

**EFFECTIVE USE OF DIGITAL TECHNOLOGIES OF HIGH SCHOOL TEACHERS
AS DIGITAL IMMIGRANTS IN SIX RURAL PUBLIC SCHOOLS**

by

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Problem: A widening experiential gap of effective use of technology in K-12 schools between “digital immigrants” and “digital natives” (Prensky, 2001) is becoming more evident as digital natives become classroom teachers and showcase pedagogical strategies with digital technologies. There is a dearth of research on digital immigrants who effectively use of digital technology in teaching and learning in high school classrooms.

Methods: Using a phenomenological (Creswell, 2007) approach to explore “lived experiences” (Van Manen, 1990) of secondary teachers who use technology effectively in their classrooms for teaching and learning. I conducted in depth semi-structured individual interviews with five digital immigrants who fit this description. Using purposive sampling (Bogdan & Biklen, 2007) participants were selected through nomination from their administrators. Data collection methods included verbatim transcriptions following each interview, sample lesson plans from each teacher, field notes, my reflexive journal, and member checks for data triangulation. Using open coding and recoding strategies (Strauss & Corbin, 1998) major themes and commonalities emerged from the data. The process of member checking and data triangulation ensured that participants’ voice, experiences, and viewpoints were rich descriptions of their technology experiences.

Findings: The participants’ stories revealed four key themes that captured the essence of their effective technology experiences: (a) motivation for being an effective technology user, (b) identity as a life long learner, (c) learner focused pedagogy, and (d) effective mentorships.

Conclusions: Participants focused on effective pedagogy as essential to student learning with technology as vehicle for instruction, not a stand-alone tool. They exhibited intrinsic motivation and enthusiasm for continuous learning.

Recommendations: Teachers may benefit from district level professional development opportunities to collaborate and showcase effective classroom technologies, particularly in rural areas. Districts should increase administrative support for teacher use and exploration of digital technologies in order to pique curiosity, build skills, and increase motivation.

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Chapter 1

INTRODUCTION

Introduction to the Problem

The intent of this phenomenological qualitative study was to investigate perceptions, experiences, and catalysts of digital immigrants who effectively use digital technologies for teaching and learning in their secondary classrooms. Hightower (2009) stated that a study conducted by the National Center for Education Statistics in 2000 revealed that only 23% of 1,674 surveyed teachers felt that they were well prepared to integrate technology in their instruction. Although this information is from a decade ago, it shows technology integration and preparation is lagging. The U.S. Department of Commerce concluded, “education is dead last in technology use...education is the least technology-intensive enterprise in a ranking of technology use among 55 U.S. industry sectors” (Vockley, 2008). According to Butts (2009), 11.9% of Iowa teachers, during the 2007-2008 school year, were in the 56 to 60 year old age group, which categorize them as “digital immigrants” (Prensky, 2001). According to the Annual Condition of Education Report, the average age for all K-12 staff is 42 years of age and 78% of all teaching faculty were born prior to 1978 (Iowa Department of Education, 2008). These data reveal that digital immigrants constitute a large majority of practicing educators.

Definition of Terms

While there are numerous definitions for technology, for the purpose of this study, the definition of “technology” came from the Technological Pedagogical Content Knowledge Framework (Koheler, 2008). This study focused on the “digital technologies such as the

Internet, digital video, interactive whiteboards, and software programs” (Schmidt, Baran, Thompson, Mishra, Koehler, & Shin, 2009, p. 125).

The following terms will be referenced extensively throughout the study. The digital divide as researched by Cooper (2006), Crang, Crosby, and Graham (2006), Hess and Leal (2001), Hsieh, Rai, and Keil (2008), Thomas (2008), and Varma (2009) will be reviewed in the literature review, however, for the purposes of this study the focus will be on the divide between digital immigrants and digital natives.

Digital Divide (*Prensky, 2001*). The digital divide is between the generation that has grown up with digital technology and have had the ability to use it on a daily basis compared to those that grew up in previous generations without digital technology access. The digital divide separates individuals who have grown up with digital technology from individuals who grew up in an era without digital technology. The latter are learning how to use digital technologies later in life, as it has become commonