projects
3rd and 5th grade	5th students taught 3rd students and teacher (Stephanie)	Persuasive writing	Kidblog, Word, PowerPoint, Keynote, 30 Hands, iMovie	Book Reviews
3rd and 5th grade	Trio Group learned together	Writing	Kidblog	Sharing opinion, teaching others, revising, editing commenting to others
2nd &	3rd students	Reading/writing	Pic Collage	Book Reviews

3rd grade	taught 2nd students			
K/1 grades	Trio Group (Stephanie) taught Tech Team	Math	Popplet	Number sentences
K/1 grades	Tech Team learned together	Reading//Writing	Screen Chomp	Presentations
K/1 grades	2nd students taught K/1 students	Science	Pic Collage	Outdoor Classroom posters
K/1 grades	Trio Group (Tami) taught Tech Team	Reading/Writing	Audio Boo, QR codes	Read Fairy tale stories, told favorite book
K-5 grades	Trio Group (Tami) taught Tech Team	Variety of subjects	Google, Safari, Kidrex, Pebble Go, Search-a-saurus, Kids Search, Learn 360	Search for information for various subjects
K-3rd grades	Trio Group/Tech team learned together	Brain breaks	Go Noodle	Re-energize, movement

Figure 11. Summary of Technology Integration January-May 2014. This chart summarizes the technology integrated in grades K-5 by teachers in the Trio Group and the Technology Team.

It is interesting to note that all grade levels were involved in technology integration. Most instruction came from teachers teaching one another. Although every single teacher did some technology integration, only four classroom teachers out of 16 integrated technology in their instruction on a regular basis. (By regular basis I mean that teachers tried more than one project and used technology integration at least once or twice per month.)

Emerging Themes: Phases One - Three of the Inquiry Project

What happened as teachers learned to integrate technology?

Throughout the phases of inquiry, the following questions guided our work:

What happens when a small teacher group inquires about integrating technology with their literacy curriculum?

- A. How do teachers learn about integrating technology within literacy instruction?
- B. How do they apply this in their classroom instruction?
- C. How do they share their ideas about integrating technology within literacy instruction with other teachers?

From those guiding questions data revealed the themes, indicated in the chart below, along with noted sub-themes.

Teachers acknowledged current beliefs and perceptions about technology	<ul style="list-style-type: none"> • Terms: Teachers examined and defined terms to build a common foundation for learning • Perceptions: Teachers acknowledged their perceptions and experiences about learning and technology integration, which impacted their instructional decisions. • Provoking thoughts (an anomaly) <ul style="list-style-type: none"> ◦ Some technology teachers assume that educators have a similar skill set (presumption of knowledge) as they have. ◦ Teachers were reluctant to learn about technology when presenters had condescending (elitist) attitudes. • Role of Teacher/Student: The traditional role of teacher/student was called into question as teachers confronted issues of control, trust and responsibility for being the expert in the classroom • Partner Teaching: Partner teaching provided support and removed teacher fears of using technology in isolation.
Strategies teachers deemed important to	<ul style="list-style-type: none"> • Pacing: Teachers reported they learned technology in small increments. Too much information at one

integrate technology	<p>time caused teachers to shut down and give up on technology integration.</p> <ul style="list-style-type: none"> ○ Application: Teachers reported needing immediate opportunities to apply new technology learned. ○ Current: Teachers reported they needed to use the technology with instructional or professional practice shortly after it was learned. <ul style="list-style-type: none"> • Scaffolding: Data revealed that teachers come with different technology skills and therefore needed different levels of support when learning how to integrate technology. • Structure: Teachers reported that norms were necessary to establish and accomplish learning goals in meetings • External Motivation: Administrative support helped teachers apply their learning but did not change their practice. • Encouragement: Teachers reported that praise and support helped them to build confidence in using technology. • Conundrum of Application: Even though teachers believed in technology integration, they did not always follow through with using it in their classrooms.
Reciprocity: Teacher interactions transferred learning	<ul style="list-style-type: none"> • Relationships: Teachers learned through relationships with others (students, teachers) via conversations, sharing ideas, and connecting new learning to previous knowledge.
Reflection caused teachers to think more deeply about their learning	<ul style="list-style-type: none"> • Written reflection helped teachers scrutinize what happened as they integrated technology. • Oral reflection (quick share conversations) generated ideas, solved problems, and helped teachers make decisions about how to proceed. • Pausation: temporary stop in action to reflect helped teachers to think about their practice.
Motives teachers	<ul style="list-style-type: none"> • Student Engagement: This was the most significant

reported that led to change in pedagogy	<p>motivator for teachers to use technology.</p> <ul style="list-style-type: none"> • Authentic: The purpose for learning needed to be relevant and the technology connected to teachers' curriculum • Autonomy: Providing choice engaged teachers in relevant learning, not simply learning to conform.
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Figure 12. Emerging Themes from the Practitioner Inquiry Study. This chart describes the themes that emerged as teachers learned how to integrate technology within the literacy curriculum.

In the following section, each theme is explicated with example data from each phase.

Theme 1: Acknowledging our Perceptions and Experiences with Technology

Integration

Both the Trio Group and the Tech Team discussed their perceptions about technology integration. Examining and defining what we meant by learning and technology integration was an important conversation that provided a common foundation for our learning. As Hatch (2002) states, “ It is a fundamental necessity to take a deep look at our belief systems because they undergird our thinking”(p.12).

Reflecting on our own beliefs about learning and technology, allowed us to gain insight into ourselves as professionals. It is a ‘powerful vehicle’ for enhancing learning” (Cole & Knowles, 2000, p.15). Examining and voicing our individual beliefs allowed us to understand each other and where we were coming from as learners of technology integration. More importantly, this foundation helped us to move forward with technology integration because we knew we wanted to learn more than surface knowledge.

Defining Terms: Laying the foundation for our learning

The Trio Group began this inquiry project by looking into our own beliefs about learning, technology, and technology integration. We wanted to use technology to support learning in meaningful ways instead of seeing it as something separate to teach. Because of this, it was important to be clear about our definitions of *learning*, *technology*, and *technology integration*. We read several sources to develop our own definition for learning. We read and discussed the pros and cons of the Learning Pyramid (Lalley & Miller, 2007) and Edgar Dale's Cone of Experience (Mantekofi, 2013). We also read about engaged learning indicators (Jones, Valdez, Nowakowski, & Rasmussen, 1994), Vygotsky's (1978) theories of social learning, Dewey's (1940) theories of experiential learning, and Howland et al., (2012) chapter on meaningful learning. We used this information to understand what researchers believed about the process of learning and applied their knowledge with our practical experiences with teaching and learning.

In our discussions, we realized that in defining learning, we had to first think about our individual beliefs about learning. We discussed the terms *knowledge* and *learning*. We discussed *knowledge* as a noun, something that is acquired via learning. We viewed *knowledge* as twofold. Surface knowledge, which is knowledge gained simply by being told, exposes one to new ideas or concepts. Action knowledge is knowledge that is retained and internalized.; it occurs through application of and reflection on learning. *Learning* was a means to an end, seen as a verb, the 'action' part of creating knowledge.

We determined that knowledge is "constructed" through our interaction with peers, our environment, and our world. Knowledge changes all the time because of our

experiences with our world. What we believed to be true today, may not be the same tomorrow because we gain new information that challenges our previous thinking or belief. In our discussion, Kate made a valid point, “Disequilibrium occurs when new knowledge is presented and we are curious, puzzled, and struggling to make sense of that newly acquired information. It is during this period of disequilibrium that we are uncomfortable, stressed, trying to make connections, understand and assimilate this new information. When we achieve this goal and incorporate that new information that is when meaningful learning has occurred.” (reflection journal, p. 2). It is in this state of disequilibrium that we learn the most.

Like Howland et al. (2012), we saw *knowledge* not as something imparted to students; rather, students and teachers share information and then together construct new knowledge through interactions and conversations. We agreed that we were not always the experts who had knowledge and whose main job was to impart this knowledge to our students. Rather we believed that new knowledge is learned through our experiences with the world and interactions with others and that each individual (student and teacher) has something to contribute (planning session, 2/10/14, p.5).

Kate stated, “I know I fit the constructivist theory. I believe that we are experts in some things and at the elementary level we introduce things to them. For example, third graders are introduced to division. But in the process of learning, there are a lot of things we construct together. I think you have to present the material, let students struggle with it and figure out what strategies they want to use. They talk with each other, problem solve together. Sometimes students present new strategies to me that I never thought

about. Kids look at things differently and are able to teach each other and me in ways I wouldn't have"(planning session, 2/10/14, p.6).

Stephanie shared, "I agree with Kate. I'm probably more on the constructivist side as well. But I think there are times when it is appropriate to be more of the expert.

Sometimes it might be more of a classroom management thing than an expert thing.

Last year I had a much more challenging class so I felt I needed to be more of a management-style teacher. We were unable to do a lot of group work. Hands down, I would much rather have cooperative learning situations in my classroom where kids work together and learn from each other" (planning session, 2/10/14, p.8). Because of these beliefs, we viewed learning through a social constructivist lens.

Ultimately, we used a combination of ideas from all our resources to determine what learning meant to us. We mainly used information from Howland et al., 's (2012) components of meaningful learning, Dewey's (1940) views on experiential learning, and Vygotsky's (1978) social constructivist theory of learning as a foundation for what we agreed were important components of the learning process. As we talked, I drew a visual representation of our discussion. We determined that learning is not defined by one word but is a process that constitutes the actions that lead to knowledge, such as collaborating with others, applying the new learning and connecting it to previous learning. Following is a visual example of our thinking (reflection journal, p. 2, planning session, 2/10/14 p. 9).

Figure 13. The Learning Process. This diagram represents the Trio Group's view of learning.

We viewed learning (verb) as a process that led to the creation of knowledge (noun). We also acknowledged a distinction between surface knowledge and action knowledge. Surface knowledge occurs when a brief overview or introduction is given about a topic as in our experiences during the iPad Institute. Action knowledge occurs when a person internalizes the knowledge by making connections and applying their learning in some fashion. Like Dale (1969) and Dewey (1940), we believed effective methods for learning something new involved direct, purposeful learning experiences such as hands on or field experiences. We learned best when we interacted or applied our learning in some way.

We believed learning was intentional, something we chose to do. As Stephanie stated, "You foresee a need in your instruction for the technology piece. Learning is based on what can I do with technology as opposed to here are your technology

options”(planning session, 2/10/14, p. 15). Our group decided we wanted to move beyond surface knowledge and create action knowledge. We wanted to collaborate, interact with each other, and apply technology in our daily instructional practice. That to us was what meaningful learning meant.

Since we wanted to integrate technology, it was necessary to have a clear understanding of what we meant by the terms “technology” and “technology integration.”

We spent time clarifying these terms, reading and researching information on what others said about this topic (Bedard & Fuhrken, 2013; Howland et al., 2012; Schrum & Levin, 2009). We agreed with Howland et al., (2012), that technology was a tool for learning rather than a teacher or separate subject. Technologies are used to engage learners, support them in solving problems and help them represent their learning. They are tools students learn with, not necessarily from. As Howland et al., (2012) suggest, “Technologies make lousy teachers but can be powerful tools to think with” (p.17). We recognized technology as always changing. As Stephanie reflected, “Technology is hard to define, as it has already changed so much in my lifetime and will continue to do so in the next few years. I believe technology is a tool used to access, understand, organize, share and present information and ideas to support learning” (reflection journal, p. 3).

Technology is something that continues to evolve, grow, and change and as it does so, it impacts humanity in the process. Ultimately, we defined technology as any tool or device, program or app, including the Internet that is used to support learning and communication.

Through our discussions and our previous experiences, the Trio Group concluded that technology integration occurs when technology is used as a tool to represent a

learner's ideas, and to explore and access information. It is used to communicate and have conversations, present our ideas and opinions, promote social change, reflect and show what we know (planning session, 2/10/14). Kate's personal goal was, "to involve technology in the process of learning the content, and not just to demonstrate that learning in a product oriented way" (reflection journal, p.3). Likewise, I felt, "its important to have a clear purpose for learning technology instead of just using a cool device, program or app" (reflection journal, p.4). We agreed that we needed to start with the learning standard first, and then determine which technology would support that standard. As Stephanie said, "Instruction should not be driven by the technology that will be used, but rather the technology should be selected based on the learning standard and pedagogical approach to the lesson or unit" (reflection journal, p. 6). Instead of beginning with technology and attempting to make the curriculum fit the technology, we used the TPACK (Koehler & Mishra, 2009) framework as a guide to connect our curriculum with technology. The TPACK framework was helpful because it makes connections between instructional pedagogy, content and technology (See appendix H).

Technology alone cannot teach students, but it is a powerful tool when students learn through the use of technology, not from it (Howland et al., 2012). Stephanie summarized our goal for technology integration when she stated, " When I think about technology integration, I think about integrating tools that inspire, engage and motivate the students and myself to be better thinkers, creators, communicators, and learners" (reflection journal, p.46). Ultimately we defined technology integration as the tools and resources used to support student learning. In other words, technology is not taught as a

separate subject but is a tool teachers naturally use in their instructional practice (planning session, 2/10/14).

Perceptions about Technology Integration impact Instructional Decisions

As both the Trio Group and the Tech Team began to integrate technology with our curriculum, we became aware of how our perceptions about technology impacted our instructional decisions. We were passionate about technology because we believed it was a tool our students needed to know how to use and because in previous experiences, we saw students engaged and excited in learning when using technology. Kate stated, “Like Stephanie, I am excited to work with Tami and collaborate on the use of technology in my classroom. Because of our work together last year, I know there is power in using technology with students. It is highly motivating to them, allows them to work cooperatively, be actively engaged and emerge as experts in our classroom” (reflection journal, p.1). We were willing to devote time to learning technology integration because of our own positive experiences using technology with our students. However, as we learned how to integrate technology, we realized how our perceptions could also be limiting.

At the beginning of the inquiry project, the teachers in the Trio Group and members of the Technology Team took a survey regarding our perceptions about using and integrating technology within literacy instruction (See appendix E). Based on the survey, 100% of the teachers believed that integrating technology was important, and 86% believed that students benefit when using technology, such as the Internet, to learn. However only 14% of our Technology Team felt skilled at using digital technology for instruction. In their individual survey comments, teachers felt that technology integration

should involve authentic uses of technology. Much like the views of the Trio Group, one teacher wrote, “Similar to a pencil, technology becomes a tool that teachers automatically use to read, find information, compose, create, solve problems, etc. It isn’t a separate thing, but a natural part of instruction. Students use technology as a learning tool much like they use a pencil or a book”(anonymous comment from Tech Team member, Tech Team survey, 2/8/14).

The survey results also revealed an important distinction between how to *use* technology itself and how to *integrate* technology within instruction. In the survey, over half (57%) of teachers said they received adequate professional development on how to *use* the technology but not on how to *integrate* it with their curriculum (Tech Team survey, 2/8/14). In fact, 71% of the teachers felt lack of professional development on *how to integrate* technology was an obstacle to integrating technology within literacy instruction. As I analyzed the data and reflected on what teachers said about their struggles, I realized that technology integration is a process. In the beginning, the teacher became aware that the technology existed and recognized how this technology could be used with instructional practice. Then the teacher learned enough about the technology to see how it worked and determined if it was the right tool to accomplish the goal. Finally, teachers determined how to integrate the technology with either professional practice or instructional practice with students. Based on notes from my personal journal, I realized that as we learned how to integrate technology, we seldom separated the steps or acknowledged them. Instead we combined them, which caused confusion and reluctance to attempt integration. The data revealed that there is a difference between understanding *how* to use the technology and how to *integrate* the technology with curriculum.

Experiences with Technology impact Instructional Decisions

The data revealed that a teacher's experiences with technology also impact their usage of technology. After our Prairie Palooza faculty development session, members of the Technology Team interviewed their colleagues about their experience with learning technology during Prairie Palooza. We then shared this information via reflection journals and discussions at our Tech Team meeting. Because we already had relationships established with our grade-level teams, most teachers were candid about their perceptions of technology integration. They discussed not only their experience with Prairie Palooza but also their perceptions of technology integration in general.

Rick, a fifth grade teacher, was not confident learning technology in large groups because he had negative experiences in previous professional development sessions. He shared, "I expected to be left in the dust when I attended Prairie Palooza but I wasn't. I tried to sit by someone like me because you want to be with someone who is about your speed, knowledge, and background. I sat by a teacher on purpose because I knew she struggled with technology too. I wouldn't feel bad if I got behind"(Focus group interview, 5/13/14). Rick liked the small group sessions because he felt more comfortable asking questions. It also helped to have the apps he needed downloaded ahead of time. He shared, "I liked having the apps ahead of time. Then I could look them over a bit before I went to the training"(Focus group interview, 5/13/14). Because of Rick's previous experiences with learning technology, Rick came to the session already intimidated and believing that he would not do well. Learning in small groups and having knowledge of the apps ahead of time, helped him build his confidence as a learner of technology.

Loretta, a teacher who attended Prairie Palooza, was also intimidated by technology. She often felt embarrassed to ask questions or let someone know when she fell behind. In the interview she shared honestly, “I often feel embarrassed when learning technology. I’m still on step one and they are on step ten! I am embarrassed to raise my hand and ask questions. If you ask the person sitting next to you, then they have to stop and they get behind. I don’t want to ask people sitting next to me. I feel bad asking a person, especially more than one time because then they get behind”(Focus group interview, 5/8/14). During her first session, Lorretta did not have the app Splashtop because she was not familiar with downloading apps on her iPad. She shared, “I didn’t have Splashtop on my iPad so the session wasn’t that beneficial. I couldn’t practice with it nor do I know how to get this app on my iPad so I doubt I ever use it” (Focus group interview, 5/8/14). Loretta’s negative experiences with technology impacted her ability to learn and influenced her beliefs about technology integration. Although she noticed ways she could use technology, once she got behind she was afraid to ask for help. Her lack of confidence in her abilities to use technology and her reluctance to seek help prevented her from integrating technology within her instruction.

Another responsibility of Tech Team members was to share their learning with members of their grade level team, as well as get feedback from them. Kate ran into a conundrum when sharing technology with her third grade team because of differences in experiences and perceptions about technology. The third grade team consisted of three teachers all with different levels of experience in teaching and with technology. As stated earlier, Kate was a veteran teacher with over 25 years experience in teaching. Even though she had attended several professional development sessions on technology

integration, she lacked confidence in her ability to use technology. Joyce was a veteran teacher with approximately six years of teaching experience working toward a degree in administration. Trish, a first year teacher, working on her Masters degree through the Fellows Program, grew up using computers. All three teachers brought different levels of experience to the table in regards to technology. This proved to be challenging as they learned to integrate technology within their literacy curriculum.

During a third grade team meeting, they decided to work on writing curriculum and integrate blogging. They chose this because Trish was doing an action research project on blogging with her students, and both Kate and Joyce were somewhat familiar with blogging. They decided to do book reviews on the blog; then students could read each other's book reviews and learn about new books in our library.

As these teachers planned and implemented the book review project using blogging, the differences in their abilities and beliefs about technology made technology integration a challenge. For example, when planning the lessons to use Kidblog for book reviews, Trish didn't feel the need to meet, she felt confident in her ability to use Kidblog. She said, "My kids have already blogged. They are advanced and don't need to spend time on editing their blog posts. They already get this" (personal journal, p.5).

Joyce did not want to spend time meeting either but was willing to meet briefly. She felt like she showed her students how to use Kidblog, and it was their responsibility to follow the directions on the project. Trish and Joyce felt confident in using technology, and both were taking college courses so their time was limited. They did not see the need to meet nor did they feel like they had time.

On the other hand, Kate wanted to partner with her grade level team as she integrated

blogging within her writing curriculum. She wanted to collaborate with her team about effective blog posts and their experiences with using Kidblog. She shared, “I want to plan more lessons on writing constructive blog comments and talk to Trish about how she worked with her students to get them to comment constructively with each other”(reflection journal, p.5). Kate felt the team should meet to check in and revise plans as necessary. Kate wondered if her lack of experience with technology was what caused her to feel differently about the need to discuss technology integration. Kate reflected in her journal, “I am frustrated that my grade level team is not working more collaboratively with technology. Both of my partners are more comfortable with technology and social networking than I am. I know that I can learn a great deal from them”(p.10). However, there did not seem to be a willingness to collaborate or share ideas regarding blogging because of differences of opinion about curriculum expectations. (personal journal, p.4). For this grade level team, sharing learning was arduous because the teachers came to the group with different expectations and experiences about technology and learning.

Thought Provoking Views of Technology Integration (an Anomaly)

Nancy, a mentor teacher in our building, brought an interesting perspective regarding her experiences with technology integration. She thought of people who lead technology professional development as “elitist”. She shared, “People who understand technology are like a clique. They seem to love the power that they know something you don’t. They put everybody else down and have this elitist attitude. It makes people feel like you are not a part of this click. Learning needs to be scaffolded and they never think of that.” (Focus group interview, 5/8/14). Because of her perceptions and previous

experiences with technology, she did not want to attend Prairie Palooza and was even considering ways to get out of it. However, when she saw we had the survey at the end, she knew she would have to stay. She shared, “I seriously thought about leaving but knew I had to return to do the survey so I decided I could last through another 15 minutes. I thought, this will be like all the other in-services. I will sit down at a computer and within five minutes they will be talking over my head. I’ll say forget it and be ready to walk away” (Focus group interview, 5/8/14).

In the beginning, her perceptions were validated. When Mike, instructional technology teacher, started discussing flipped classrooms at the beginning of Prairie Palooza, Nancy felt intimidated. She shared, “The meeting started and my mind began to close. Mike started talking about flipped classrooms and lots of terms I don’t know. I began to feel insecure and thinking of a way I could get out of the meeting. Instead of talking at someone, the presenters need to talk with us” (Focus group interview, 5/8/14).

The Technology Team invited Mike to share briefly at the beginning of Prairie Palooza about summer opportunities to learn about technology. Mike assumed everyone in our faculty was familiar with the technology terms he was using. He told our faculty about the technology opportunities but neglected to explain them. Nancy made a poignant point: “It is like the saying, A person may forget what someone says but you will never forget how you felt. I felt left out because I didn’t have the same skill level as everyone else so I shut down” (Focus group interview, 5/8/14). Nancy was referring to the quote by Maya Angelou, “I’ve learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel.” It was obvious that

Nancy's views towards technology were impacted by her previous experiences with technology.

Kendra, a special education teacher who attended Prairie Palooza, had similar perceptions of technology integration. She felt that technology trainers have an "assumption of knowledge" that everyone understands their terminology. Kendra shared, "People presume a level of knowledge that we don't have. They think because they know it, everyone else knows it too. It's like the everyday terminology that I use in special education. Most people wouldn't understand it because they don't live it every day. They don't have a need to know it. It is the same with the terminology of technology. People assume we know terms when many of us don't. Example: Mike started talking about flipped classrooms. I thought, "Flipped classroom what the heck does that mean?" I see glimpses of things but instruction is so fast, there is this assumed level of knowledge that isn't there for all of us" (Focus group interview, 5/8/14). As we talked about her experiences with technology, she discussed the possibility of the impact of natural ability. She wondered, "Could there be an innate sense of technology that some people are born with like when you learn how to play music? Some people take to it naturally and learn easily while others have to work very hard to learn it" (Focus group interview, 5/8/14). Ultimately, when it came to learning about technology, Kendra shared, "I get overwhelmed and I just shut down and go back to what I know" (Focus group interview, 5/8/14).

The data revealed that a teacher's experiences with technology, whether negative or positive, impact a teacher's motivation to give it a try in the future. Put succinctly, the

data from the technology survey (2/8/14), reflection journals, and group discussions revealed the following key points:

- Teachers believed that technology integration was important and that it was beneficial for student learning.
- Teachers felt that technology should be integrated in authentic ways.
- Few teachers (14%) felt they had the necessary skills to integrate technology with their instruction.
- Teachers felt there was a difference in knowing how to use technology and understanding how to integrate it with their curriculum.
- Teachers felt they had not received adequate training on technology integration. (Tech Team Survey, 2/8/14).
- Teachers' beliefs about and experiences with technology impact their willingness to integrate technology and impact their instructional decisions.

Teachers' perceptions about technology integration impact not only their willingness to use technology in their classrooms but also their ability to learn how to use these tools in the first place. Rick, Nancy, Kendra, and Loretta were intimidated by technology and did not feel confident in their ability to learn how to use it. Their previous experiences with technology negatively impacted their ability to learn. Before the training began, they felt they would not be successful, and one teacher even looked for an escape route. Similar to Levin & Wadmany's (2008) findings, the data revealed that technology integration depended largely on teachers' personal feelings, skills and attitudes to technology in general. These teachers' perceptions impacted their ability to

learn during the session and prevented them from seeking help or asking questions that may have helped them learn. Instead they simply shut down.

The third grade team's experiences with technology made it difficult for them to collaborate on technology integration. Because they came to the meetings with different experiences and skills regarding technology, it was a challenge to find common ground and plan together. Although they each implemented blogging within their writing curriculum, the experience could have been much richer for all involved, including their students, if they had shared their knowledge, skills, and experiences with each other.

Nancy and Kendra brought up two important points worth further consideration. They suggested that teachers of technology present themselves as "elitist" and presume that their participants already have a certain level of knowledge about technology. Similar to Vygotsky's (1978) notion of the zone of proximal development, these teachers initially needed support from a more experienced individual, and then gradually moved towards independence with technology integration through continued support. What was lacking in their experiences with professional development was scaffolding of instruction and continued support from an empathetic colleague. Nancy and Kendra's willingness to honestly share their perceptions provide important information as we consider how teachers learn about technology integration.

Rethinking our Role as Teacher

As I reviewed the data, I noticed teachers' perceptions about their role as teacher were often barriers as they integrated technology. Both Stephanie and Kate struggled with feeling responsible for their students' learning. Because of their previous experiences teaching, they believed that the teacher is supposed to be the "knower" and

share the knowledge with students. They thought they had to have the answers when technology did not work. When we began this inquiry project, many of us felt a responsibility to be the expert because we assumed the role of teacher (reflection journals, Tech Team video, 2/19/14). Stephanie explained, “The difficulty for teachers is that we feel like we have to know the technology well in order to foresee possible contributions and constrictions of the tool. With as many tools as there are available and accessible to education, it’s hard for teachers to know them really well” (reflection journal, p.7).

For example, when Stephanie and Susan (second grade teacher) began using Kidblog to teach literacy, they both confronted fears of using a program with students that they barely knew themselves. Stephanie shared in our planning session, “I think that the biggest part of the fear is the control of how am I going to teach it if I don’t even know what it is, and how am I going to explain it and how am I going to answer questions and troubleshoot?” (planning session, 4/7/14, p.4). Similarly, Susan shared in an interview, “I have to let go of the fear that I won’t know how to teach it and that things won’t go crazy in the room. Classroom management is big for me and it’s hard to let go and just let kids experiment” (Focus group interview, 5/13/14, p.1). Not only were they uncomfortable not knowing Kidblog well, but they also were afraid of potential classroom management issues if they could not trouble shoot technology issues.

Other teachers in our building also acknowledged issues of control and feeling the responsibility of being “the expert” in their classrooms. Lois, a second grade teacher, struggled with this issue. She admitted that she was reluctant to use technology because she did not know how to troubleshoot when students had problems. Although Lois was

reluctant to integrate blogging with her writing instruction at first, once she let go of “being the expert” she excelled with technology integration. She was the first teacher to post pictures on her blog. She was so excited that she sent me the text message, “ I blogged and even included a picture. Check it out!” (Lois, personal communication, 4/28/14). She also began blogging from home and would pose questions to her students. She would take a picture of a plant or insect; insert the photo in her blog, and challenge students to identify it.

Not only did Lois learn to blog with her students, but she also integrated PowerPoint with her animal research project. Through trial and error and support from me, Lois learned how to use PowerPoint herself. She and I planned the lesson, and although I showed her a few basics, she mainly learned the program herself. She worked with her students to discover how to add animations and music into their PowerPoint presentations. She also created individual PowerPoint presentations for volunteers to use in the all-school Science Fair at the end of the year.

As Lois reflected, “I am learning it is okay that the students might know more than me, and I try not to get so frustrated when things don’t go right. I am a risk taker, it is okay to make mistakes, and things don’t always go as planned. Even if you have to wait a day or two to fix a problem, then that is okay too. AND even old dogs can learn new tricks (even in the world of technology)” (Interview, 5/13/14). By acknowledging her own perceptions of using technology, Lois was learning to let go of being the expert and to trust herself and her students as learners.

The data revealed that it was not that teachers did not believe in the importance and benefits of using technology, but rather it was a lack of understanding how to use the

technology as a productive learning tool that was the issue. Teachers needed to trust that students could learn using the technology in order to see it as a tool that supported learning. To do this, they had to acknowledge their own beliefs about teaching and learning, and they had to trust their students as learners.

Trust the Learner

As we continued to integrate technology, we also realized we needed to trust our students as learners with us. Even though both the Trio Group and the Tech Team had a variety of ideas to integrate technology, it was a challenge to implement them because of individual issues with trust and confidence in our abilities to use the technology independently. Both groups realized we had to confront these issues before we could make technology integration an automatic part of our teaching practice. As Edith shared during a Tech Team meeting, “I need to let go of control and the desire to always have control. I had to allow my flexible side out and let the kids take over more control” (Tech Team video, 5/14/2014). Once Edith shared learning with her students, they took to blogging, several students even blogging from home.

Stephanie confronted issues of trust as she considered implementing BYOD (bring your own device) with her fifth grade students. Stephanie was nervous about implementing BYOD with her students, she said, “While Mike (instructional technology teacher) shared some information with me regarding BYOD, I am still conflicted about whether to keep thinking it through and planning or just jumping in and allowing the students to shoulder some of the responsibility for learning with me” (reflection journal, p. 4). Even though she had reservations, Stephanie decided to pilot the BYOD program with her class. By the end of the first week, Stephanie shared, “Overall I really enjoyed

this week with technology and I think my students did too. I believe that students feel empowered with technology and like that they have control of the lesson” (reflection journal, p.13). This experience helped Stephanie to see her role differently and begin to trust her students as independent learners.

After Stephanie implemented BYOD with her fifth grade students, she had several students approach her about using apps they discovered in addition to the ones she provided for them to use during independent reading time. Stephanie was not sure how to approach this. She wanted her students to be independent learners and explore new ways to use their devices for learning; however, she also wanted to protect her students, making sure that these apps were learning tools and that her students were safe when using technology. Stephanie shared her quandary in her reflection journal, “I am nervous because the students mentioned using apps/programs that I have not heard of and am not familiar with. I hope to use this as an opportunity to have them become the teacher and teach me along with the rest of the class but it makes me nervous not to know ALL about the app/program. I think it is a great way to learn more about apps or programs at a faster rate but it does make me nervous. I think trying something new can be very scary, but also makes you feel a bit like you’re living on the edge” (reflection journal, p.28, 34).

Stephanie faced similar issues of trust when she first began blogging with students. In our planning sessions the Trio Group confronted these questions: Do we allow fifth graders to blog with students from other schools, or can they only blog with each other? What issues might that pose? As Stephanie shared, “Blogging for the first time with a fifth grade class from another school is scary because there are several things we can’t control. It is new territory. We have never tried this before” (planning session,

3/15/14, p. 15). Prior to partnering students with a blog partner, Stephanie and I held a discussion about safely blogging. We elicited ideas from them as well as adding our own advice. Her students blogged each morning with another fifth grade class in our district. They shared essays about themselves by creating “Meet Me” blog posts (reflection journal, p. 32). Stephanie had one student who chose to use the blog inappropriately and this became a “teachable” moment. Stephanie and I worked together to make this a learning experience for everyone on how to write appropriate comments and how to handle situations of cyber bullying. We chose education rather than shutting down the blog. Stephanie’s fears began to fade as she saw students excited about reading the blog. Stephanie shared, “While I was nervous about this at first, the students’ excitement has helped me to overcome my fears. It is so captivating to get in a discussion with someone and have to wait for others to respond. I have seen how much they enjoyed writing for the sake of their classmates reading it” (reflection journal, p. 33).

Kate, Stephanie, and I discussed our concerns about Internet access to technology during our Trio Group meeting. We acknowledged that we faced issues of trust when determining how much freedom to give students when using the Internet to search for information or use apps or programs we are not familiar with. We questioned whether we should limit students’ access to websites and apps we provided for them or allow them to use Google to search for information. What we found by providing sites for them was that the information was often limited and they could not find all the answers to the questions posed. For example, I worked with Stephanie’s students on an author study/book review unit. I provided websites for them to use to find information, but these websites did not have information on all the authors they wished to review. Our

fear of what students may be exposed to caused us to limit access to the Internet and provide the websites for them. Kate shared in our planning session, “I think a part of it is that with paper/pencil stuff we have so much more control. We can control what the kids are exposed to. When we pick books for them, we are actually limiting where they get their information but we see it as protecting them. Once students get on the Internet, we can’t protect them anymore” (planning session, 4/7/14, p. 5). Ultimately, we found it beneficial to teach students how to be safe in the virtual world by viewing issues that arose (and they will) as learning opportunities instead of obstacles to learning. Kate stated, “Teachers have a fear of technology that kids are going to end up where they shouldn’t be. I have to totally trust them because I can’t always see their screens” (planning session, 4/7/2014, p. 5). The Trio Group came to the conclusion that education and discussion is key to protecting students as they use technology. We realized that our own fears were preventing students from learning how to be safe and limiting their opportunities to learn. Although it was difficult, we had to trust our students as learners in order to move forward with technology integration.

During the Trio Group’s reflection meeting, we discussed how amazed and excited we were when we let go of being the expert and students shared in the learning process with us. It took pressure off of us and made learning fun and engaging. This motivated us to continue learning new ways to integrate technology. For example, some websites Stephanie wanted to use for the fifth grade geography unit would not work because the iPads didn’t have Flash players. Stephanie shared, “Half of the students went to other websites that worked on the iPad and others went and grabbed a laptop. They partnered with each other and were totally flexible. They just rolled with it. They were

great and they don't care that some sites didn't work. They solved their own problem without me!" (reflection journal, p.25; planning session, 3/15/14 p.8).

As Kate began to trust her students, she also found her students were independent problem solvers. During reading workshop, she set up MYON reader as a learning station for students to use while she worked with small reading groups. She shared, "We had a problem getting on MYON on the iPads, but the kids just went through the website all on their own. They went to the school website and accessed MYON from the website. That was the great thing. When the app didn't work, they didn't stop. They just went a different way. I didn't even have to tell them. They just know" (planning session, 3/15/14, p. 8).

Previously, we felt it was our responsibility to protect students by limiting their access to information. The Trio Group realized we were actually limiting learning opportunities in our attempts to keep students safe. Not only did students not have access to the information they needed, but they also were not learning how to protect themselves as users of technology. We were missing a relevant opportunity to teach them how to be safe and independent users of technology (planning session, 4/7/14, p.5; Tech Team video, 4/23/14).

Based on data from our reflection journals and transcripts from discussions in our planning sessions, we realized we had to "trust the learner" and think about our role as teacher in a different way. We were no longer the keepers of knowledge imparting information to students. We came to realize our role was more of a facilitator of their learning. As Stephanie shared, "I have trouble giving up control of knowing all that could go wrong and being able to answer all the possible questions or troubleshoot all possible

problems. There are going to be glitches and imperfections and that's okay. The students will forgive you and the lesson will go on"(reflection journal, p. 13). We focused on educating students about how to be safe when using technology instead of preventing access. This created many opportunities for students and teachers to use technology as a tool for learning, accessing information, and social networking. We Skyped with middle school students, blogged with students from another school, and used the Internet to access unlimited information to find answers and solve problems. As Stephanie so eloquently stated, "With technology we just jumped in with both feet. That has forced us to not to worry about the "what if" situations or our feelings that can sometimes get in the way of brilliant ideas" (reflection journal, p. 33).

Partner Teaching

Tech Team members shared their fears of integrating technology in isolation. In the Tech Team survey, 85% were afraid of having difficulty managing the classroom when students were on computers (2/8/14). They were willing to try using a program or app but felt more comfortable if there was an "extra pair" of hands in the room, especially when first integrating the technology. Also, another person planning to partner-teach or be there for support, helped them be accountable for following through with the lesson. Edith shared with me in a quick share conversation in the hallway that she wanted to use Kidblog with her students but was afraid to "take the plunge" alone.

She also felt like she had to know Kidblog well before she could introduce it to students (reflection journal, p. 8). Kate shared similar views. She shared, "It can be overwhelming to be one teacher with 18 kids blogging at once and trying to respond" (planning session, 3/15/14, p. 5). Edith decided to work with Kate and her students to introduce Kidblog.

This scenario worked well. Not only did the students learn to blog from each other, but Kate and Edith also learned aspects of blogging from the students as well.

This reminded me of my own experiences with integrating technology in isolation. I reflected in my journal, “When I use technology with the K/1 students, it is so hard to get to everyone when I am all by myself. Several of them are not reading yet so navigating the keyboard can be a challenge. They don’t recognize the difference between the letter O and a zero. When they get stuck, they don’t have the skills to troubleshoot on their own so then I lose them while they wait for me to help” (reflection journal, p. 8).

Erika and Laura, both K/1 teachers, had similar issues and were reluctant to integrate technology on their own. They felt the hardest part of technology integration was troubleshooting. One example occurred when Erika used the app Screen Chomp. It worked well on some of the iPads, and on others it did not. She ran into snares when uploading students’ finished work. As she tried to troubleshoot with students, others were ready to move on. Soon her room became chaotic as students were at different points with the project and some could not access the program at all. As Erika stated, “When the technology doesn’t work or a kid hits the wrong button, you get stuck helping one student while chaos erupts around you” (Tech Team reflection, 5/14/14). The stress of technology not working as expected makes teacher reluctant to integrate technology. One member suggested on the Tech Team survey, “It would be helpful to have teachers pair together so each would have an accountability partner to try out new ways of using technology and to work through kinks together. Then teachers could share how they were able to use technology and what obstacles they faced” (Technology survey, 2/8/14).

In one of our Tech Trio planning sessions, Stephanie and I decided to integrate podcasts with her writing curriculum. Stephanie was used to teaching on her own in her classroom, but since neither of us was familiar with creating podcasts, we decided to do the project together. Using Voice Record, students created podcasts about a special place they had written about on their blogs. To create the podcasts, Stephanie divided her class into two groups, I worked with one group and she with the other. It was helpful to have a much smaller group of students as we helped them troubleshoot and learn how to use Voice Record. Students practiced reading fluently by incorporating intonation and enthusiasm as they recorded their stories. No one was an expert with this technology. Together, students and teachers figured out how to edit the podcasts and splice together parts of their narratives to create entertaining stories that were posted on their class blog.

For social studies, Stephanie made historical fiction iMovies. Both Mike, our Instructional Tech teacher, and myself provided extra hands during the project. Stephanie found having support helpful when her students used technology. She commented, “We spent the first 30 minutes helping students narrow their search as they looked for information.... I am so used to teaching on my own. I have to remember that asking for another set of hands is a good idea so that two adults are available to help troubleshoot at least for part of the lesson” (reflection journal, p.44).

Kate felt the same way when she and I worked together with her students on book review projects using blogging. She shared, “It’s always more comfortable if you are a teacher working with another teacher who is doing similar things with technology. We all need to be more comfortable with it on our own but having support helps us to get there” (planning session, 5/18/14). It is interesting to note that neither teacher was used to

having support while teaching. They were used to the “norm” of teaching in isolation and having to troubleshoot on their own. They both acknowledged the importance of having another teacher there to help answer questions and to problem solve if technology did not work.

The data from all three groups, (the Trio Group, the Tech Team, and faculty members), revealed that teachers’ perceptions and fears impacted technology integration, limited their own learning, and more importantly limited their students’ learning.

Through our collaborative discussions, reflection journals, and technology survey, we confronted our perceptions of technology integration, we scrutinized our beliefs about our role as teacher, and acknowledged issues we had with trusting students as they take ownership of their learning.

Theme 2: Strategies Teachers Deem Important to Integrate Technology

In this inquiry project, as teachers began to use or “apply” the technology within their instruction, they identified strategies that helped them learn. As I analyzed reflection journals, transcripts, interviews, and Tech Team videos, common attributes emerged as members of the Trio Group, Technology Team, and our faculty reflected on what they needed as they learned not only how to integrate technology into their curriculum but also how to apply it.

However, the data also revealed a significant contradiction. Even when teachers were willing to learn about technology integration, they did not always follow through with their learning. Application of technology was an issue that we struggled with in all phases of inquiry. By application I mean using the technology either in the classroom with students or individually to support a teacher’s professional practice. For example, a

teacher could learn how to create documents in Google Drive for either the students to access (instructional practice) or for their own notes during faculty meetings (professional practice). Although both the Trio Group and Tech Team discussed possible solutions, applying technology continued to be a challenge that was not completely resolved.

Following I share the common attributes teachers deemed important as they learned to integrate technology. Then I will discuss the challenges we faced with integrating the technology within our instructional practice.

Pacing our Learning

Learning about technology seemed overwhelming, especially in the beginning. There were many apps, programs, websites, blogs, etc., to choose from. As Stephanie wrote, “What’s frustrating as a learner with technology today is that it’s always changing. There will always be something new and improved or more efficient or better suited for your purposes. It’s hard to stay ahead of the game” (reflection journal, p. 4). Often times teachers of technology, like those who taught at the iPad Institute, presented an overview (surface knowledge) of all the things a program did or they shared several programs or apps that a teacher could use in the classroom in an attempt to expose teachers to technology. Minimal, if any, learning occurred. Instead teachers often gave up and returned to using what they already knew (Tech Team survey, 2/8/2014; Tech Team video, 4/23/2014).

Based on the Trio Group’s experiences at the iPad Institute as well as the data collected from our learning experiences during the inquiry project, it was apparent that when too much information is presented in a short amount of time, minimal learning or

application occurs (Tami, reflection journal, 2/10/14; Stephanie, reflection journal, p. 5; Kate, reflection journal, p. 8; planning session, 3/5/14). It is the quintessential debate of quality versus quantity. In the Tech Team survey (2/8/2014), Tech Team members said they needed to learn things in “small steps” and needed a “list of directions” to refer back to as needed. One Tech Team member offered this advice; “It helps to start small. Focus in on one or two things and give teachers time to practice, connect it to their curriculum and try it with students. It has to be meaningful, not just one more thing to do. I think often when we go to PD on technology, we get ‘coverage’ of what you can do with software or devices but never time to try it ourselves or try it with our kids” (Tech Team survey, 2/8/14, anonymous comment). When teachers were only “exposed” to a variety of technology options, as was the case at the iPad Institute, rather than applying or interacting with the technology, only surface knowledge or exposure to new ideas was achieved. When teachers are exposed to a wealth of information in a short amount of time, it is questionable if learning occurs or is applied.

In addition to preferring learn one segment of technology in a session, teachers also shared that they needed opportunities to apply technology in the moment during the training, not later. One Tech Team member wrote, “Start small, focus in on one or two things and give teachers time to practice and connect it to curriculum and try it with students. It has to be meaningful, not just one more thing to do. I think often when we go to PD on technology, we get “coverage” of what you can do with software or devices but never time to try it ourselves or try it with our kids” (Tech team survey, 2/8/2014). For example, as the Trio Group began our inquiry, we invited Mike, our instructional technology teacher, to share ways for us to integrate technology and implement BYOD.

Surprisingly, even though it was a small group (only Kate, Stephanie, and myself), we left the training feeling lost. Mike shared a multitude of ways to integrate technology with literacy, such as using Blogger, Evernote, Twitter, Google Drive, and Padlet. The problem was that he only provided an overview of each technology. We gained only surface knowledge and did not have time to try the applications while he was there or think of ways we could connect the programs or apps to our own curriculum.

Stephanie wrote, “At this time it was 4:00 p.m. Mike began talking about the possibilities of electronic book reports. While I was excited to hear his presentation, part of me knew my brain was fading after already being there an hour after school. Even my sense of excitement couldn’t fuel my over stimulated brain with new information. I was close to shutting down” (reflection journal, p. 5).

Kate wrote, “I felt like I had just succeeded in learning Padlet, and he (Mike) throws out more options. Having too many choices complicates things, it muddled the information I had just learned and felt comfortable with” (reflection journal, p. 5).

Although the information was relevant to our practice, Mike presented too much information in a short time without providing opportunities for us to apply the information or make connections with our curriculum. The three of us felt so overwhelmed that we neglected to apply the information he shared. We saved his PowerPoint in our shared folder for later reference, but “later” never came. Stephanie continued in her journal, “Once you get behind, you can’t catch up, and that’s when feelings of being overwhelmed settle in. As a learner, I would prefer the teacher provide information about what is best now and then stop. I found that being overwhelmed trumps anything I just learned and felt good about” (reflection journal, p. 4). Similar to

findings of other research, the data revealed that it is when teachers make connections with the technology and apply it in some way that learning is internalized (Dale, 1969; Dewey, 1940; Howland et al., 2012).

The data from our reflection journals and conversations in Tech Team meetings revealed that pacing our learning and providing opportunities to apply that learning were significant components for teachers' successful integration of technology. One Tech Team member wrote, "Learning things in small steps and then having the chance to try it out and discuss it with my colleagues about what works and what doesn't work. I need to work together through issues that arise as I use technology" (Tech Team survey, 2/8/2014). However, feelings of being overwhelmed prevented us from learning. Teachers would simply go back to the familiar, teaching in the same ways. Feeling overwhelmed also impacted our perceptions about technology integration. Both Stephanie and Kate shared how learning too much at one time made them "uncomfortable" and "trumped" previous learning. When presented with lots of information in a short period of time, learning did not happen. Even when we were excited about the information, as when Mike shared, we shut down. We did not know where to begin, so we did not start at all. Ultimately, teachers from the Trio Group and the Tech Team reported that they need to focus on learning one new technology at a time, need to "give it a try" during the session, and time to apply it in their classrooms in order to integrate the technology with their daily instruction (reflection journals, Tech Team survey, 2/8/14).

Scaffolding Instruction

Much like students, teachers come to the learning environment with different skill sets and experiences in regards to technology. The data revealed that adults need instruction to be scaffolded. When I use the term scaffold, I am referring to the instructional technique associated with Vygotsky's (1978) zone of proximal development in which a teacher provides instructional support by making connections to students' prior knowledge, breaking up the learning into smaller pieces and providing guidance as students learn each piece (Coffey, 2009). Learning involves mentoring provided by a more knowledgeable person who engages in activity with a less experienced persons, referred to as scaffolding (Lee & Smagorinsky, 2000). In our informal interviews with colleagues and our Tech Team discussions, the data revealed that differences in skill levels impact teachers' abilities to integrate technology (Focus group interviews, Tech Team video, 4/23/2014). We noticed that even though most faculty members had attended required training on technology integration the previous year, they did not all have the same foundation. There were differences in teachers' experiences with technology and in their confidence using technology.

For example, in the Prairie Palooza session on Splashtop, Nancy wanted to learn how to remotely manipulate her computer via her iPad, but felt frustrated and intimidated when she did not understand the terminology. She shared, "My frustration grew when I did not have the app on my iPad, and now the app cost money, so I wasn't going to get the app anyway. I then tried to load the free app on my iPad, but the presenter kept going so I got behind." She felt intimidated when she didn't understand the terminology that was used. She continued, "The presenter started throwing out lots of unfamiliar terms. He just assumed everybody knew them. I tried to find something to connect to. I felt like

a kid in the classroom struggling with reading as all the other students read the chapter and say how easy it is. I don't think this is easy! Thankfully the music started which told us to move to the next session, so this session was closed" (Interview, 5/8/14). Nancy was unfamiliar with the terminology yet the presenter assumed everyone in the room understood what he was talking about. This confirmed her previous thinking that technology trainers are "elitist" and she began to shut down. Nancy shared, "A teacher leaned over to me and said, "That is why I don't like technology." She was referring to the same feelings as me. She didn't understand the terms. I smiled because I felt like at least I am not the only one feeling this way" (Interview, 5/8/14).

Lorretta shared her frustration with learning the app Sock Puppets. She was excited to learn this app because she thought it would engage her students and they could possibly use it themselves. She stated, "Like with Sock Puppets, I was trying to open the app, and the presenter went on and started. I felt behind. It was up to me to say, Wait guys, I don't know this stuff, but I didn't because I don't want to make other people wait on me." (Interview, 5/8/14). Loretta said this often happens when she attends technology-related professional development. She described another instance that occurred when she attended training provided by the special education department. She shared, " Like at the beginning of the year, they [the special education department] tried to teach us Google Docs so we can use it to share information on kids. I got behind, and so did other teachers, but they [the presenters] kept moving along. I still don't really understand it or use it" (Interview, 5/8/14). Loretta needed the teachers of technology to check for understanding and to provide written or visual directions in case she fell

behind. Because learning was not scaffolded, Loretta did not learn or apply the technology she was supposed to learn.

However, when learning was provided in increments with support provided during the session, teachers felt more comfortable and were willing to try technology. During Nancy's second session of Prairie Palooza, the presenters helped her feel at ease and showed her ways she could use the app Pic Collage in her own teaching. She shared, "The Pic Collage presenters seemed laid back, and one presenter stayed seated. This made the atmosphere more relaxed, and it didn't seem like us/them. They sat down with us and presented information in parts instead of standing in front of the room. That made it more collaborative, not so authoritarian" (Interview, 5/8/14). Nancy said, "In this session I already had the app downloaded so I felt prepared. I began to play around with the app [Pic Collage] and started feeling some success! Patti and I began to laugh and started showing each other how to add stickers, backgrounds, etc., in Pic Collage. I did not leave feeling frustrated, but felt excited! Hmmm---why? I guess because I didn't feel insecure" (Interview, 5/8/14). When Nancy felt comfortable and learning was scaffolded to meet her needs, she built confidence in her abilities to learn technology. In the end, she was proud of her accomplishments. She shared, "I was proud of my work with Pic Collage and even tried to email my poster to another teacher" (Interview, 5/8/14).

Much like our students, teachers needed different levels of support when learning technology. Schrum & Levin (2009) remind us, "It is important to remember that one type of learning doesn't meet everyone's individual needs. Offering a wide variety of ways to learn was effective." (p. 108). Loretta shared, "I won't use the technology if I don't have time to apply it and use it right away. I need to be shown and I need to see it

and then I need to do it behind you sort of like learning a line dance” (Interview, 5/8/14).

Likewise, Kendra, a special education teacher, said, “I need step by step instructions like you teach K students to learn letters of the alphabet. I need a cheat sheet to take with me, and once I have done it a couple times, I can go back to my sheet if I get stuck and forget the steps” (Interview, 5/8/14). Loretta also wanted to have step-by-step directions to follow after she left a session. She said, “Having the directions is like a security blanket for me. They are there if I need them”(Interview, 5/8/14).

As stated earlier, Kate’s third grade team approached technology integration with different levels of experience (see p. 138). They each had various skill levels when using technology with their instruction. This caused tension amongst team members and prevented the team from learning together and supporting each other as they integrated blogging with their writing curriculum. I shared in my personal journal, “All three teachers are willing and eager to integrate technology, but they each are coming with different experiences when it comes to technology. Each seems to do their own thing. Two of the teachers felt confident with blogging and were ready to move on while another teacher would like more support” (Tami, personal journal, p. 5). Recognizing differences and providing different levels of support to meet each teacher’s individual needs were important for the integration of technology.

Because of our discussions during our meetings (Tech Team reflections, Tech Team video, 4/23/14), the Tech Team recognized the importance of providing different levels of support as we planned for Prairie Palooza. Therefore, we included visual directions on the smart board for each session and posted these on the teacher share drive for teachers to reference later. Kate shared, “I do think having the PowerPoint or

something similar for reference on the smart board was helpful to people attending our session and being able to put the information on the faculty share drive for others to reference afterwards was a good thing. We all have different learning styles. For some people it's visual, some people it's music, some people it's auditory. So we need to present information in different ways" (reflection journal, p.11).

Ultimately, as Tech Team members shared their learning with our faculty, they found it helpful to start where teachers were and build on their strengths. Teachers needed small group instruction, step-by-step directions, time to use the technology and talk about it during the session, and the opportunity to apply the technology in an authentic context in a timely manner. These important instructional strategies aided teachers in their learning of technology.

Structure for Learning

Both the Trio Group and the Technology Team found it necessary to have structure in our meetings in order to learn. Often we would get distracted with what I call "teacher stories." Teacher stories are stories we tell about what has happened to us, our colleagues, or our students throughout the week that are not necessarily relevant to the purpose of our meeting. While these conversations can be important in building initial relationships within a group, we must recognize when they are beneficial and when they are hindering progress. Stephanie shared in her reflection journal, "We often have to talk through issues such as weather, sickness, illness, co-workers, etc. As teachers we are human and it is only natural to want to get it out there. We often wasted some time in our meetings with this type of talk, but I think that it only brought us closer together as a

group which deepened the discussions we had about technology” (reflection journal, p. 47).

To keep us focused, the Trio Group needed to establish a structure to follow. In practitioner inquiry those involved in the inquiry learn together without one person assuming the role of expert. I did not want to tell the group how to learn; instead I wanted the structure to come from collaborative discussions. The Trio Group read articles I shared with examples of how we could structure our learning, such as “When Teachers drive their Learning” (Semadeni, 2010) and “A Planning Cycle for Integrating Digital Technology into Literacy Instruction” (Hutchinson & Woodward, 2013). Through discussion of the articles and our own ideas, we established norms for our group, one being that we would use a timer to help us stay on topic when it was each person’s turn to share (reflection journal, 3/3/14). We decided to use the Fusion model (Semadeni, 2010) and the Think Aloud process (Crutcher, 1994; National School Reform Faculty, 2014) to guide our group. Although we didn’t follow either model step-by-step, they served as a helpful guide. More importantly, the norms and structure we established were a group decision, one we all agreed with.

Just like our Trio Group meetings, we found that our Tech Team meetings needed structure if we were going to learn in meaningful ways. The Tech Team learned that we faced issues of staying on task, deciding who leads, deciding when and what to learn, and applying our learning once we left the meetings. I reflected, “We got off task because we didn’t have a clear purpose for the meeting nor did we have an agenda. The group doesn’t have any ground rules” (personal journal, p.7). Mercer and Hodgkinson (2008) talk about the importance of having a set of “ground rules” to guide group conversations

(location 1363). For example, we started the year using a blog we called “Start the Spark” to reflect and share our learning. We used the blog as a form of communication to post examples of what we were doing in our classrooms with students. Later in the year, our school district wanted teachers to begin using Google Drive. The Tech Team felt responsible for teaching our faculty, so we changed mid-stream, and started using Google Drive to reflect and share information. Constantly changing meant we did not learn anything well. I reflected, “It is so hard to keep people on track-there is no accountability. We are like ping pong balls floating back and forth across the hallways of school, bouncing from one activity to the next, accomplishing very little” (personal journal, p. 6). Teachers also shared their frustration of not having a specific focus and constantly learning new things, but nothing well.

Edith: “I want our team to be about learning new things...we do a lot of talking about what we were going to do, and not a lot of doing or applying it” (Tech Team reflection, 5/14/14).

Stephanie: “Part of my frustration with the Tech Team was that it took a while for us to pinpoint our focus. Our learning now is just so unstructured. We need specific expectations and a plan for learning technology integration. I would like for our team to lay out our goals this summer when we meet so we can hit the ground running” (planning session, 5/18/14, p. 22).

Structure was also important when Tech Team members shared with their grade-level teams. For example, Kate found it challenging to share or make decisions with her third grade team because they lacked norms for their group. During their meetings, there was confusion about student expectations for the curriculum and technology integration.

Final decisions were seldom made. I reflected in my personal journal, “A decision as simple as choosing when to meet and plan was a challenge. A topic that was supposed to take 10 minutes took almost 50. In addition, there is the pressure to cover all the curriculum by the end of the year so teachers feel like they have to move on, can’t spend more time on blogging. We didn’t have a clear purpose for meeting, didn’t have an agenda, and no ground rules or norms for group discussion”(personal journal, p. 5).

The data revealed that structure was important for teachers to integrate technology. When sharing our learning, the Trio Group, the Tech Team, and grade-level teams (as in Kate’s experience) would have benefited from having clear expectations so that members could learn efficiently and effectively. Establishing specific expectations for members, as well as defining a clear purpose for learning about technology, were all necessary for teachers to learn efficiently. Without structure, teachers faced issues of staying on task, deciding a purpose for the group, determining when and what to learn, and overall accomplished very little.

External Motivation

Members of the Tech Team unanimously felt that accountability was a necessary component for applying technology in our classrooms. In final reflections of both the Trio Group and the Tech Team, every member mentioned the need for some kind of accountability to follow through with applying technology within their instructional practice (Tech Team final reflections, 5/14/14). Laura wrote, “We have to have some way to hold teachers accountable, plan for technology to be integrated ahead of time. I know busy schedules get in the way, especially with implementing Prairie Pups (K/1 classes) this year. Maybe use a scope and sequence or have someone serve as secretary

so we don't just keep discussing things but apply them" (Tech Team final reflection, 5/14/14).

Our faculty also expressed a need for accountability in the online survey they took after Prairie Palooza. On the survey, faculty members were asked, "How can the Tech Team support you? Either via focus groups or the survey, faculty members responded with "Hold me accountable" (Faculty survey, 5/7/14; Focus group interviews). Amy, a SPED teacher, shared in an interview, "Once I leave I don't have time to try something with the technology. Not because I don't want to, just because real world things hit me and take priority like giving a test and then I never seem to get to it" (Focus group interview, 5/8/2014). Likewise, Rick, a fifth grade teacher, sheepishly admitted, "I didn't follow up or try anything yet from Prairie Palooza, even though I liked it, because there was no accountability, no reason to follow through" (Focus group interview, 5/13/14).

After recognizing our struggle with applying technology, the Tech Team felt having the building principal's support would help with accountability and follow through. Prior to hosting Prairie Palooza, the Technology Team requested that our administrator put information about Prairie Palooza in our weekly memo, as well as remind faculty that it was required professional development. Without this support, the Tech Team was concerned that faculty may not sign up for the sessions being offered. "We need our faculty to sign up for Prairie Palooza sessions and bring their iPad to the sessions. We need [our administrator] to put this in the weekly memo so teachers see it as a priority"(Technology Team video, 4/23/14). Our administrator was supportive of Prairie Palooza. Not only did she "strongly encourage" our faculty to attend, but she also attended herself. She was instrumental in purchasing additional computers so

teachers would have access to devices as they integrated technology. Because of her support, all classroom teachers attended Prairie Palooza with the exception of one specialist teacher who was required to be in a different building. Rick shared an analogy, which illustrates the importance of having administrative support when learning to use technology; “Learning to use technology with my students is like taking guitar lessons. You need mom there to push you to do the lessons, to practice. We need someone to push us and encourage us to keep trying” (Focus group interview, 5/13/14). Some teachers found external support such as positive reinforcement or administration requirements helpful in order to follow through with technology integration.

Encouragement: Positive Support

As Stephanie pondered what motivated not only her but also others to give technology a try, she had an interesting insight. Stephanie realized that she is comfortable with technology and had seen the benefits of technology integration with her students; however, the teachers on her grade-level team had not had those same experiences. As the Tech Team discussed ways to encourage other teachers in our building to integrate technology, she shared, “I think maybe they haven’t see the excitement yet in students. I don’t think they’ve gotten good feedback through using technology in their classroom yet. That goes back to the reinforcement of social learning theory. They haven’t had the reinforcement necessary yet to propel them forward, where you guys are because you have seen the excitement in your kids and had positive results” (Tech Team video, 5/18/14). We realized that we were excited about technology integration because we had positive experiences using technology with our students and in our own instructional practice. Kate suggested that we “start where teachers are, find

their comfort level. The important thing is to make sure their early efforts with technology are successful” (reflection journal, p. 3).

Edith also felt encouragement was helpful. She shared, “To learn something new, I need positive encouragement, accountability to try it out, and time to talk out new ideas with other teachers” (Focus group interview, 5/13/14). Stephanie too felt having “cheerleaders” motivated her to keep learning even on the frustrating days when technology does not work as planned (power outage, Wi-Fi down, etc.). She stated, “Tami and Kate provided a wonderful support system, full of encouragement and compliments along the way. Having cheerleaders in your corner makes everything more enjoyable” (reflection journal, p.46).

To summarize, teachers from the Trio Group, Tech Team, and our faculty reported that the following strategies were important as they learned to integrate technology:

- Talking about technology with colleagues.
- Keeping it simple by learning one thing at a time.
- Applying the technology during the professional development session, and later in an authentic context with support.
- Having a plan of action to implement the technology prior to leaving the professional development session.
- Scaffolding; teachers need different levels of support as they learn about technology.
- Choosing technology that is relevant to the curriculum.

- Building confidence in the ability to use technology through encouragement, praise, and partner teaching.

Challenges of Applying Technology

Even though the teachers involved in this inquiry project were passionate about technology integration, applying technology-whether with instructional or professional practice- was a challenge. Challenges included determining which technology was an appropriate tool to help students learn the curriculum, learning how to use the technology, and then actually trying in our classrooms. For example, during Tech Team meetings, we would agree to try a new app or program in our classroom and share our experience at the next meeting. However, we seldom followed through with integrating technology. We were faced with the demands and priorities of day-to-day school, and finding time to apply technology only happened if we scheduled it prior to leaving the meeting. Kate lamented, “Just trying to figure out time is crazy. We are supposed to read all this Lucy Caulkin’s stuff. We are trying to figure out a new science curriculum. Time. Time. Time. I don’t know what to do about it because some of it is out of my control. Like the cookie dough assembly or being chosen to pilot the smarter balance test” (planning session, 3/12/14, p.3). Often our priorities of what we taught were based on what our district required or what we knew was listed on walk through evaluations conducted by administration. Stephanie reflected in her journal, “We have a responsibility to get through the curriculum and that is our focus. Part of me is scared to take time integrating technology” (p. 7). Although technology integration was supported by our administration, it was not a requirement or expectation. There was nothing in our building goals that included technology integration. Therefore, at our Tech Team

meetings, we often shared excuses rather than experiences of technology integration (Tech Team video, 4/23/14).

Throughout this inquiry project, applying technology was an issue we continued to struggle with and we did not find a consistent solution to this quandary. However, the data showed that the following components supported teachers with technology integration and helped them to follow through: (a) connecting the technology to relevant reasons for using it (b) having time to apply the technology during the professional development session (c) focusing on one piece of technology at a time, and (d) having a plan of action prior to leaving the Tech Team meeting. These were important factors that encouraged teachers to not only try technology integration but also to follow through with their initial plan. Stephanie shared, “I have people ask me the question, what got me over the hump of learning something new and integrating it into my classroom. I honestly don’t know. It’s a difficult question. I think student motivation and encouragement from others is part of it. My excitement is another part of it, and knowing that it’s the future is a small part of it” (reflection journal, p.25).

Theme 3: Reciprocity: Interactions Transfer Learning

For teacher learning to be meaningful and sustainable, reciprocity is key (Knight, 2011). Reciprocity is the belief that when learners interact with each other, everyone learns. (Knight, 2011, p. 21). Likewise, Lee and Smagorinsky (2000) suggest, “the learning process is reciprocal. Meaning is thus constructed through joint activity rather than being transmitted from teacher to learner” (p. 2). We found reciprocity to be a key component of technology integration. Not only did teachers learn from each other, teachers learned from students, students learned from teachers and students learned from

each other (personal journal, p. 29). Making connections with each other and our students inspired our learning of technology. Following are examples of how, through the process of reciprocity, teachers learned how to use technology, and integrate it within their curriculum.

One example of reciprocity occurred when students taught each other and also their teachers. During a planning session, Kate and Stephanie decided to have Stephanie's fifth grade students teach Kate's third graders how to use an app called Pic Collage to make posters for their health unit. Stephanie reflected in her journal, "I think that one of the best things we did was when my students went to teach Kate's students how to use Pic Collage. Her students have now taught second grade how to use Pic Collage as well, so the learning is continuing to be transferred around the building. I know this has happened with other classes too as they learn Kidblog. I think students' collaborating within the building is very powerful, and I think it is awesome that they can call on each other as experts. I would love to see this continue next year. Teachers can do this too" (reflection journal, p.46).

Not only did students learn from each other in this experience, but Kate learned how to use Pic Collage from the fifth grade students as well. Prior to this, Stephanie had introduced this app during one of our Trio Group planning sessions; however, Kate had never used the app. Stephanie had shown her how she used this app with her students, which gave Kate the idea for using it in her health unit. Kate wrote, "I was amazed at how much more I learned about using Pic Collage sitting in that small group and being an active participant with those two students. I learned how to change backgrounds, insert stickers, change the font size, and put a border behind the text. I did not even have to

have an iPad in my hand to be involved in the learning. The fifth grade students were great teachers” (reflection journal, p. 10). During the lesson, I noticed “all the students were engaged in learning. As I walked around the room watching fifth grade students teach the third graders, I almost felt unnecessary. The students certainly didn’t need me at the moment. They were creating amazing posters about preventing disease. They were learning much more from each other than they did from me” (Tami, reflection journal, p. 7). Kate reflected in her journal, “It didn’t seem to matter whether the students were older or the same grade level. My third graders enjoyed learning to blog and use Pic Collage from the fifth graders. They equally loved teaching blogging to the second grade students. They could work one-on-one with each other and did not have to wait for us to get there to help them when problems came up. The teaching that occurred student-to-student eliminated the wait time my students would have experienced if I was the one that was teaching everything to them” (reflection journal, p.15) The experience of learning with students and not always having to be the expert, built Kate’s confidence in technology integration. Not only did students learn from each other, but Kate also learned from the fifth grade students. She began to trust that her students could learn without her knowing exactly how to use the technology.

As we learned how to integrate technology, significant examples of reciprocity also occurred between teachers. Reciprocity was evident as members of the Tech Team shared ideas with each other, with teachers in our building, with other educators and even with our students. As Fonticharo (2010) suggests, we had a willingness to share in or take turns leading the journey of technology integration instead of insisting that our team was the “gatekeeper” of the technology kingdom (p. 104). Often I wrote the agenda for

Tech Team meetings, but everyone had an equal voice in sharing new technology. No one person was in charge of teaching or considered the expert. We learned new apps or programs by visiting Twitter feeds, reading blogs or articles, visiting websites, watching tutorials on YouTube, exploring on our own, and often conversing with other educators. When we learned something new, we brought it to the Tech Team meetings. For example, Stephanie shared ideas that she learned from following Mike on Twitter. She shared, “I follow Mike, a technology instructor from our district, who provides me with a lot of good ideas and apps. I download most of what he says is free or discusses other teachers using. I might not use the app right away, but I know that I will have it for the future to use whenever I have time to play around with it. I also play around with apps using trial by error to get to know the app” (reflection journal, p. 9). Laura shared, “We all need to be researchers and spear head finding new opportunities for learning about technology and share them with each other” (Tech Team final reflection, 5/14/14).

Through the process of reciprocity, Kate, Stephanie and I began a blogging unit to teach persuasive and informational writing. Kate used blogging with her students to cover the persuasive writing curriculum objectives. Stephanie used blogging to teach students communication skills and for creative writing. They both then shared their experiences with our Technology Team.

Edith, a second grade teacher on our Tech Team, was excited about the blogging idea and wanted to try blogging with her students. Edith stated, “To be honest, I was getting bored. I felt like I had fallen into a rut and wanted to try something new, so I decided to try blogging. I was already using a personal class blog that I had learned from Stephanie. The kids liked looking at our class blog so I thought they might enjoy doing

their own blog. They love to tell stories and talk about themselves so it seemed a good way to engage students in learning” (Tech Team final reflection, 5/13/14, p.1). Kate’s positive relationship with Edith helped Edith feel comfortable implementing Kidblog with her students even though she did not know how to blog. What was impressive was that not only were students teaching students, but Edith also learned from both Kate and students as she observed them blogging about themselves. Edith stated, “The kids can figure technology out quickly and teach each other a lot. They don’t need me to know everything, even second graders. They have enough experience and “know-how” to get started and I can learn along the way just like they do!”(Tech Team final reflection, 5/13/14). Students were engaged in the writing process and learning not only how to blog and express themselves through writing, but also how to work cooperatively with each other. Through this process, students learned from other students, and teachers learned from each other and their students. Kate shared in a planning session, “There is value in kids seeing us learn right along with them. It puts us on a more even playing field, when they get to teach us too” (planning session, 3/15/14, p.12). This is reciprocity in action.

Once Edith started blogging with her second grade students, she shared her learning with the two teachers on her grade-level team, Lois and Susan. In the beginning, Lois was reluctant to start something new that she knew very little about. She stated, “It’s not that I don’t want to blog with my kids. I’d rather learn this myself over the summer and then I can start with them next year”(personal journal, p.22) Lois was reluctant to integrate technology because she was afraid she would not know what to do if the technology did not work. She felt it was her responsibility to be the expert and be

able to troubleshoot. She needed to know the program well before she could teach it to her students. She shared, “If I can’t fix their [students] problem right then, I feel bad and frustrated. I need to know there is someone to call if something goes wrong and the whole class is sitting looking at me”(Focus group interview, 5/13/14). This is similar to what Stephanie stated earlier about teachers’ need to be in control and know technology well. It was important for Lois to know how to use the program, before she could let her students use it. She needed to know there was a support system in place if/when things went wrong (Focus group interview, 5/13/14).

Susan, a teacher on the second grade team, wanted to give blogging a try. She stated, “I thought parents would enjoy reading the blogs. I thought it would be great for my students to become involved in Kidblog because it is a real world application and a huge motivator. I wanted them to have the life-long skill of blogging” (Focus group interview, 5/13/14, p.1). Not only did Susan feel blogging would motivate her students, she also made connections with her curriculum. As she stated, “I want to make sure that as I integrate technology, it is meaningful and not just a filler. I want the experience to be meaningful for my students not just- Well, don’t know what to do right now, maybe I can just have my kids blog!” (Focus group interview, 5/13/14, p. 1). Because Susan saw connections with her writing curriculum, she saw a purpose for technology integration. She used blogging with her students to practice writing stories and to record information about their animal research projects. In addition, Susan signed up to use Kidblog with her students next year and shared her experiences with blogging with her second grade team (Lois and Edith). Through reciprocity, the ‘spark’ was ignited, and technology integration took off in our school.

Once Lois listened to her second grade team discussing their positive experiences with blogging, she became interested and willing to give it a try. However, Lois didn't ask her second grade team for help in learning how to use Kidblog. Instead, she went to Stephanie, someone she trusted, for advice. Stephanie and Lois often work together to plan lessons even though they teach in different grade levels. Because of their relationship with each other, Lois felt comfortable asking Stephanie for help.

Stephanie reflected in her journal, "I've been thinking about how teachers learn. Yesterday I had a conversation with a good friend of mine that I think fits into this idea of how teachers learn. Lois, who teaches second grade, came to me to get more information on Kidblog. She came to someone she trusts to get more information and to discuss the purpose of blogging. She did this in a one-on-one situation, just me and her. She shared her fears and asked me questions. I think she felt comfortable and not threatened. She is very comfortable with what she does and doesn't want to change. She felt frustrated that her colleagues are moving ahead without her. She also thought parents might not understand the purpose of blogging. We finally agreed that kids could use the blog to take notes about their animal research project. She seemed overwhelmed. I am glad she came to me to discuss options for using the blog even if she wasn't ready to jump all the way in. I think relationships and trust are important for teachers to learn" (reflection journal, pp. 29-30).

This proved to be true with Lois. After her conversation with Stephanie and witnessing the excitement both students and teachers shared about blogging, Lois decided to try blogging with her own students. Lois needed support from trusted peers to take the risk of using technology with her instruction. "I need someone who is willing to learn

with me. Someone who is willing to collaborate with me on projects we could do using certain apps or programs. I have to have someone to call when I am teaching and something goes wrong. I also have to try one thing at a time so I don't get everything mixed up" (Focus group interview, 5/13/14). Not only did Lois learn to blog with her students, she also included learning about technology in her supplemental learning plan for next year and asked me to work with her over the summer to learn additional ways to integrate technology within her curriculum.

Another example of reciprocity occurred when Rick, a fifth grade teacher, heard members of the Tech Team discussing using QR codes with writing. He also saw QR codes being used at a science fair he attended. This peaked his interest, and he came to me to learn how to use them. Rick and I had worked together in education for years. We had built a trusting relationship through classes we had together and our experiences teaching fifth grade. We discussed ways he could embed QR codes on posters to share what students learned during a science project on animal observations in the Outdoor Classroom (Tami, reflection journal, p. 29). Rick in turn shared with me how he was using outdoor cameras to record pictures of wildlife that visited the Outdoor Classroom. Through our discussion, we created a website for students to share their observations and post their pictures from the Outdoor Classroom.

The data from reflection journals and focus groups revealed that reciprocity worked well when trusting relationships were in place. Both Kate and Stephanie built trusting relationships with teachers as they provided ideas and suggestions, but more importantly patience and understanding, when teachers came to them with questions about technology. Stephanie reflected in her journal, "I don't want to be the expert of

technology in our building. I'd rather be someone teachers feel they can consult with or come to when they need support. I hope that I am approachable and helpful as I work to encourage others to use technology throughout the building" (reflection journal, pp. 47-48). This was apparent when Lois, the teacher who was reluctant to integrate technology, came to Stephanie with questions about blogging. Stephanie listened to Lois's concerns and encouraged her to integrate blogging within her writing curriculum.

Stephanie also provided guidance to her fifth grade colleague by helping him sign up for Prairie Palooza. She reflected, "I did my Tech Team homework today and helped my co-teacher sign up for Prairie Palooza. Since he doesn't check his emails often, he didn't know anything about signing up for sessions so I started from square one. He seemed excited about the idea of our meeting, especially when he found out he had the apps he needed, 30 Hands and Pic Collage, already downloaded on his iPad" (reflection journal, pp. 33-34).

The data revealed that reciprocity spanned grade levels and was based on trusting relationships between teachers rather than on grade-level teams. It was based on trust not only between teachers but also between teachers and students. Based on teachers' reflection journals and focus group interviews, I noticed the following commonalities in regards to reciprocity:

- Relationships were important for reciprocity to work well.
- Age did not matter when learning to use technology, teachers learned from each other and from their students
- As teachers trusted their students to learn, it eliminated waiting on an expert for help, and students could help and learn from each other as well as the teacher.

- Partner teaching helped teachers troubleshoot, eased anxiety, and built their confidence in their ability to integrate technology.
- Perceptions of the role of teacher began to change. Students began to see there were many experts in the room, including themselves; teachers began to see themselves as facilitators of learning instead of the keepers of knowledge.

Following is a visual representation of how reciprocity worked between teachers and students as we learned to integrate technology. This is only one example of the learning that was shared between teachers and students.

Figure 14. Reciprocity in Action. This diagram is an example of the interactions that occurred between teachers and students as they learned how to learn using technology.

Theme 4: Reflection

Reflection was an important theme that emerged for both the Trio Group and the Technology Team. As Cole and Knowles (2000) propose, we used reflection as an “ongoing process for examining and refining practice. It is what turns experience into learning” (p .2). During this inquiry project, the members of both groups reflected verbally and in writing. The Trio Group and the Tech Team used online reflection journals and collaborative conversations to help us think about our learning as we integrated technology with our instructional practice. Faculty members shared their thinking on the Prairie Palooza survey and through informal interviews conducted in focus groups with by Tech Team representatives.

Reflection Through Online Journal Writing

In the beginning, thinking about our learning was a challenge because we were not used to thinking about ourselves as learners, and it was difficult to find time to pause and reflect on what happened as we integrated technology. As I reviewed initial transcripts of the Trio Group discussions, I noticed that our reflections, both written and verbal, were focused on how we believed our students learned, not on how we learned as adults (reflection journal, p. 11). I wrote in my reflection journal, “ I noticed a lot of our talk is about our kids, but our purpose is to know ourselves as learners and understand how we learn. This isn’t a regular practice for teachers. They don’t have a habit of focusing on their own learning nor are they provided time to do so. It is not easy to reflect on ourselves” (p. 11). Nancy, a teacher who served as our peer de-briefer, noticed

the same thing when reviewing our initial data. She suggested, “It is natural for us to think about our students and student learning. How can you switch your brains to somehow think about yourselves as learners? Has anyone ever asked this question, those providing the professional development?” (peer de-brief session, 3/15/14, p. 2).

Nancy asked an important question. How often are teachers asked to reflect on their learning during professional development sessions? Rarely are we asked to think about how we learn or what we need as learners. As Cole & Knowles (2000) state, “...much of what teachers know and express in their practice is tacit, personally held and not easily explained” (p. 6). One would think that reflecting on one’s own learning would be an easy task. It was not. It was difficult for us to consider what learning meant for us as teachers. We, of course, wanted our students to learn and believed that technology provided the tools to support student learning; however, the focus of our inquiry was to understand how teachers learn to integrate technology, not how our students learn to use technology. Kate, Stephanie, and I discussed this in our weekend reflection meeting (4/14/14). Why is thinking about our own learning such a challenge?

Reflecting on our own learning takes time and practice and is not something typically considered part of a teacher’s job like planning lessons or grading papers. It was challenging to spend time thinking about our learning because we had immediate concerns, such as meeting student needs, planning lessons, or grading papers. (reflection meeting, 4/14/14). It was not that we did not feel reflecting was valuable; it just did not meet our immediate teaching needs. Stephanie noted, “I’ve been thinking a lot about the question, ‘How do teachers learn?’ I don’t often think about my peers, just my students. I’ve been trying to change my thinking and observing recently but it is hard because I

don't think of colleagues or myself as learners. We are expected to be the experts at all times" (reflection journal, p. 29).

We needed to develop "new habits of mind" (personal communication, Sanchez, April 9, 2014). We read *Researching Teaching: Exploring Teacher Development through Reflexive Inquiry* (Cole & Knowles, 2000) to find strategies that would help us to reflect on our own learning and learned about researching ourselves through journal writing. Cole and Knowles (2009) assert, "Understanding oneself as a teacher is foundational in the initial and ongoing development of professional practice" (p. 25).

Seldom do we as teachers ask ourselves, "Why did I do, feel, or think that?" We do not stop to ask ourselves why we do the things we do, we just do them. Cole and Knowles (2000) suggest using journals for self-understanding. Thinking about ourselves as learners and reflecting on this via writing builds self-awareness. The authors ascertain, "... self-knowledge is a first step toward change" (Cole & Knowles, 2000, p. 58).

As alluded to earlier, the Trio Group revised our journal reflection questions to focus on ourselves as learners. We revised our inquiry question from "How did you integrate technology?" to "How did you *learn* about integrating technology?" We revised all of our questions to better fit the purpose of our inquiry. Changing the questions helped us to look at our own learning rather than student learning. Our revised questions are listed below (reflection journal, 3/15/14):

1. How did you learn about integrating technology?
2. What did you learn about yourself as you were integrating technology?
3. What technology did you integrate this week?
4. What "aha" moments did you have?

5. What struggles or successes did you experience as you integrated technology?

As Kate began to think of her own learning instead of her students, writing her thoughts helped her to see what she needed as a learner. She shared during our planning session, “Teachers have to be actively engaged and internalize it for learning to be meaningful. They have to work together and share different perspectives. Teachers need time to try it [technology] out, practice with it, see how it works. They may need to change their design and try again and see how it worked. I also believe reflection aids retention. When you reflect on something it helps you internalize the information and you hang on to that knowledge for a longer period of time. So the reflective part is an important part of meaningful learning” (planning session, 2/10/14, p. 11).

The Trio Group agreed to reflect in our online journals at least once a week. Our goal was to reflect prior to our weekly planning sessions. We did not realize what a cumbersome task this would be. Kate stated, “I realize that I need to be held accountable for using technology with my students and reflecting on it. I do not mind one bit, but again, time to reflect becomes the issue for me. I will always put a priority on what I need to get ready for direct instruction with my students. Once I am finished with the school day, there are so many chores to take care of at home as well as assignments to grade, etc., for school. I am exhausted at the end of the day and reflecting is at the bottom of my to do list” (reflection journal, p. 15). During a quick share conversation, Stephanie honestly shared, “It is cumbersome to write about my thinking. I see it as one more thing to do. It is like math. I know 3×5 is 15. Why do I have to write about that?” (personal journal, 4/13/14).

I too struggled with this. I put on my calendar that I would reflect at least twice a week. It was a challenge because the tendency is to accomplish what is due at the present moment or the next day. Yet even though reflecting and thinking about our learning was difficult, we all felt it important to making learning meaningful. It was a component we included in our definition of learning. However as we discovered, it is easy to *say* reflecting is important, and believe it to be true, yet actually *doing* it is another matter. Since reflecting was not part of our school day routine, it was easy to put this in the proverbial “to do” pile. Both Stephanie and I tried beginning each morning by opening our reflection journals located on Google Drive and leaving them open at the bottom of our computer screens. Then when we noticed something, it was easy to jot it down and write more about it later. Although this helped, it was still a challenge to find the time to pause, think about our learning, and then write during a hectic school day.

Finally, we agreed to spend a part of each planning session reflecting in our journals. We needed a designated time to hold ourselves accountable for reflecting during our meeting time. Reflecting at the beginning of our meetings helped us organize our thoughts so that our talk was more productive. It was through reflecting on experiences with technology that we gained insights and “aha” moments that we may otherwise miss. Even though it was a struggle, we continued because we believed reflection was a conduit to learning and improving our practice. Kate shared, “The opportunity to reflect and revise is key to our successful implementation of technology and unfortunately, due to time constraints, often overlooked” (reflection journal, p. 7). Stephanie also saw value in reflecting as she wrote in her journal, “We’ve all seen the benefit of reflection within the Trio Group whether it’s written or verbal. I know that I’d

prefer just to get together and talk, but I am now convinced that my thinking goes deeper when we write first. I think that being able to converse with others definitely gets my own creative juices flowing and collaboration with the Trio Group is different than with my grade level team. It is like a breath of fresh air” (reflection journal, p. 46).

When the Trio Group did a member check in March, it was inspiring to review our journals and see how much we were learning. In less than two months, we had learned and implemented a variety of technology such as the BYOD program, Pic Collage, Padlet, QR codes, iMovie, and 30 Hands. As Kate said, “I need to continue to take the time to reflect in writing about using technology in my classroom. It is extremely valuable to put my thoughts, concerns, and revisions in writing. It helps me think of the deeper use of technology, student learning and my own growth as a teacher when I take the time to reflect” (reflection journal, pp. 14-15).

Tech Team Reflection

Reflection played a key role for the Tech Team as well. Reflecting via online journals and through team discussions helped members acknowledge and examine their perceptions about learning how to integrate technology. However, similar to the Trio Group, members of the Tech Team found reflecting through our online journals a challenge. If we did not take time during the Tech Team meeting to write about our thinking, it did not happen. Because of limited time, the Tech Team chose to identify and discuss issues that we struggled with through our discussions rather than our online journals. Reflection was important and helped us to acknowledge our perceptions and then find ways of dealing with them so we could move past them. It was through reflection that we embraced our learning.

Reflection Through Talk

Time for teacher talk and collaboration played an important role in learning to integrate technology during all phases of the inquiry process. Talking about, showing, and observing each other's classrooms are important components to teacher learning (Schrum & Levin, 2009). This was true not only for Kate, Stephanie, and I, but also for the Tech Team and our faculty. Laura wrote in her final reflection, "Talk was important. I loved the collaboration and discussions we had this year on the Tech Team"(5/14/14). The Trio Group found this to be true after attending the iPad Institute. We neglected to apply any of the information we learned at the iPad Institute because we each went to different sessions and did not spend time reflecting about our learning after the sessions. Stephanie shared, "It's important to go with teachers or someone from your grade level so you can talk about how to use technology. I went by myself to technology training last year. I think it would be really powerful to go with a grade level team so you can collaborate and come up with ideas on how to use technology" (Tech Team video, 4/23/14). When we did not reflect on our learning after attending the iPad Institute, we did not apply anything that we learned.

Through our discussions, the Tech Team determined it was important to include time to talk within each session. Because our time was limited, only an hour, we felt our time was better spent discussing our experiences with technology rather than writing about them. Tech Team members felt that "teachers need time in the session to talk about how to implement the technology or it won't happen"(Tech Team video, 4/23/14). Kate shared, "I want the opportunity to collaborate and share with others. It is very helpful to have time to brainstorm ideas/reflect with the other teachers on my team. I

prefer learning from someone who has actually tried technology with students to someone that is the expert with a program” (reflection journal, p.15). Stephanie shared how talk was helpful to her learning and teaching. She shared, “I liked the discussions that we had on a regular basis, being able to share about what I had done the previous week and share about my future plans knowing that the focus was on technology” (reflection journal, p. 46).

The transcripts from the Tech Team videos revealed that talk was a necessary and important component of our learning. It was during our conversations that ideas transpired; we learned about new technologies, and discussed ways to implement them in our classrooms. It was also a valuable way to solve problems we were having with technology integration. As Erika stated, “I learned a lot this year just from conversations that we had. It was nice to be able to talk through issues and bounce ideas off each other. Talking about technology regularly made me think more about how I use technology and made me think about what I could do in the classroom. Someone would share an idea and I would check it out and then go use it in my classroom”(Tech Team final reflection, 5/14/14). For example, during a Tech Team discussion, Stephanie shared how she used the app Popplet with her fifth grade students. Erika immediately made a connection with her math curriculum. During the meeting, Erika started exploring the Popplet app on her iPad instead of participating in the meeting. I noticed and asked what she was so interested in. Erika replied, “Stephanie was talking about Popplet, and it grabbed my attention. I was curious and wanted to see if I could use this app with my students. I am making a graphic organizer so we can write number sentences around a certain number using the iPads” (Tech Team video, 4/23/14). Talking about our experiences with

technology helped us learn. Because of our discussions about past learning experiences with technology, the Tech Team organized Prairie Palooza in a different format other than the traditional “sit and get” method of professional development. Reflective conversations helped us to determine what we needed as learners and to identify issues with previous faculty development sessions. We then used this information to plan Prairie Palooza.

Pause for a Moment...

Most importantly, reflection helped both groups pause and think about their learning. What both groups realized was that including time to reflect, whether verbal or written, forced us to slow down and think about our experiences with technology. In the hurried, rushed days of school, we seldom take time to do this. Often we spend the day reacting to events, rarely having time to think about why events happen, just living in the moment. However, the data revealed that most of our significant learning happened from our reflections. When we “paused,” we had the “aha” moments that transformed our thinking and learning. As Kate stated, “Reflecting on learning, spending time sharing, drawing conclusions from what we have learned. Asking, Now where are we going next? When you reflect, especially in writing, you learn and remember information better” (planning session, 2/10/14, p. 17). Reflecting was a necessary component that helped us learn how to integrate technology and also helped us better understand ourselves as learners.

Schon (1983) states, “Awareness of one’s own intuitive thinking usually grows out of practice in articulating it to others” (p.243). Through our “articulation” with each other, we found this to be true. The data from our reflection journals, transcripts, and

Tech Team video revealed that reflecting and sharing our thinking with each other helped us think more deeply and move our learning from surface knowledge to action knowledge. Both verbal and written reflection helped us better understand what we need as learners of technology integration. Reflecting supported our learning in the following ways:

- Trio Group refocused our learning on ourselves instead of our students.
- Trio Group confronted perceptions about technology Ex: we realized teachers often think of themselves as *knowers* of knowledge (experts) instead of facilitators of learning
- Tech Team confronted their perceptions about technology, examined their own needs as learners, and then used this information as they planned Prairie Palooza faculty development
- Both groups: examined and identified perceptions (control, fear) about technology that prevented them from using technology
- Both groups: used reflection to guide decisions to determine where to go next with technology integration
- Both groups: discovered new ways of integrating technology with the curriculum
- Both groups: experienced the value of pausing to think about learning

Theme 5: Motives for Change in Pedagogy

Student Engagement

Student engagement was a significant factor that motivated teachers to apply technology in their classrooms. Teachers noted this in all phases of the inquiry research

(Trio Group reflection journals, Tech Team survey, Tech Team final reflections, Focus group interviews). One example occurred as Stephanie's fifth grade students taught Kate's third grade students how to use the app Pic Collage to complete a health project. "When you see students engaged in the learning process because they want to be, not because we tell them to be, it motivates you to provide more learning opportunities like these" Kate shared during a planning session (3/15/14). Another example occurred when Kate used Kidblog to integrate technology within the writing curriculum. She found technology to be "very motivating" to her students (reflection journal, p.3). Using Kidblog, Kate observed reluctant writers become more willing to revise and edit their pieces, build stamina for writing, and feel excited to share their learning with others. This excitement motivated Kate to keep learning as well. She wrote, "I see the kids are very motivated to make comments to each other. They are actually talking about the writing, making suggestions for each other, and checking each other for spelling, punctuation, and capitalization. The kids are so much more willing to revise and edit their own pieces because it is so much easier to add details and move parts around to better organize their thoughts. No one has to start completely over. It is very exciting to watch them collaborate, experiment, discover new things and emerge as leaders in the classroom" (reflection journal, p. 8). Kate was motivated and willing to try blogging because not only did this tool support her writing curriculum, she also witnessed how engaged her students were while writing on the blog.

Kate's lessons that integrated technology with reading and writing carried over into students' personal lives. Her students were so enthusiastic about blogging that they chose to write even on a snow day. Two of Kate's students chose to create a story

together via the blog when school was canceled because of inclement weather. While most students were out playing in the snow, these girls created a make-believe story about a fish on their blog. Word got out about their fish story, and soon students in both classes could not wait to blog and comment on each other's writing. Kate noticed, "I am thrilled to see kids get excited about blogging and I am thinking we can share lots of great feedback using the blog. It is very exciting and gratifying to watch them collaborate, experiment, discover new things and emerge as leaders in the classroom" (reflection journal, p. 5, 14).

A similar incident happened when Kate introduced MYON reader to her students. Students were excited and motivated to read online. Kate reported, "One student had to miss their time at the Listening to Reading station during Reading Workshop to meet with a special education teacher. He convinced his special education teacher to let him do his reading on MYON after he was done with his lesson even though it meant staying after school and going to Adventure Club later" (reflection journal, p. 3). She shared, "How do you take an idea and do something with it? It is the student excitement. We are in this profession because we want students to succeed. Technology helps us support them in every way we can" (planning session, 3/15/14, p. 12).

Stephanie's fifth grade students were learning to blog not only to improve writing but also to share author and book reviews. Similarly to Kate, Stephanie found using the blog engaged her students in the writing process. She shared, "For me my kids being excited motivates me. As a teacher it is so much fun to hear the clicking of the keys as students thumbs went wild. I started reading their blog posts and announcing some out

loud as they typed. I read some and laughed at others” (reflection journal, 3/15/14, p. 10).

As Stephanie witnessed her own students’ engagement with blogging, this motivated her to take a risk with her own learning. I suggested her students blog with fifth grade students from other schools. Stephanie was reluctant to open up the blog to the outside world. She shared, “Blogging for the first time with another fifth grade class is scary because there are many things I can’t control. It is new territory. We have never tried this before” (planning session, 3/15/14, p. 9). However, Stephanie was motivated and willing to try because she saw the excitement in her own students. She learned how to share their blog with another school in our district. She worked with the fifth grade teacher to pair students as blog partners. In her reflection journal Stephanie wrote, “ My motivation to learn continues to be student engagement and excitement about technology, along with my general shift in thinking that with technology more students are actively involved in the learning process” (p. 25).

Members of the Tech Team were also motivated by student engagement. Edith, a Tech Team member and second grade teacher, found technology integration to be motivating not only for her teaching practice but also for her students. In a quick share conversation in the media center, Edith expressed how well Kidblog was going with her students. BJ (one of her students) said his favorite subject used to be math but now it was writing. She said her students were constantly asking when they could blog. They were putting their opinion pieces on their blog. One student reads the piece aloud while the other student types. She noticed they were helping each other find and fix their mistakes in their writing. She was amazed at the learning conversations going on between her

students (Tami, personal journal, p. 8). Edith reflected, “Recently we used blogs as a forum to publish our opinion pieces. This has been great because the students have been so excited to publish on the blog for others to read”(Tech Team final reflection, 5/14/14).

It was great to see Edith so excited about teaching and learning with her students. Prior to technology integration she had been “bored” with teaching and felt like she was in a rut. Through technology integration with blogging, she once again found her “spark.”

Lois, a second grade teacher, was motivated not only by her students but also by her peers to try technology. As stated previously, Lois was reluctant to start blogging with her students. Lois became motivated to integrate technology within her writing curriculum after she heard her grade-level team sharing what was happening with their blogging lessons and her own students began asking questions about writing with the computers. Listening to her colleagues in second grade and her own students’ interest, motivated Lois to take a risk and try Kidblog. She shared, “I wanted my students to be able to do what the other classes were doing. Plus as an adult, I wanted to see what blogging was all about”(Interview, 5/13/14). Not only did she begin blogging with her second grade class, she also used PowerPoint in the science fair at our school, and included learning about technology in her professional learning plan for the coming year.

Authenticity and Autonomy: Relevant Purpose for Integrating Technology

Teachers needed to see a purpose or connection between the technology and their curriculum in order apply technology in sustainable ways. Stephanie noted the importance of connections in her reflection on learning, “In order to engage teachers, it is important that they are interested in the subject, give them choice. It needs to be relevant to their grade level. You have to have a purpose or a need. Learning has to be

intentional. That helps your motivation to learn. I went to Blogger because I had a need to communicate with my parents”(planning session, 2/10/14, p.14).

Having choice in learning was also a key element that engaged teachers in learning ways to integrate technology within their instruction. As the Trio Group gathered ideas on technology integration, Kate, Stephanie, and I chose books and articles relevant to us. We made the decision on the resources to use that would be helpful to learning how to integrate technology. Kate shared some learning opportunities: “We do lots of things to become more familiar with technology. We take classes; attend in-services, workshops, and conferences to learn more. We read books, use the school district’s website to watch instructional tutorials, network with colleagues, and just sit down with laptop or iPad to practice and explore what is available” (reflection journal, p. 6). For example, we read a chapter from *Leading 21st Century Schools* (2009), which offered suggestions on technology integration. Stephanie noticed, “While reading chapter three, I was constantly thinking about how I could take this new information, especially the relevant technology uses, and integrate it into my classroom. I was especially interested in what the book had to say about blogs, knowing that I was using blogs with my writing curriculum” (reflection journal, p. 26). Because Stephanie was interested in using blogging to teach writing with her students, she had a purpose for learning. She was internally motivated to learn more about blogging to improve her instruction because she chose to read the chapter and it was relevant to her teaching practice.

Similarly, Tech Team members recognized the importance of autonomy as we discussed plans for leading professional development with our faculty. Members first

discussed professional development sessions that had not gone well the previous year with the iPad deployment. One instance occurred when our faculty was required to attend a training session on Evernote. Teachers were frustrated by the session for several reasons. The session was taught to the faculty as one large group and covered a lot of material quickly. The faculty did not choose to attend; it was required and they did not see a purpose for using the program with their students, nor did they learn the program well enough to try it on their own. Once teachers got a “click behind” they were lost and gave up. From this experience, the Tech Team recognized the importance of offering authentic choices in our own professional development session. We did not want to repeat this experience, so we provided choice when we led the Prairie Palooza professional development with our faculty (Tech Team video, 4/23/14).

Having an authentic purpose for using technology motivated Stephanie to integrate TodaysMeet and Poll Everywhere with her reading curriculum to teach inferencing. She used these online resources to allow all students to participate in discussions at the same time. Stephanie wrote in her journal, “I had trouble falling asleep with thoughts of technology swirling through my brain. I decided that I would try TodaysMeet the following day. I knew I wanted to discuss classroom rules for BYOD, as I hadn’t really brought up any management pieces and I thought TodaysMeet would be a great way to give everyone a chance to share inferences during reading” (reflection journal, p. 11). Stephanie came to school early the next day to set up a TodaysMeet question for her students. This was not typical for Stephanie. She plans lessons a week in advance and seldom strays from the plan for the day. However, Stephanie recognized a purpose for using these web-based tools and therefore was motivated to spend time

learning how to integrate them, so much so, that she was thinking about technology integration at home.

Similarly, the Tech Team found that making connections between required curriculum and technology is one way for technology integration to occur. As previously stated, making authentic connections with their curriculum inspired Laura and Erika to use the app Poplett with their K/1 students to teach math curriculum. Similarly, Laura began using the app Pic Collage to teach the science curriculum. She listened as Kate explained how she used Pic Collage with her health curriculum to make posters about disease prevention. This piqued Laura's interest. Once she made the connection, she immediately began exploring Pic Collage during the meeting. (Tech Team video, 4/23/14). She then worked with Erika and developed a science lesson to use Pic Collage with their K/1 students to create posters of our Outdoor Classroom. In our Tech Team meeting, members shared, "We want to be using technology all the way through, not just as an end product. So it becomes a natural part of teaching, we have to connect it to our curriculum" (Technology Team video, 4/23/14). Kate reflected, "Authentic, it has to be authentic. You have to have a purpose or need. I think teachers need to see its purpose- show them what you've used it [technology] for in the past through multiple examples" (reflection journal, p. 47).

However, the data also revealed that teachers are reluctant to integrate technology when required to learn it without a purpose or reason for doing so. This occurred with several district initiatives, not because they weren't quality resources but because teachers were taught how to use the resource without learning how to integrate the resource with their instructional practice. For example, Learn 360 was purchased by our

district to provide high quality multimedia resources relevant for K-12 students to be used in several subject areas. Even though this is a great resource, both the Trio Group and the Tech Team only learned how to log-in to the program. We never used the resource because we did not see a connection to the curriculum we were teaching at the time. As Edith shared with me, “I tried to share Learn 360 with my second grade team. They do not see the value in it, so they do not want to spend time on it. It is not relevant to them or their teaching now. They listened and then said now you have shared, let’s move on to the important stuff”(Tami, personal journal, p.1). Edith was frustrated because she felt if her team would spend time exploring Learn360, they would see the value and integrate this resource with their instruction. Since they did not see a purpose for using this resource, they didn’t want to spend time learning how to use it.

A similar incident happened when Google Drive was mandated by our district for the coming year, and the Tech Team felt a responsibility to become familiar with its’ features since it was the Tech Team’s job to share technology with our grade-level teams. In order to learn the features of Google Drive, we temporarily abandoned the use of our blog site, “Start the Spark” and began sharing our technology ideas on Google Drive. Later, when the Tech Team worked together in pairs to plan for Prairie Palooza, not a single member remembered that we had several examples of the technology we planned to share already prepared on our technology blog. This blog was created for the purpose of sharing relevant ways to integrate technology. Instead of using the information from our blog, we started re-creating the wheel. I reflected in my journal, “ The Tech Team forgot we have great information on our blog site. We don’t have to create new examples, they are already there!” (reflection journal, p. 23). We recognized that we

needed a purpose to use the blog site or we abandoned it and completely forgot it was available. Use it or lose it, as the saying goes.

The data revealed that for teachers to integrate technology, they needed to understand the purpose for learning the technology, learn how to use the technology itself and then make a connection with how to use the technology with their curriculum.

Learning the technology needed to be connected with authentic purposes for using it.

When teachers made a connection to their curriculum, like Erika and Laura did when they learned apps during the Tech Team meeting, they were eager to try integrating that technology. The data also revealed that teachers needed the opportunity to use the technology in the moment, not later. By in the moment I am referring to applying the technology during the professional development session. However, when teachers did not have an immediate reason or purpose to use the technology nor the opportunity to use the technology during the session, the learning was often forgotten, as what happened to the teachers who attended the iPad Institute.

Not only did authentic connections help us learn, but they also provided the motivation to try and take risks with our learning. These connections provided a “spark” that inspired teachers to apply their learning. Kate sums it up best; “I can honestly say that I learn more about using technology when I have a personal, purposeful reason to use it. I will become much better at using Facebook or Twitter when I have grandkids and want to keep up with what is happening with them” (reflection journal, p. 9). Likewise Stephanie summed up the importance of connecting technology with purpose; “ Learning has to be intentional. That helps your motivation to learn. Teachers need to see a connection to their curriculum. They need to be able to ask, ‘What can I do with

technology?’ as opposed to ‘Here are your technology options’ (planning session, 2/10/14, p. 2).

To summarize, student engagement, autonomy, and authentic purposes to use technology were significant motivators that inspired teachers to integrate technology with their lessons. However, student engagement was the most frequent reason teachers gave for wanting to use technology in every phase of the inquiry. Student engagement and excitement for learning propelled teachers to continue using technology in their classrooms.

Phase 4: Final Collective Reflections

Trio Group Final Reflections

The Trio Group began this endeavor because we believed in the importance of technology integration and wanted to learn how we could use technology in our own instructional practice as well as encourage our colleagues to do the same. We wanted to find out what happens when a small group of teachers learn to integrate technology within their curriculum and then share that learning with others. Through the phases of inquiry, working as our own team, working with the Technology Team, and sharing with our faculty through Prairie Palooza, we learned what teachers need to integrate technology, so that it is more than simply an “end product” but becomes a “natural part of teaching” (planning session, 2/10/14, p.16).

Because of our many conversations, reflections, consistent meetings, and application of technology, the data revealed notable change in instructional practices with the members of the Trio Group. As we reflected on learning, shared ideas and struggles,

and confronted our perceptions about technology integration, our teaching practice began to change in several ways.

First we realized that we started to let go of being the “expert” and instead began to share the learning process with our students. Kate realized this when using Pic Collage and Bit Strips (comic creator) apps with her students. Kate did not know how to use either app well. As shared earlier, Kate learned how to use Pic Collage as she observed fifth grade students teaching her own students how to use this app. Similarly, Kate and her students learned how to create comic strip stories together using the Bit Strips app. Kate found that students were able to learn features of the app almost intuitively. She noticed students discovering features of the app from conversations with each other and independently through trial and error. She let go of being the expert and became comfortable learning with them. She shared, “I used to be much more frustrated and anxious about using technology but with Bit Strips, students learned so much doing the comic strip and they were so far ahead of me. They learned so much faster. Now I have more trust in them as learners. I am a lot more comfortable with technology and not knowing it all” (planning session, 3/12/14, p. 6).

Similarly, Stephanie too saw her role as teacher changing from being the dispenser of knowledge to more of a facilitator of learning. She shared, “I think that is one thing teachers’ struggle with, the change in their role in the classroom. I reflected a lot about that. I struggled with that loss of control for a long time. You have to be okay with not knowing everything and being okay with admitting that in front of your kids” (final planning session, 5/18/14, pp. 11-12). The more Stephanie used technology with her students, the more she began to trust in their ability to be learners and began to let go

of her need to be the expert. Stephanie was more willing to let her students figure out how to use technology instead of her needing to know it all first. This was apparent when she wanted students to try other programs instead of only using PowerPoint to do book reviews. She commented, “I’d like to introduce students to similar apps to PowerPoint, since that seems to be a popular choice for book reviews. Maybe I’ll have some students experiment with Keynote or Prezi. I’ve also heard teachers talking about Explain Everything or Notability for presentations, too. I’ll have some students explore these apps and let us know” (reflection journal, p. 40). Previously, Stephanie wanted to know these programs herself before letting her students use them. Now she was willing to let her students experiment and share their learning with her and their peers. Like Kate, she trusted the learner.

As we began to trust students to share responsibility in learning, we also realized we could learn from students as well. We realized how much we learned through interaction with our students and with other teachers. As we integrated technology, reciprocal relationships between students/students, teachers/teachers and students/teachers were powerful components of learning. Kate, Stephanie, and I witnessed this when Stephanie’s students taught Kate’s third graders Pic Collage and when Kate’s students taught second graders how to use Kidblog. In one of our planning sessions, Kate shared how these experiences enabled her to see the benefits of reciprocity; “I have noticed that I am much more willing to try out technology this year even if I am not an expert with it myself. I attribute that to all the experimenting we did with Bitstrips and the work we did with Stephanie and her fifth graders on Pic Collage. They learned it so much faster. Now I have more trust in students to let them go with

their learning. I am a lot more comfortable using technology and not knowing it all ahead of time. I still wish I knew more, but I will say students are empowered when they get to be the teacher and show me things” (planning session, 3/12/14, pp. 5-6).

Another instance happened when using MYON reader. Kate noticed that not only were students reading on MYON daily but they were also troubleshooting on their own.

As shared previously, Kate’s students were able to access MYON reader independently, even when the app on the iPad did not work. The students did not need to interrupt Kate’s guided reading lesson to ask for help. They were able to problem solve on their own, and used the school website to access MYON reader. Not only did they gain confidence in their abilities as learners; they also taught Kate another way to access MYON reader. Both teacher and students brought their knowledge to the table and learned together. Stephanie stated in our planning session, “You have to say, ‘We’re going to be learning this together.’ We have to be okay with going to each other and our students to figure some things out” (final planning session, 5/18/14, pp. 11-12).

Trio Group Change in Instructional Practice

The Trio Group also noticed changes in instructional practices. Stephanie noticed changes in her teaching practice as she began integrating technology not as a separate project but as a part of her daily instruction. For example, Stephanie began using TodaysMeet as a way for all students to respond simultaneously to questions she posed instead of using the traditional chart paper. Stephanie shared, “I knew I wanted to discuss classroom rules for BYOD. Originally my plan was to do the traditional list on chart paper. However, I knew technology could make this activity more engaging and exciting for the students. What kept me up longer was wondering if I could set up

Today's Meet in the morning and be ready when the kids came. This is very unusual for me. I usually know what I'm teaching and how I am going to teach it the weekend before. I was very nervous as I fell asleep" (reflection journal, p.11). Stephanie was thinking about ways to integrate technology into her instruction on her own time. She was even willing to modify her current lesson plans to integrate technology. She was beginning to see technology as a tool to improve student engagement with her instruction, something she could use daily, not as a separate project.

Kate also began thinking of technology as a tool to teach with as she planned her lessons. For example, third grade had a new science curriculum to implement this year.

This was a challenge because the lessons were incomplete and confusing. Kate thought of ways to use technology to teach the science lessons. She shared, "As we are looking at the new science curriculum, there are several lessons that involve kids making posters or projects to share their learning. We are using Pic Collage to make food webs for the different habitats we are studying. I love using the iPads instead of making paper posters because the kids have immediate access on the Internet to actual photographs of the animals and plants they want to use for their food webs" (reflection journal, p. 5).

Both Kate and Stephanie began to include technology as a tool to use in their daily literacy instruction more frequently. It was beginning to become an automatic process. After implementing BYOD, Stephanie and I taught her students how to access books online using Overdrive (public library online reading program) and MYON reader. Soon they were reading from their devices daily. We also taught them how to use Voice Record to create podcasts of their creative writing stories.

Stephanie noticed a change in her teaching practice. She began to view technology as a tool to use in daily instruction. She shared in our planning session, “Right now I am having students read independently on their devices. During writing time they are publishing their pieces in Microsoft Word. I am commenting on their pieces using the comment button in Word. The next day they go back and revise. By Friday they were ready to use iMovie to create historical fiction projects about their writing. Soon we will use Voice Record to make creative writing stories about their place in geography. Using technology is becoming a natural process for me! I don’t even think about it. It’s just part of the school experience” (planning session, 3/8/2014, p. 4).

Kate, too, noticed changes in her teaching practice. She chose Kidblog to teach persuasive writing with her students. She shared, “The technology made it a better lesson. Until that point, we were looking at technology to be a different way to produce what we learned, a final project. This time it felt like technology was really an important part of learning, and it made sense to use Kidblog instead of paper/pencil. It makes it so much easier to edit and revise on the blog than using paper/pencil. Plus students get constant feedback, see comments, and work on it at the same time. All of this makes using the blog better” (planning session, 4/7/14, p. 8).

Through our Trio Group discussions, reflecting in our journals, partner teaching, and witnessing first hand student engagement in learning, we noticed that Kate and Stephanie were using technology as a tool to support their instructional practice. They were beginning to see technology integration as something done almost unconsciously, not as something separate to teach. Stephanie reflected in her journal,

“I just wanted to touch base this week with my reflection, even though it feels that I didn’t do much with technology. I tried to tell Tami that yesterday when we met. However upon closer inspection, my students did in fact use technology quite a bit this week, but it just seemed so seamless that I didn’t even notice anymore. I think I am changing my ideas about lesson planning, thinking more about how to incorporate technology into my lessons. I want to include technology as I know how motivating it is for students and how interactive it allows students to be with the lesson. I guess that’s a good thing, right?” (reflection journal, pp. 23, 28-29).

Stephanie moved her writing lessons onto Kidblog for creative writing. She started charting writing ideas with students using blog posts. She used TodaysMeet and Polleverywhere for class discussions because it gave every student a chance to respond. She also included online reading opportunities for them during independent reading time. Stephanie was using technology but was unaware as it was becoming an automatic part of her teaching practice.

As Stephanie continued using technology in her classroom, she noticed how it spilled into her personal life. She was seeing technology not only as something to be used at school but also something she could use in authentic ways in her personal life. She reflected, “I’ve also started changing my mindset. I’ve started taking notes in my graduate classes and committee meetings on my iPad. I put my grocery list on my iPad and take it to the grocery store. I’ve done similar things with lesson planning, always wanting to implement technology so I don’t feel like I am wasting it” (reflection journal, p. 44).

In our final reflection, during our last session together, both Kate and Stephanie noticed changes in their practice and beliefs about technology integration.

Stephanie stated, “In the beginning I thought more about the management side of integrating technology and how it was going to be handled. In the end, my mind set had shifted to simply integrating it into my lessons more seamlessly. I realized that technology wasn’t always about the big projects that you do every once-in-a-while, but using it every day so that students retain that knowledge and ease of use. I think people worry about letting go of the control factor and not being the expert within the classroom. I think that with more technology in the classroom you become more of a facilitator within the classroom and less of a sage on the stage” (reflection journal, p. 46).

Kate stated in her final reflection on her learning, “I have to say that as I reflect on the whole year, I am proud of the number of things that I tried out this year. It didn’t seem like that much when I was first thinking about it. Of course, some of it was a repeat of what I learned last year, I just adapted it. But that is the power of being a lifelong learner, you build on your prior knowledge and are always working to learn more, improve and revise that knowledge” (reflection journal, p. 14).

The Trio Group went on a worthwhile journey to discover how teachers learn to integrate technology within the literacy curriculum. Through this process we not only learned about technology integration, but more importantly, we learned about ourselves as learners. It was as Kate shared, a humbling yet satisfying experience: “It is very exciting and gratifying to watch students collaborate, experiment, discover new things and emerge as leaders (experts) in the classroom. But at the same time, it is disconcerting and humbling as a teacher (once the “sage on the stage”), to be knocked down to

sometimes as low as a novice status in both their eyes and my own” (reflection journal, p.14). As Nancy, peer de-briefer, noticed after reviewing our data, “We are no longer the keeper of all knowledge. Our roles as teachers have changed”(Debrief session, 5/8/14).

Tech Team Final Reflection

The data revealed that responses from members of the Tech Team at times mirrored those stated by members of the Trio Group. Both realized that some of their perceptions about teaching were changing. Because the Tech Team did not meet as frequently, changes in their instructional practice was not notable. As stated in theme five, members of the Tech Team applied technology but didn’t necessarily change their teaching practice long term.

However, the data revealed changes in the Tech Team member’s perceptions about the teacher’s role in technology integration. Similar to the Trio Group, members shared how they needed to let go of being the expert in the classroom and trust their students to share the learning with them. Edith shared, “In terms of technology, I had to let go of control and the compulsion to be perfect. In our profession, we are overachievers who hold ourselves to high standards and the thought of a lesson that could flop feels like a poor reflection on us. The nature of our job turns people into ‘control freaks.’ We always have to be thinking about what could go wrong and planning ahead to prevent that so integrating technology can be a reversal of our normal role. We just have to let go and let it happen and know that it won’t be the end of the world. And then hope nobody comes to evaluate us!” (Tech team final reflection, 5/13/14, p. 1) Edith also recognized this when Kate’s third grade students taught her second graders how to use

Kidblog. Edith shared, “What I realized was that the kids can figure things out quickly and teach each other a lot. They don’t need me to know everything, even second graders. They have enough experience and “know-how” to get started, and I can learn along the way just like they do!” (Focus group interview, 5/13/2014, p.2).

Prairie Palooza: Faculty Final Reflection

Based on the Prairie Palooza survey and our interviews with our grade-level teams, the faculty had a positive experience with Prairie Palooza. Laura reported, “Everyone was excited to have a ‘Palooza’ and break up the traditional PLC meeting. It helped that everyone had a choice in what they would be learning about” (Tech Team final reflection, 5/14/14). Sally reported, “People got to learn about the apps they were interested in, play with them and create work samples. My grade level thought it was great! They learned a lot in a short amount of time. Just talking aloud with others helped me get ideas for next year”(Tech Team final reflection, 5/14/14). Erika shared, “My team really liked it! They thought it was well organized and clear. It would be helpful to have more sessions like this”(Tech Team final reflection, 5/14/14). Our administrator was also impressed. Stephanie shared, “Today I visited with my administrator about how she thought Prairie Palooza went. She got very excited just talking about it. She thought the sessions were well thought out and organized and that the presenters were very knowledgeable. She enjoyed the format. She indicated she wanted to do this again in the fall”(Stephanie, reflection journal, p. 38).

In regards to improving Prairie Palooza, a common suggestion among our faculty was to provide more time to “play” with the technology in each session. They felt they were able try it but wanted more time to explore and think of ways to use it with their

curriculum. Edith shared, “My second grade team suggested that at our next Prairie Palooza we need a bit more time to explore and play. They liked that the sessions were short, just wanted more time to give them a try”(Tech Team final reflection, 5/14/14).

Amy, a special education teacher, shared, “I enjoyed Prairie Palooza, but I need more time to practice. Once I leave I don’t have time to try something with it, not because I don’t want to, just real world things hit me and take priority like giving a test. Then I never seem to get to it” (Focus group interview, 5/8/2014).

The Tech Team was also interested in how we could support faculty with technology integration in the future. The final question on the Prairie Palooza survey asked, “How can we [Tech Team] help?”. The most frequent responses from the faculty were (Prairie Palooza Survey, 5/7/14):

- Hold me accountable
- I need to learn in small groups, so continue sessions like these
- I need the chance to apply technology during the session
- Keep it brief, teach me one thing at a time
- I need practice time with new technology
- Keep me updated on new ways to teach with technology
- I need step-by-step directions
- Let me work collaboratively, partner-teach lessons using technology

Summary

“To sustain a positive, constructive outlook on life and their work, people must find a way to keep developing their strengths, to treasure and celebrate their successes, to

appreciate what they can achieve, to pass on to others what they have learned.” Robert Evans

Evan’s quote summarizes the work of the teachers in this practitioner inquiry study. Through the phases of inquiry, the Trio Group, the Tech Team, and our faculty worked together to learn ways to integrate technology within literacy instruction. We shared our individual knowledge of how to use features of technology either in small groups or one-on-one. We supported each other through collaborative discussions, encouragement, and partnership teaching. Collectively, the data revealed that teachers in all phases of the inquiry found the following components helpful as they learned ways to integrate technology:

- Connecting technology with curriculum objectives (purpose)
- Providing choice in learning
- Acknowledging differences in individual learning needs within our faculty
- Providing time to apply technology during the session
- Providing time to try out new learning with students in classrooms
- Providing support and encouragement from colleagues and peers
- Providing time to talk with others about their learning (small groups)
- Providing structure in the learning process, especially during group work
- Providing time to reflect on our learning and perceptions of technology integration

The data revealed that the Trio Group, the Tech Team, and members of our faculty all participated in some way with technology integration. As stated previously, the Trio Group experienced notable change in their teaching practice; however, these teachers

spent more time planning, sharing, applying, and reflecting on experiences with technology integration than other faculty. Even so, it is significant that during the phases, all members of our faculty applied technology at least once in their classrooms (reflection journals, Tech Team reflections, Focus group interviews with faculty, Tech Team video, Prairie Palooza survey). Throughout the inquiry project, all three groups not only learned ways to integrate technology but also learned about themselves as learners and teachers of technology integration.

Chapter 5: Implications and Conclusions

In this chapter, I briefly summarize the results from my research questions, offer my interpretation of the data, and then discuss the implications. I will address the implications for educators and those who impact professional development decisions. Finally, I will offer suggestions for further research.

Summary of Results

To understand the results of this inquiry project, I framed the results by the questions posed. The Trio Group (Kate, Stephanie and I) wanted to find out what happens when a small group of teachers work together to learn about integrating technology within the literacy curriculum. We wanted to know how teachers learn about integrating technology, how they apply it to their instructional practice, and how they share their knowledge with others. This study was conducted under the umbrella of practitioner inquiry; therefore, I participated in the study as both participant and researcher.

This inquiry project was conducted in the following four phases:

- Phase 1: The Trio Group learned how to integrate technology and shared it with the school's Technology Team.
- Phase 2: The Technology Team, which had a representative from each grade level, including specialists, learned how to integrate technology and shared with their grade-level teams.
- Phase 3: The Technology Team led a professional development session entitled "Prairie Palooza" for the entire faculty, teaching them ways to integrate technology within their curriculum.
- Phase 4: Collective reflection occurred when both the Trio Group and the Technology Team reflected on their learning. Members of the Technology Team also held focus groups with their grade-level teams to gain insights into technology integration and on their learning experience during Prairie Palooza.

Throughout the phases, five themes emerged that describe what happened as teachers learned to integrate technology within their curriculum. The themes that emerged were as follows: (a) teachers acknowledged current perceptions about technology; (b) teachers recognized strategies they deemed important to integrate technology; (c) reciprocity occurred as teachers learned from each other and from their students; (d) reflection was a significant strategy that helped teachers think about their learning and application of technology; and (e) motives such as student engagement prompted change in pedagogy.

Interpretation of the Data

As I reviewed the themes that emerged from the data, I considered how we learned to integrate technology within our instructional practice. What were the

significant implications for educators to know as they embark on the journey of technology integration? Following I describe the essential ideas that came from my inquiry project that contribute to the discussion of how teachers learn to integrate technology.

1. Essential Idea: Acknowledging Beliefs about Technology and Learning

Teachers' views of technology impacted their ability to integrate technology within their daily instruction. Their perceptions of technology as well as their beliefs about their abilities to use and teach with technology, determined the degree to which they integrated technology within their curriculum. Acknowledging these perceptions from the beginning was fundamental to learning how to integrate technology within instructional practice. For example, when teachers viewed technology as a separate subject to teach, they only used it as an end project. However, when teachers viewed technology as a tool for learning, the technology was used to engage students in active, constructive, and authentic learning experiences. Acknowledging our beliefs about technology helped us to integrate technology within our curriculum in authentic ways.

Once the Trio Group acknowledged what we believed about learning and technology, we recognized a difference between simply exposing students to technology (surface knowledge) and using the technology as a tool to learn with (action knowledge) (Howland, Jonassen & Marra, 2012). Because we wanted our learning to be applicable, we worked towards action knowledge. Acknowledging our beliefs from the beginning propelled the Trio Group to move away from viewing technology as an end in itself, and toward using technology as a medium for a variety of learning. Having the foundation of what we believed about learning and technology integration, helped pull us through to

change our teaching practice, and gave us a common language and understanding as we learned how to integrate technology.

Similarly, the Technology Team's discussions about what we needed as learners of technology provided the foundation for planning the Prairie Palooza training for our faculty. Initially, our administrator suggested that we provide an overview of what we had learned during the year. We knew that simply providing exposure (surface knowledge) to the ways we had used technology in our classrooms would result in little, if any, learning for our faculty. Therefore, we chose to provide small group, interactive experiences for our colleagues, so they would learn about the technology, and also have the opportunity to use it during our session. Collaborative discussions of how we learned to use technology and what we needed as learners caused us to provide a different learning experience for our faculty.

2. Essential Idea: Shift in Teacher Role: Trusting the Learner

Traditionally, many conceptualize a teacher as someone who is the expert, who imparts knowledge to others (Howland et al., 2012). Teachers tell students what they know and share their interpretation of the world based on the curriculum they are required to teach. In this context, students cannot learn with technology because they are unable to construct their own meaning. The teacher has already done it for them (Howland et al., 2012). In their reflection journals, teachers confronted their beliefs about their role as teachers as they integrated technology. They reported struggling with control of student behavior and learning when they used technology in their classrooms. They felt they had to be the expert on the technology they were using before they could use it with students.

However, as I read the data, I realized the issue was not control but confidence. For example, we as teachers have confidence in our ability to read and write; therefore, we are more comfortable letting our students have more independence in these areas. Often teachers provide opportunities for students to read independently during center time or when they have sustained silent reading. Conversely, we are not as comfortable giving students technology, and having them practice using the device as a tool for learning without our understanding the technology well. Researchers have found that not knowing how to use technology or how to incorporate technology within content standards to be obstacles that prevented teachers from using technology as a part of their instructional practice. Teachers' knowledge of how to use and integrate technology has a significant impact on their instructional practice and on their self-efficacy (Ertmer & Ottenbreit-Leftwich, 2010). Similarly, we found that our lack of confidence made us reluctant to use technology with our students. This proved limiting in not only our teaching practice, but also prevented students from learning with technology as well. Teachers who are more confident in their technology skills are more willing to give their students more independence using technology, and are more likely to use technology as a teaching tool to support curriculum (Hutchinson & Reinking, 2011).

Giving up authority in one's classroom changes the role as teacher and is not easy to do. We went from being knowledge dispensers to knowledge creators as we shared in the learning process with our students. Previously, we felt a keen responsibility for student learning. Therefore, we needed to control the learning environment by knowing how to use the technology well, to prevent chaos and enable learning to take place. However, technology integration allowed learning to become personalized. Access to the

Internet gave students the flexibility to pursue their own personal interests and allowed for infinite possibilities for learning. Both the Trio Group and the Tech Team found that when they relinquished control and trusted their students as learners, not only did students learn, but they also learned from their students.

Teachers also faced issues of confidence in their abilities as users of technology. They were afraid they would not know how to troubleshoot if students had difficulty using the technology; consequently, they were reluctant to try it in their classrooms. Both the Trio Group and the Technology Team discovered that we did not need to be the expert. We only needed to be familiar enough with the technology to know if it was the appropriate tool to support curriculum objectives. When teachers learn the technologies in order to function as the “expert,” they limit students’ ability to learn with technology (Howland et al., 2012; Pahomov, 2014). We found it was not necessary to be the expert all the time when we increased trust and relaxed control. In fact, we built our confidence as learners and users of technology when we shared in the learning process with our students.

3. Essential Idea: Reflecting on Practice

Reflection was a necessary part of our learning throughout the inquiry project that provided a pathway to improve our instructional practice. Reflection allowed us to temporarily stop and think about the instructional decisions we made when integrating technology. As several researchers suggest, reflective practice is a vital resource for significant and sustained school improvement, experience alone isn’t enough (Cole & Knowles, 2000; Pahomov, 2014; Schon, 1983; York-Barr, Sommers, Ghere & Montie, 2001). The Trio Group reflected in their online journals and through discussions during

our planning sessions and reflection meetings. The Tech Team reflected mainly through discussions in our Tech Team meetings. Both written and verbal reflection provided the avenue for us to see the “aha” moments in our learning.

Reflection was important because it provided a “deliberate pause” or purposeful slowing down of life, so that we had time to think about our learning (York-Barr et al., 2001, p. 6). In the harried day of teaching, we did not have time to “pause.” Schon (1983) refers to this reflective practice as reflection-on-action in that it provided the means to think more deeply about our learning, to scrutinize ideas, solve problems, and generate new ideas.

Reflection provided an avenue to grow and learn for both the Trio Group and the Tech Team. It was through reflection in our online journals that the Trio Group realized we needed to focus on our learning instead of our students’ learning. It was through writing and re-reading our journals, that the Trio Group noticed changes in our own teaching. Through reflection journals we realized that teaching with technology was becoming an automatic process rather than an isolated event.

The Tech Team primarily learned through reflective discussions. It was through discussions that we determined strategies that worked well and defined the barriers we faced as we learned to integrate technology. Through collaborative discussions we shared our experiences with technology integration with each other, and we learned new ways to integrate technology within our own curriculum. Reflective discussions helped us to understand what we needed as learners of technology, which was beneficial when we planned the Prairie Palooza faculty development.

4. Essential Idea: Andragogy, Acknowledging the Needs of Adult Learners

Sparks & Hirsh (1997) suggest a paradigm shift in the traditional view of professional development. Historically, teachers are seen as the receivers of knowledge but not the developers or generators of knowledge (Cole & Knowles, 2000). Professional development to this point has largely relied on experts in the field. However, it was clearly apparent in this study that learning from the more knowledgeable other (peers) was more effective than learning from experts in the actual integration of technology. For example Kate, Stephanie and I learned more from our collaboration with each other than we did when Mike (instructional technology teacher) shared ways to integrate technology within our literacy curriculum. Similarly, our experiences at the iPad Institute resulted in minimal if any change in instructional practice. By participating in practitioner inquiry, we generated new knowledge regarding our instructional practice from our work with each other. We were change agents of our own instructional practice rather than being imposed on by change.

This is not to say there is not a place for experts in the field to share their knowledge with practitioners. On the contrary, those who are experts in their area of study have much to contribute. Their knowledge and experience is important to helping teachers improve their pedagogical practice. The key is *how* they share the information with those who have less knowledge. Knowles (1984) recognized the needs of adult learners when he introduced the theory of andragogy. Knowles provided specific examples of applying the principles of andragogy to technology training for adults (Pappas, 2013). Understanding the principles of andragogy are important to provide meaningful and sustainable professional development.

In my personal journal, I wondered why teachers of technology are not using some of these principles with teachers. It certainly is not because we are not aware of the needs of adult learners. Several prominent researchers have addressed the need for alternative ways to provide learning opportunities for years; yet, we continue to use ineffective “sit and get” methods. Like Knowles (1984), these researchers agree that school systems need to consider alternatives to the traditional “one shot, talking head” workshop approach (Allington, 2012; Anderson, Herr, & Sigr, 2007; Cochran-Smith & Lytle, 2009; Cole & Knowles, 2000; Sparks & Hirsh, 1997). Fullan (2008) states, “there is far too much going to workshops, taking short courses and the like, and far too little learning while doing the work” (p. 13). Despite recognition that traditional methods of professional development are largely ineffective, the voices of these researchers as well as the voices of teachers are often still ignored.

As I read what teachers said they needed as learners of technology (reflection journals, transcripts of discussions), I noticed similarities between the learning needs of teachers and students. As noted in chapter four, Howland et al., (2012) describe components of meaningful learning for students. As I reviewed the data, I noticed connections between the components of meaningful learning and what teachers reported they needed as learners. It is interesting to note the similarities between the two. Unfortunately, those in the field of traditional professional development seldom acknowledge the needs of adult learners (Sparks & Hirsh, 1997).

Similar to students, teachers revealed they needed professional development opportunities that allowed them to be active participants in the learning process. Teachers who participated in this study identified the following components needed to

support their learning (reflection journals, focus group interviews, transcriptions of group discussions):

- Teachers need to understand the purpose for learning.
- Teachers need to have choice in the professional development they attend and the ability to regulate their own learning instead of attending out of compliance
- Teachers need to actively participate in the learning and observe the effects during professional development.
- Teachers need to make connections with previous learning by connecting new knowledge to knowledge they already have.
- Teachers need opportunities to apply their learning in authentic and intentional ways within their classrooms and with their students.
- Teachers need to have conversations about their learning and time to reflect on implementation.
- Teachers need time to talk through lessons they have tried, problem solve and adjust lessons to meet needs of learners in their classrooms.
- Teachers have different experiences and skill levels as learners of technology; therefore scaffolding learning opportunities is necessary. Once teachers get a “click behind,” learning stops.
- Teachers need empathy and understanding of their needs as learners.
- Teachers need to start with what they know regarding technology and build on this knowledge.

It is ironic, that what educators want for students; a wide array of learning opportunities that engage students in experiencing, creating, and solving real problems,

using their own experiences and working with others is denied to teachers when they are learners (Sparks & Hirsh, 1997). If we want teachers to learn in meaningful and sustainable ways, it is necessary to consider the needs of adult learners.

5. Essential idea: Learning Technology Integration, a Two-part Process

As stated in chapter two, Hutchison & Reinking (2011) found from their survey of over 1,400 literacy teachers that the professional development experiences these teachers encountered focused on *using* the technology, not on *integration* with curriculum. Using technology and integrating it within instructional pedagogy are two different processes. With any digital technology, it is imperative to examine how the tool can help teachers meet curricular goals in order to engage in curriculum integration as opposed to technological integration (Hutchison & Reinking, 2011). Traditionally, technological integration reflects a stance that views information and communication technologies (ICTs) as separate from, or not fully integrated into, the curriculum; whereas curricular integration reflects a stance that views ICTs as integral to the curriculum. Recent research (Hutchison & Reinking, 2011) indicates that a majority of technology use in literacy classrooms occurs as technological integration rather than curricular integration.

In this inquiry study, the data revealed similar findings. This was apparent not only from the results of our Technology Survey (2/8/2014) but also from our experiences with learning how to integrate technology. After reviewing data from the Tech Team and the focus groups with faculty, I realized that when teachers talked about needing time to apply the technology during the session, **they meant not only how to use the technology itself, but also time to plan how to *integrate* the technology within their curriculum.** In other words, before they leave the professional development session they

need to have a plan of action about how to use the technology as a tool to support their instructional pedagogy. The diagram below illustrates this process.

Figure 15. Technology Integration with Curriculum. This diagram illustrates the process of learning to use technology and integrate the technology within curriculum.

The diagram above illustrates the process a teacher goes through as he or she integrates technology within their curriculum. Put succinctly, integrating technology requires an awareness of technology, learning enough about the technology to determine possible connections with the curriculum, and then making a plan for integrating the technology with professional or instructional practice. These are separate components

that are important to consider as teachers learn how to integrate technology with their instructional practice.

During our inquiry study, teachers found that the technology integration process began with either a technology idea shared by a colleague or was based on a curricular requirement. For example, during a Technology Team meeting, Stephanie, a fifth grade teacher, shared how she integrated the app Popplet within her literacy curriculum. Her students used Popplet as a graphic organizer to organize their ideas for stories they were writing. The K/1 teachers immediately made a connection with using the app to teach math curriculum. They realized students could use Popplet to make math sentences. Instead of paying attention in the meeting, they immediately explored the app's features and made plans for using Popplet with the students the following day.

However, sometimes teachers began technology integration with a curriculum objective, such as understanding how to write a persuasive argument. After discussing various technology tools, third grade teachers determined blogging would be a tool that would provide an authentic forum for students as they learned how to write persuasively. Once teachers had a relevant purpose for using the technology, they had to learn its basic features and create a plan of how to use blogging to write persuasive book reviews. It was a two-step process. They discovered that it was not enough to know basic features of the technology or have an idea of how to use it as a teaching tool. Unless they also made a plan for how to connect the technology within instructional or professional practice, integration seldom happened.

6. Essential Idea: Transfer Learning Through Reciprocity

Throughout the inquiry study, teachers learned within a democratic community of learners. Everyone had an equal voice, with no one person serving in an authoritative role. Our learning was guided by our curriculum needs and the needs of our students. The technology we chose to learn about was based primarily on the connections we made with the curriculum we had to teach. We had relevant reasons to learn. Only once during the study did we have an expert (instructional technology teacher) share with us. Even though I was the media specialist, my role was that of participant, not the leader who provided the training. Instead, we took turns in leading the group largely depending on who had technology strategies or experiences to share. Bandura (1977) defines this as reciprocal determinism whereby an individual's behavior is influenced by the environment; and the environment is also influenced by the individual's behavior. In other words, a person's behavior, environment, and personal qualities all reciprocally influence each other. This occurred when Lois, a second grade teacher, witnessed her colleagues using blogging successfully to teach the writing curriculum to students. The interaction with her grade level peers influenced her to try blogging with her own students.

Reciprocity was our most valuable teacher. The power of our learning came from interacting and supporting one another through conversations, trial and error, readings, social networking, and partner teaching. It was through our interactions with each other and our students that we learned the most. Our learning was not linear but rather natural and on-going in the sense that teachers would learn in a variety of ways either in small group meetings, through "quick share" conversations with each other in hallways or

during lunch, or even from their students. It is significant that teachers learned from each other (and from students) within the context of their own setting, in stolen bits of time, so that their learning was relevant and meaningful to their daily instructional practice.

Within their own context, they were able to apply their learning and had access to immediate support from their colleagues. The diagram below depicts the reciprocal process we used to learn technology integration. Although this same diagram was used previously to depict the phases of inquiry, I now use the diagram to illustrate the reciprocal nature of the relationships between teachers and students that led to technology integration within our school.

Figure 16: Reciprocity through Phases of Inquiry: This diagram is a visual representation of how the interactions between teachers and students transferred learning.

Revelations

As I reflected on the findings of this inquiry project, there were points I found surprising. For example, it is interesting to note that the teachers who had the largest turnaround with technology integration were not members of either the Trio Group or the Technology Team. For example, Lois was reluctant to integrate blogging within her writing curriculum, but observations of her grade-level peers, her own students' interest, and trusting relationships with two members of the Tech Team helped her to move beyond her fears and try blogging. The following year, she continued to value and seek

out opportunities to integrate technology within her curriculum. It was also surprising the impact quick share conversations had on our learning and ability to integrate technology within our curriculum. It was often the quick share conversations that spurred ideas for deeper conversations within our groups. For example, it was during a quick share conversation in the Media Center that Stephanie and I started the organizational idea behind Prairie Palooza. We then shared this initial idea during a Tech Team meeting and through collaborative conversations the plan for Prairie Palooza was established.

The focus group interviews that we conducted with faculty members also revealed information that I found remarkable. During these small group or individual conversations, teachers acknowledged their personal frustrations as learners. I realized that teachers and students have similar fears and needs in terms of learning something new. Seldom are these recognized during professional development sessions. I also realized the importance of establishing trusting relationships with colleagues. It took courage for teachers to share honestly about their needs as learners. It is doubtful teachers would have been so willing to share their personal feelings without these relationships in place. Overall, teachers learned from trusted colleagues in either grade-level team meetings or individual conversations. Teachers learning from each other and their students permeated the culture of our school.

Implications

Based on the data from this practitioner inquiry study, several implications will help to move technology integration forward. Understanding and improving our teaching practice came from collaboration with others, as well as reflecting on ourselves as learners and the instructional decisions we made every day. Following I discuss

implications for educators in general, because these implications impact more than teachers. Understanding beliefs about learning and technology are important for all stakeholders to consider. I use the term educator to encompass the stakeholders who play a role in impacting student and teacher learning. I then address implications for those leading professional development and finally, offer suggestions for future research. I use the children's story, *The Velveteen Rabbit*; as a metaphor to understanding these implications.

Implications for Educators

“What is real?” asked the Rabbit one day....
“It doesn’t happen all at once”, said the Skin Horse. “You become. It takes a long time. That’s why it doesn’t happen often to people who break easily, or have sharp edges, or who have to be carefully kept.” (Williams, 1958, p.9)

Although these poignant words are from a familiar children's story, *The Velveteen Rabbit*; the dialogue between a soft, shy, sawdust bunny and a wise, experienced Skin Horse provide an appropriate metaphor of how we become “real” as teachers and learners. Metaphors provide ways of communicating about teaching and enhancing personal understanding of teaching (Cole & Knowles, 2000). This simplistic yet beautifully written story has much to teach us about how supportive, caring relationships can help us to take risks and embrace the challenges of change in our instructional practice for both teachers and students.

Similar to the process of change, becoming “real” doesn’t happen to us overnight. It doesn’t happen easily. And sadly, we may be the very ones that prevent ourselves from becoming “real”. Some of us in education are afraid to take risks because we may break easily, or we have sharp edges and are unwilling to view the world from others’

perspectives. As we learned to integrate technology, some teachers were hesitant because they didn't know it well. Others had negative experiences with technology in the past, which made them reluctant to use technology in their classrooms. Sometimes we needed to be nurtured, supported, and encouraged because we had not yet found the confidence in ourselves as teachers of technology integration.

Knowing ourselves in the Personal

In the world of teaching, how does one become “real”? Cole & Knowles (2000) suggest that educators become “real” when they know who they are as teachers, when they know their personal histories and can articulate “their story” (p. 14). Educators become “real” when they can draw on their own personal stories and continue to grow and learn to improve their professional practice. For example, all of us have encountered different experiences with school. We have been influenced from the beginning by our parents’ perceptions of learning, our society’s view of education, and our personal experiences with school. All of these impact our beliefs about teaching and learning. Understanding and acknowledging these beliefs is foundational in the initial and ongoing development of professional practice. It is the beginning steps in learning, improving and changing professional practice to improve learning for our students. Teaching is a dynamic expression of oneself. By understanding ourselves, it helps us to understand the actions we take and the decisions we make with our students in the day-to-day life of school. As Cole and Knowles (2000) suggest, “We must know from where we have come in order to understand where we are going” (p. 29).

Knowing ourselves in the Professional

Just as the Velveteen Rabbit struggled to make sense of his place inside the nursery and discover who he was as a stuffed bunny, both the Tech Group and the Tech Team wrestled with determining what we believed about our roles as teachers of technology. As Cole & Knowles suggest (2000), it is necessary to understand what you believe about teaching and learning to fully understand how you respond to, interpret, and interact with the instructional decisions you make every day. What goes on in the classroom is a direct reflection of who we are as educators (teachers, administrators, policy makers, etc.) and what we believe and how we interact with students, their families and our peers. Therefore it is vital for all educators to acknowledge their beliefs and perceptions about teaching, learning and technology integration to understand their role as teachers. The process of continually reflecting on oneself as a teacher is authentic professional development (Cole & Knowles, 2000).

It is imperative for both teachers and administrators to engage in ongoing reflection about themselves as learners and their instructional practice. The practice of teaching is an expression of who we are as individuals. The better we understand ourselves as teachers, the better we can learn and grow in our practice. Following are questions for teachers to consider as they acknowledge their own beliefs about teaching, learning and technology (Cole & Knowles, 2000):

1. Who am I as a teacher (administrator)?
2. How did I become the educator I am today?
3. What are my needs as a learner?
4. How do I define learning for myself and for my students?

5. How do I define technology?
6. What role does technology play in my instructional practice and student learning?

Reflection as Key Component to Learning

Reflective conversations with Skin Horse, the wild rabbits and the Nursery Fairy helped Rabbit to discover what being “REAL” meant. Reflection was the key that helped us become aware of our beliefs and perceptions about learning and technology. Both the Trio Group and the Tech Team found reflection to be an important part of our learning. Reflection provided the pathway that led us to think deeper about our experiences with technology, make connections with previous learning, consider ways to apply technology within our literacy instruction, recognize changes in our instructional practice, and notice the impact technology integration had on our students.

There are a multitude of things that require teachers’ time, but few are as important as the time spent on reflecting on one’s practice either through journaling or through conversations with colleagues. Reflecting on one’s practice is a necessary, relevant, and inexpensive form of professional development. It should be embedded as a necessary component of teaching practice, not a mere suggestion. Time for reflection, both verbal and written, should be included as a part of a school’s improvement plan so that teachers have the following opportunities:

- To explore ways to integrate technology within their curriculum.
- To make connections with previous learning.
- To understand the impact technology integration has on instructional practice and student learning.

- To have time to pause, breathe, think and talk about our instructional practice.

Reflection takes time, but it is time well spent. Reflection is the strategy that helped us to internalize our learning and transfer it from surface knowledge to actually applying the new learning and doing something with it. Instead of being seen as separate from instructional practice, reflection needs to be embedded within pedagogy and become as necessary as writing lesson plans or grading papers.

Technology changes at lightning speed; in fact, much of education occurs in the fast lane, however, we can't let the pace of change in technology or the rush of school days govern the pace of learning. Educators (teachers, administrators, policy makers) must create ways to pause at rest areas along the roadside to reflect on our instructional practice and make appropriate adjustments for our continued journey. We need time to pause and focus on our teaching practice. What works well? What doesn't? What do we still need to learn? York et al., (2001) suggest that reflective practice is as much "a state of mind as it is a set of activities" (p.3). Therefore, time for reflection must become part of the school culture. It needs to be a common practice that occurs on a consistent basis. Before reflection can become a "habit of mind" it needs to become a part of guiding instruction and a necessary part of professional development. It is worth the time.

Redefine the Roles of Educators

Teachers

"They were rabbits like himself, but quite furry and brand-new. They must have been very well made, for their seams didn't show at all, and they changed shape in a queer way...they were evidently a new kind of rabbit" (pp. 26-28).

The Velveteen Rabbit was baffled after first meeting the wild bunnies in the woods. They challenged his thinking of who he was as a rabbit. He was exposed to new ways of thinking about what a rabbit could be. These rabbits could hop and dance without anything to wind up. Rabbit was exposed to a new definition of “REAL” (p. 30).

Teachers too, need to consider a new definition of teaching. Initially, Rabbit found it uncomfortable to sleep with Boy at night. He missed his conversations with Skin Horse and the moonlight hours in the nursery (p. 21). Similarly, teachers find it uncomfortable to change their teaching practice. Like Rabbit experienced his first night with Boy, learning technology feels strange and different at first, and teachers feel insecure with new teaching practices. However, as Rabbit grew to know Boy,” he liked being with him” and “they played splendid games together”(Williams, p. 21). Likewise, the teachers in this study found the more we used technology in our classrooms, the more comfortable we became with it. Not only did we begin to see technology as a tool used in daily instruction; we also became more confident in our ability to integrate technology within our teaching practice.

Teachers have to re-examine their roles as teachers. Traditionally, teachers’ primary responsibility has been directly instructing students, where teachers were the purveyors of knowledge and students the recipients. However, when teachers continually determine what and how students learn, then students cannot become independent learners. With the advent of the Internet, students now have unprecedented access to information and no longer need someone to impart information to them. Instead, they need guidance to help them learn the strategies and skills to successfully navigate the Internet and use online information to effectively learn and communicate. As the amount

of information available to us expands, what matters is not what students know, but how they acquire knowledge and what they do with it. Therefore, what does that mean for teachers?

It is necessary for educators to re-think the job description of “teacher”. In this study, we realized that our need to be the expert and in control of student learning proved to limit both our own and our students’ learning opportunities. In order for students to learn with technology, it is necessary for teachers to redefine their roles in the following ways:

- Provide reciprocal learning opportunities where students can work with peers and with teachers to develop the interpersonal skills they will need in their professional lives.
- Relinquish some authority in the management of learning, so that learning becomes a shared experience.
- Embrace the role of a facilitator of learning by guiding students (teachers) in asking their own questions, collecting and interpreting information and identify the credibility of resources.
- Become continuous learners themselves, constantly inquiring about ways to improve their instructional practice and meet the needs of their students.
- Notice the language used with students to develop a culture of inquiry
- Include time for reflection for themselves and students.
- Use reflection as a tool for authentic learning and self assessment

Both the Trio Group and members of the Tech Team realized the power of reciprocity in both our students and our own learning. We discovered that students can

and will learn with technologies. In fact, there were times when the students were more knowledgeable and taught us how to use the technology. In the role of facilitator, teachers guide the learning process, ask probing questions, and become an active participant in acquiring new knowledge. Facilitating allows teachers to be a part of the learning rather than a lecturer or a giver of information. It was through this shared learning experience that Kate learned to use Pic Collage from fifth grade students, and Edith learned to use Kidblog from third grade students. We found that when we trusted our students, and shared the learning experience with them, not only were students engaged and built their confidence as learners but we also learned from them.

To promote a culture of inquiry within their classrooms, teachers need to be aware of the language they use with students. Talk is a central tool of our profession. Teachers need to use a language of inquiry that allows students to think for themselves instead of eliciting predetermined answers. They need to pose questions that stimulate thinking and invigorate learning. Johnston (2004) defines this as “teacher instructional talk”. (p. 4). Through instructional talk, teachers can position students as competitors or collaborators, and themselves as referees, resources, or judges simply by the words they choose in their daily interactions with students (Johnston, 2004). As teachers redefine their roles, they need to understand how to use talk to mediate students’ learning experiences. This is vital in helping students to become self-regulated learners.

School Leaders

Although this study focuses on how teachers learn to integrate technology within their literacy instruction, it is important to note that administrators and school leaders have an important voice in the learning opportunities afforded to teachers. Just as

teachers need to re-define their role in teaching students, administrators also need to re-define their role as instructional leaders of schools. Ironically, there are important parallels between the two. The suggestions listed previously for teachers, also hold true for administrators. Just as students need to be trusted and have ownership in their learning, so do teachers. Teachers need opportunities to learn collaboratively with other teachers to improve their instructional practice. Therefore, the suggestions listed above are not solely meant for teachers, but should also be considered for all involved in providing professional development.

Re-envisioning Traditional Professional Development

“Real isn’t how you are made,” said the Skin Horse. “It’s a thing that happens to you. When a child loves you for a long, long, time, not just to play with but really loves you, then you become Real.”

“Does it hurt?” asked Rabbit.

“Sometimes,” said the Skin Horse, for he was always truthful. “When you are Real you don’t mind being hurt.” (Williams, p. 17)

Thinking differently about professional development (PD) doesn’t happen quickly or easily. There is not a magic pill teachers can take or the “quick fix”. And yes, sometimes it does “hurt” when a long held belief is challenged or questioned. However, it is necessary to have a different definition of professional development if we ever hope to provide “real” learning experiences for teachers.

In order to provide “real” learning opportunities for educators, first and foremost, professional development must be viewed as an essential, embedded component within the system of school that makes learning more relevant and applicable to instructional practice. Schon (1973) suggests developing institutions which are “learning systems”, capable of bringing about their own continuing transformation (p. 242). Learning is not

seen as an end goal, but instead, is an ever-evolving process that must continue throughout an entire lifetime (Schon, 1973).

In addition, those leading professional development need to determine the goal for learning. Is the purpose to provide a broad overview of the features of the technology or is it for teachers to learn and apply the technology within their instructional practice? Currently, most methods of professional development provide surface knowledge or exposure to the features of the technology. Rarely do traditional professional development sessions provide opportunities for teachers to practice using the technology within the session nor do they provide opportunities for teachers to make a plan to integrate the technology within their curriculum.

Those leading professional development, especially in the area of technology, must consider the background experience and skills of their participants. Teachers in this study revealed that often presenters have a presumption of knowledge that participants understand the terminology used, and have a foundation of technology skills that may not be the case. They often attempt to cover too much material in a short amount of time. Once participants get a “click behind” they are lost. They shut down and learning stops. Because participants come with many different skills and experiences, it is vital that presenters of technology scaffold their instruction to meet the variety of needs within the audience. By scaffolding, I mean that presenters need to provide supports within the session for participants as they learn how to use and integrate the technology. Following are ways presenters can scaffold instruction to support learning:

- Provide step-by-step directions for participants to follow if they get a “click behind”.

- Provide examples and model the features of the technology used in authentic context.
- Provide specific learning expectations, focusing on learning one piece of technology at a time instead of providing an entire overview of all the things that particular technology can do.
- Include time for participants to work in small groups, talk with each other about how to use the technology, practice using the technology, and discuss ways to integrate the technology within their own practice.
- Include reflection time within the session so that participants have time to think about their learning, determine questions they still have, and consider how they will apply their new learning with their students.

The teachers in this study found that if they did not have these supports embedded within the professional development session, they seldom applied their learning. Therefore, presenters of technology must consider the needs of the learner when teaching how to use and implement technology.

Ultimately, the traditional views of professional development must be transformed into a more democratic view of learning that will provide opportunities for teachers to have a voice in improving their practice. Professional development would create learning environments where practitioners can inquire about solutions to the day-to-day dilemmas they face as teachers. As Reeves (2010) states, “Some of the best new ideas are emerging from collaborative and alternative approaches to professional development”(p.73). I suggest an alternative approach in order to largely shift traditional

forms of professional development from the “sit and get” method to “**Collaborative Inquiry Circles (CIC).**”

Collaborative in that educators commit to teaching and learning with and from each other and their students. No one person is the expert. Instead, like Vygotsky’s more knowledgeable other (MKO), teachers share responsibility for learning and improving their instructional practice (Lee & Smagorinsky, 2000). In addition, rather than receiving knowledge only from experts, teachers collaborate with peers, researchers and their own students to create new learning. They are accountable to each other. They have a voice in the learning process instead of learning being imposed on them.

Inquiry in that teachers take ownership of their learning by talking about what is most meaningful to their instructional practice. Teaching becomes a form of inquiry in the sense that teachers constantly inquire about how students learn, how they can improve their own professional practice and how they can be facilitators of the learning process. Continual learning becomes a part of the culture of teaching.

Circles in that not only teachers teach one another; instead, all stakeholders are involved in the educational sphere supporting each other to improve practice. This includes teachers, administrators, policy makers, parents and students. Through the process of reciprocity, all stakeholders share ideas and problem solve as they use technology as a tool to support learning. Teachers see their role in a collaborative fashion not only as they teach their students but also as they learn themselves. They are accountable to each other.

These collaborative inquiry circles fall under the umbrella of practitioner inquiry. They are small groups of educators who share a common goal that is relevant to their

practice and at times within their own context. They are self-regulated learners who share in the learning process by gathering resources, observing their practice and reflecting on their learning. They take turns being the more knowledgeable other instead of one person being the expert. It is a shared learning experience that is relevant to their teaching practice.

Based on the voices of the teachers involved in this study as well as other prominent researchers (Cole & Knowles, 2000; Darling-Hammond & Richardson, 2009; Sparks & Hirsch, 1997) the following reforms are essential to improve teacher learning opportunities:

- Collaborative Inquiry Circles are seen as indispensable and play a critical role in improving instructional practice. Learning occurs and knowledge is constructed through the interaction with others. They become a part of the school culture.
- Recognition of individual beliefs about technology, teaching and learning are acknowledged from the beginning and provide the foundation for future learning.
- Reflection is embedded within learning and seen as a necessary component of teaching
- Learning opportunities are job embedded so that individuals or small groups can learn within their own context, within the teacher workday.
- Teachers develop expertise by spending part of their work day observing each other and reflecting on their understanding of teaching and learning (observations, small study groups, joint lesson planning, practitioner inquiry, etc.)
- Teachers focus on a deeper understanding of content, pedagogical and technology integration (TPACK) (Koehler & Mishra, 2009).

- Leaders of professional development provide consultation, resources and support as teachers learn instead of functioning primarily as the expert.
- Leaders of professional development see themselves as teachers of adults and understand the needs of adult learners (Andragogy).
- Teacher learning is a continual part of the culture of the school and school system
- Learning opportunities are scaffolded to meet the needs of individual learners.

This is important especially when learning technology. With technology, once you get a “click behind,” learning often stops.

These reforms in traditional professional development are necessary to create learning communities in which everyone—students, teachers, administration and researchers, are both learners and teachers. They are the “nuts and bolts” of professional development that create places of learning for educators to transform instructional practice and improve student learning. By participating in practitioner inquiry, we generated knowledge regarding our instructional practice and were change agents of our own instructional practice rather than being imposed on by change. Embracing practitioner inquiry serves to improve practice, inform the teaching profession and provides a voice for teachers when policy decisions are made that impact their professional lives (Campbell, 2013). Following are suggestions of practitioner inquiry models that give teachers ownership in their learning:

- Practitioner Inquiry Research (Cochran-Smith & Lytle, 2009):
 - Inquiry: pose a question or problem as a way to know about and improve teaching, learning, schooling
 - Data of practice: many forms representing student and teacher work, not just assessments

- Communities: teachers, administration, colleagues work together with common purpose over time
- Practitioner is knower and agent for educational and social change
- TAPER (Teachers as Professional Readers) Professional Development (Allington, 2012):
 - Goal: develop individual expertness and foster shared knowledge among members of same group
 - Teacher inquiry project based on teacher interest and need for improvement- define problem, question
 - Teachers read professional books, articles, research and discussed in collegial setting, meet consistently
 - Teachers give new learning a try in classroom setting
 - Teachers reflect and share experiences
 - Schools have several TAPER groups that share learning with each other
- Fusion Model (Semadeni, 2010)
 - Teachers have choice in their learning.
 - Teachers form learning teams based on common interest.
 - Learning teams schedule meeting times, establish learning goal and learning assignments
 - Learning teams discuss their learning and ways they can apply learning with their instruction.
 - Members partner teach or observe each other teaching the new strategy with students and provide feedback to each other.
 - Members reflect on their teaching and make decisions based on reflection

- Learning teams follow this process until they feel like they have accomplished their learning goal. Then they share their learning goal with other faculty or administration.
- Discussion Circles: A Learning Process (Wallace and Ensor, 2014)
 - The diagram below illustrates an alternative to traditional professional development where teachers learn together in small groups about a topic that is relevant to their teaching practice.

Figure 17. Learning Team Process. This diagram serves as a guide for small groups of teachers to learn in relevant and authentic ways.

Educators often focus on the needs of student learners and improving student achievement. While we are in the business of educating children, I suggest that to do that well, we also need to consider the learning needs of teachers. Wright, Horn & Sanders (1997) suggest that “More can be done to improve education by improving the

effectiveness of teachers than by any other single factor”(p. 63). Therefore, it is imperative that those in charge of providing learning opportunities for teachers (administrators, policy makers, etc.) recognize the learning needs of adults. It is time, as Allington (2012) suggests, “to rethink professional development,” and trust teachers to learn in meaningful and sustainable ways (p. 160).

Suggestions for Future Research

Because of the integration of a digital component in the standards (Corestandards.org, 2012; Iste.org, 2008), it is necessary for teachers to learn how to create digital environments and prepare digital citizens for a future in a technology-filled society. It is imperative that future learning opportunities for teachers provide both the skills in how to use the technology as well as how to integrate technology within their literacy practice. While this study identifies needs of teacher learners and provides suggestions for different ways of conducting professional development to support teachers with technology integration, more research can be done. Following are suggestions for future research that may be beneficial:

- This study was conducted over a four-month period. A longitudinal study conducted over an entire school year would allow one to see if and how teachers continue to integrate technology.
- This study focused primarily on how teachers learn to integrate technology within their instructional practice. It would be interesting to see how technology integration impacts not only instruction, but also student achievement.
- How do we actually change the current delivery model for professional development? This study is not the first to suggest changes in the traditional

format of professional development. Despite numerous research studies that conclude traditional methods of professional development are ineffective, there has been little or no change in the traditional methods. What needs to happen to change traditional professional development? What are the long-term impacts that these investments have on both teachers and students?

- After the Tech Team provided the Prairie Palooza professional development, we could not determine how many teachers applied what they learned because it was held at the end of the school year. What would happen if Prairie Palooza were held at a different time of the school year? What impact might that have on teacher learning and application?
- This study was conducted in a small elementary school of approximately 300 students. Every teacher within the school was impacted in some way with technology integration. Could this same process be used in a larger school to promote teacher learning? What would happen when there are several teachers on a grade level team? What would happen if a similar process were used at the secondary level?
- What parts of this study could presenters of large professional development sessions (conferences) implement? These presenters often have a limited time frame and seldom have time to build relationships with participants or understand the background knowledge they bring with them. How can they change their current methods of presentation to enhance the learning opportunities of their participants?

- What part does experience play in technology integration? In this study, teachers who did not grow up with technology seemed to find it more challenging to take risks, problem solve, and have confidence in integrating technology as in the example with Kate and her third grade team. I also noticed this in the Trio Group. Stephanie seemed to learn the features of technology faster than either Kate or myself. Both Kate and I wondered if the differences in our experiences with technology were what impeded our confidence in our abilities to integrate technology. What role does a person's previous experience with technology play in his or her ability to integrate technology?

Conclusion

“Instead of dingy velveteen, he had brown fur, soft and shiny, his ears twitched by themselves and his whiskers were so long they brushed the grass. He gave one leap of joy using those hind legs was so great that he went springing about the turf on them, leaping sideways and whirling around.... He was a real rabbit at last, at home with all the other rabbits” (p.41).

In order to provide “real” learning opportunities for educators, the landscape of professional development must change. Information and communication technologies (ICT) are redefining the nature of learning for both teachers and students. To become literate in today's world, students must become literate with 21st century technologies. Because of this, those who teach literacy must also embrace these changes and have a responsibility to effectively integrate these technologies into their literacy curriculum (International Reading Association, 2009). However, these new technologies by themselves are not a panacea for teaching literacy. Technology can provide opportunities

for students to thrive and take ownership of their learning but it is the *teacher* who plays an integral role in challenging students to learn and grow (Allington, 2012; Cambourne, 2002). Therefore, it is imperative that teachers are provided with adequate training and skills to integrate technology within their instructional practice.

As stated previously, several researchers (Allington, 2012; Cole & Knowles, 2000; Darling-Hammond & Richardson, 2009; Sparks & Hirsh, 1997) have discussed the ineffectiveness of traditional professional development opportunities since the 1980s, yet few if any changes have been made in the way we conduct professional development. History teaches us the power of a transforming idea, an alteration in world view so profound that all that follows is changed forever (Sparks & Hirsh, 1997). Just as Rabbit was transformed through his experiences with Skin Horse, Boy, the wild rabbits, and the Nursery Fairy; so too, are teachers “transformed” as they encounter relevant learning opportunities through collaborative discussions with their peers. Similar to Rabbit, teachers experience the same excitement and joy when they are inspired by new teaching practices that are relevant to their curriculum and engage their students in learning. Such a paradigm shift is necessary to transform the current methods of professional development. The teacher voices in this study have identified necessary components to dramatically change the landscape of professional development. Instead of gaining new “hind legs” as Rabbit did, they gained new teaching tools that transformed their roles as teachers and improved their instructional practice. That is when teaching and learning become ‘REAL.’ The question is; are we willing to accept the challenge of change in professional development? Are we willing to become ‘real’ about teacher learning?

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Appendix A

Trio Group Weekly Reflection Questions

These questions were used to guide reflections in weekly online journal.

Initial Online Reflection Journal Questions:

1. How did you integrate technology this week?
2. What successes did you have?
3. What struggles did you encounter?
4. How can you share your learning with others?

Trio Group *Revised* Online Reflection Journal Questions:

1. How did you *learn* to integrate technology this week?
2. What did you notice about yourself as a learner?
3. What successes did you have as you were integrating technology?
4. What struggles did you have as you were integrating technology?
5. Thinking about yourself as a learner and teacher of technology integration, how do you make technology integration meaningful for others?

Appendix B

Trio Group Final Reflection Questions

1. How did you integrate technology? What are some of the things you tried?
2. As you reflect on your learning about integrating technology, what do you have to pay attention to in yourself?
3. How did you go about learning a new or different way to integrate technology? I noticed that you take your learning one step further. What propels you to do that?
4. What struggles or successes did you have as you were learning ways to integrate technology?
5. Are you thinking differently about your teaching now that you are integrating technology? If so, how?
6. What are some strategies that helped make the Trio Group successful?
7. What did you need in order to stay involved in the group and keep participating?
8. What are some issues that we faced as we tried to learn together?
9. At the beginning of this project, we defined meaningful learning. Think about how we defined knowledge. When you are “leading” your grade level team in learning about tech integration, what strategies might you use so that learning is meaningful?
10. What did you learn from this experience that may shape what you do in the future?

Any other comments, suggestions, “ahas” that you would like to share about our work together or about your experiences with technology integration?

Appendix C

Prairie Palooza Survey

1. What grade level do you teach?
2. What app did you find most helpful today?
3. How do you plan to implement this technology in your classroom?
4. What supports do you need?

Appendix D

Technology Team Final Reflection Questions

These questions were initially answered individually in an online journal, then we discussed them during our final Tech Team meeting.

1. What did we want to happen this year on Tech Team?
2. What actually happened?
3. What happened as you shared with your grade level team?
4. What do we need to do differently as a team next year?
5. What should our next steps be?
6. How do you want to continue to learn and grow?

Appendix E

Survey of Technology Use in Literacy (<http://goo.gl/forms/ofxn4jYKwB>)

1. During the previous school year, about how often did you use technology as a part of literacy instruction?

(e.g. the Internet, creating multimedia presentations, sending email, etc.)

2. During the previous school year, about how often did your students use technology as part of literacy instruction?

(e.g. the Internet, creating multimedia presentations, sending email, etc.)

3. To what extent do you present students in your typical reading or language arts class with online work that involves using computers or the Internet in the following ways?

Not at all, Small extent, Moderate extent, Large extent, Not applicable

Creating a word document

Playing educational games on CD

Playing educational games online

Gathering pictures online

Reading a book or story online

Creating a multimedia presentation

Using reference sites online

Publishing information on a wiki or blog

Publishing information on a website

Sending email

4. To what extent do you feel the following activities would be important to your literacy instruction, assuming they were available?

Not at all, Small extent, Moderate extent, Large extent, Not sure

Creating a word document

Sending email

Playing educational games on CD

Playing educational games online

Gathering pictures online

Reading a book or story online

Creating a multimedia presentation (Ex. PowerPoint)

Using references sites

Publishing information on a blog

Communicating using Instant Messenger or other chat tools

Formulating questions online

Locating information online

Evaluating information online

Searching for information online

Using specific search strategies to search for information online

Collaborating online with students from other classes

5. To what extent do you feel prepared to teach students the skills they need for reading online?

6. To what extent are you skilled at using digital technology for instruction?

7. To what extent are you skilled at using digital technology in general (computers, cell phones, iPads, etc.)?

8. To what extent would you like to increase your integration of technology into your literacy instruction?

9. What do you feel would help you increase your integration of technology into your literacy curriculum?

10. Please indicate the extent to which you believe the following are obstacles to integrating technology into your literacy instruction:

Not at all, Small extent, Moderate extent, Large extent

I don't think technology is reliable.

I don't know how to incorporate technology and still teach content standards.

I don't know how to use technology.

I don't know how to integrate technology into my literacy instruction.

I don't think technology fits my beliefs about student learning.

I don't think I have enough time to prepare for using technology.

I don't think I have enough time to integrate technology because of the amount of time required to prepare students for required testing.

I don't believe technology integration is useful.

11. Please indicate the extent to which you believe the following are obstacles to integrating technology into your literacy instruction:

Not at all, Small extent, Moderate extent, Large extent

I think Internet text is too difficult for students to read.

I don't understand copyright issues.

I have difficulty controlling what information students access online.

I don't know how to evaluate or assess students when they work online.

I don't have time to teach students the basic computer skills needed for more complex tasks.

I have difficulty managing the classroom when students are working on computers.

I don't know how skilled my students are at using technology.

12. Please indicate the extent to which you believe the following are obstacles to integrating technology into your literacy instruction:

Not at all, Small extent, Moderate extent, Large extent

Lack of access to technology

Lack of incentives to use technology

Lack of time during a class period

Lack of technical support

Lack of professional development on how to integrate technology

Lack of funding

Lack of support from administration

13. To what extent do you feel students benefit when they use digital technologies such as the Internet to learn in your classroom?

14. What do you think it looks like to integrate technology into literacy instruction? Give as many ideas as you can.

15. How effective do you think professional development sessions you have attended have been to support you with technology integration?

16. What suggestions do you have for supporting teachers in learning to integrate technology into literacy instruction?

17. Do you feel that you have received adequate professional development on how to use technology?

18. Do you feel you have received adequate professional development on the integration of digital technology into your literacy curriculum?

19. To what extent do you feel prepared to teach skills for reading in online environments?

Appendix: F

Think Aloud Process/Success Analysis Protocol

Developed in the field by educators affiliated with NSRF.

The facilitator's role is to help the group to keep focused on how the success described by the presenter is different from more routine work. The *analysis* of what made this so successful is the purpose of the protocol. The facilitator is a full participant in this protocol, and each participant takes a turn as the facilitator. Each "round" (steps 2-6) takes anywhere from 23-28 minutes. "**Success**" is defined as something that proved to be highly effective in achieving an outcome important to the presenter.

1. Identify a success. (5 minutes)

Write a short description of a success. [Note: you may want to specify here the arena of the success — in terms of your work as a teacher, as a CFG coach, as an administrator, with a student, using a particular teaching strategy, etc.] Describe the specifics of the success. Be sure to answer the question, "What made this experience so different from others like it that I have had?"

2. Presenter describes the success. (5 minutes)

In triads, the first presenter tells the story of his or her "success," in as much detail she s/he can remember. The group takes notes.

3. Group asks clarifying questions. (3 minutes)

The rest of the group asks clarifying questions about the details of the "success" in order to fill in any information the group needs to be helpful to the presenter.

4. Group asks questions that help the presenter reflect upon the success. (optional step)

The purpose of these questions is to help the presenter uncover why this was so successful—to see more in the success. The presenter answers the questions, but there isn't any back and forth discussion with the group. Some examples of questions include:

- Why do you think...?
- What was different about...?
- Why did you decide to...?

(5 minutes).

5. Group reflects on the success story. (10 minutes)

Group members discuss what they heard the presenter say, and offer additional insights and analysis of the success. The presenter is silent and takes notes.

6. Presenter reflects. (5 minutes)

The presenter reflects on the group's discussion about what made this so successful. The group then discusses briefly how what they have learned might be applied to all of their work.

Appendix G

Grappling's Technology and Learning Spectrum

Grappling's TECHNOLOGY AND LEARNING SPECTRUM		
How to use the technology Technology Literacy Uses	Adapting Uses	Transforming Uses
<p>Technology Focus - Learning/Acquiring/Practicing Technology Skills NOT Curriculum *</p> <p>"Just-in-case" technology skills are acquired for possible future needs</p> <ul style="list-style-type: none"> ■ Literacy classes ■ Learning hardware and software ■ Students projects are technology focused rather than expecting standards to intentionally drive the use of technology for learning ■ Curriculum provides "topics" for technology uses <p>Instructional Focus</p> <p>Technology-centered pedagogy</p> <ul style="list-style-type: none"> ■ Teacher talk is "technology talk" rather than "learning talk." <p>Technology uses are organized for their own sake</p> <ul style="list-style-type: none"> ■ Acquiring and assessing technical skills ■ Offered as separate and/or optional experiences/programs ■ Allowed when "real work" is completed or considered alternative/"reward" activities ■ Research done to learn tools and processes ■ Teachers view technology as something to learn or do 	<p>Technology Focus - Optional/Adaptive Learning Tasks-InformationConsumers *</p> <p>Integrating is translated into "use it for something, anything...just use it"</p> <ul style="list-style-type: none"> ■ Drill and practice with content software ■ Instructional games ■ Productivity tools used to adapt assignments/tasks given in the past without technology ■ Curriculum provides "topics" for technology uses <p>Instructional Focus</p> <p>Teacher-centered, Direct Instruction pedagogy</p> <ul style="list-style-type: none"> ■ Teacher talk is "same stories with new tools" - there is confusion that new tools make new instructional stories. <p>Technology uses are adapted/provided but still optional for traditional curriculum goals.</p> <ul style="list-style-type: none"> ■ Teacher and student roles remain the same ■ Learning/assessment practices are unchanged ■ Student experiences depend upon teacher directed assignments ■ Research is "go look up" and "tell me back" (LOTS) ■ Teachers view technology as interesting but optional and not necessary to achieve present curriculum goals 	<p>Technology Focus - Essential -Information Producers*</p> <p>Integrating is "just-in-time" technology skills as needed for learning tasks /projects</p> <ul style="list-style-type: none"> ■ Complex learning and thinking tools ■ Community learning tools ■ Assessment tools ■ Productivity tools used to construct meaning, and produce information useful and beneficial to others <p>Instructional Focus</p> <p>Student-centered, constructivist pedagogy</p> <ul style="list-style-type: none"> ■ Teacher talk is "new stories with new tools." <p>Technology uses enable new learning tasks not possible without technology</p> <ul style="list-style-type: none"> ■ Student roles expand to include explorers, producers of knowledge, communicators and self-directed learners ■ Teacher roles expand to include facilitators, designers, learners, and researchers ■ Learning and assessment practices are changed ■ Students initiate technology uses as they create their own learning experiences ■ Research is sustained inquiry for original thinking and conclusions useful to others ■ Teachers view technology as essential for development of higher-order thinking skills (HOTS)
* NOTS Content	* CLOSED or LOTS Questions	* OPEN or HOTS Questions
<p>Staff Development Focus</p> <p>Designated "experts" tend to be self-initiating in learning on their own. Other interested staff mostly learn on their own time and own dime.</p>	<p>Staff Development Focus</p> <p>Participation and support while encouraged is still optional as well as unfocused. Staff development funding is inadequate - less than 30% of total technology budget supports staff development.</p>	<p>Staff Development Focus</p> <p>Essential skills and practices are articulated, expected, supported and measured for <u>all</u> teachers. Adequate funding of at least 30% of technology budget is in place.</p>
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Appendix H

TPACK Lesson Planning Guide

TPACK Lesson Building:

Class: _____

Date: _____

Curriculum Outcome (CK):

Assessment: How will you know students met the learning objective?

How will the lesson be delivered (PK)? Consider scaffolding that needs to take place in order for students to be successful.

What technology could be used to support the PCK?

What is the envisioned end result of this TPACK?

Additional notes:

(Lesson plan provided by Mathew Koehler, 2011)

Appendix I

Focus Group Informal Interview Questions (conducted by Tech Team w/ faculty members)

1. What worked well in regards to Prairie Palooza?
2. What should the Tech Team do differently next time?
3. Share your thoughts about learning how to integrate technology.
4. How do we help teachers apply their learning and integrate technology within their curriculum?

Appendix J

Example of Coding used to Analyze Data

1	Code	Data	Person	Source	Date/page
38	Connection	Presenters talked about how they used Pic Collage with students and I made a connection. I thought of ways I could use this app with my students. My mind started clicking about how to use this app with students and projects and use it when I take photos of teachers, etc.	Nancy	Interviews	5/8/2014
39	connection	Sorry- I'm using Poplet (stacy just told us about in TEch team) and I am making a graphic organizer so we can write number sentences around a certain number on iPad mins tomorrow.	Erika	TEch Team video	4/23/2014
40	connections	when working with Linda in our first mentor session, she came up with an analogy for learning Google drive. (like driving down lane to own house or going to parking lot shared with people she invites) Using analogies, connecting learning to something we know is a powerful learning tool!!	Tami	reflection journal	p. 34
41	connections	While reading chapter 3 about new tools, I was constantly thinking about how I could take this new information, especially about relevant technology uses, and integrate it into my classroom. I was especially interested in what the book had to say about blogs, knowing that I was using blogs.	Stephanie	reflection journal	p.26
42	control	I had to get over the feelings of having butterflies in my stomach, and handing over some of the learning responsibilities to my students, who gladly accepting becoming the experts and sharing information with me and their peers.	Stephanie	refleciton	p.44
43	control	I needed to let go of control and the desire to always have control. I had to allow my flexible side out and let the kids take over more control. It ended up being more engaging for them and I had fewer behavior problems. Everyone was focused on the task at hand (blogging) so letting go of control actually brought more order to our room.	Edith	Interview	5/13/2014 p. 1
44	control	In terms of technology I had to let go of control and the compulsion to be "perfect". In our profession we are overachievers who hold ourselves to high standards and the thought of a lesson that could completely flop feels like a poor reflection on us. The nature of this job turns people into "control freaks". We always have to be thinking about what could go wrong and planning ahead to prevent that so integrating technology can be a reversal of our normal role as conductors. We just have to let go and let it happen and know that it won't be the end of the world. And hope nobody comes to evaluate us!	Edith	Interview	5/13/2014 p. 1
<div> <div>+</div> <div>≡</div> <div>Learn ▾</div> <div>Barriers ▾</div> <div>Apply ▾</div> <div>Share ideas ▾</div> <div>Outliers ▾</div> <div>✓</div> </div>					

Tami Ensor grew up in Columbia, Missouri where she excelled in sports and developed her passion for literacy and learning. She attended the University of Missouri and graduated with a B.S.Ed. in Elementary Education in 1988. She taught first, second, third and fifth grades during her 18 years as a classroom teacher before moving into administration in 2005. During her years as an elementary teacher, Tami completed her Master's degree in Curriculum and Instruction at the University of Missouri. She became interested in technology integration after receiving her eMINTS certification while teaching fifth grade. Later she obtained a Master's degree in administration at William Woods University because she wanted to support teachers with instructional pedagogy, especially in the areas of literacy and technology. She worked as an administrator at Benton and Russell Elementary schools. Because Tami was passionate about learning and improving her practice, she returned to school in 2006 to obtain her Specialist degree in Educational Leadership from the University of Missouri. It was during her work as an administrator that Tami realized she wanted to improve her skills as an instructional leader. She noticed that the traditional method of providing learning opportunities for teachers was largely ineffective. So in 2009, Tami returned to the University of Missouri to obtain her Ed.D. in reading, with a focus on technology integration while also working as an administrator for Columbia Public Schools. Because of her passion for literacy, learning and technology, Tami obtained a position as a media specialist at Two Mile Prairie Elementary while working on her doctorate degree. This position provided opportunities to collaborate with teachers on literacy and technology integration. Tami loves learning and is always on a field trip. She loves to broaden her horizons and discover new things either through reading, traveling or meeting new people. She enjoys collaborating with and learning from teachers and other educators. She also loves spending time walking with her favorite furry friend, dancing with her amazing husband and spending time with friends and family.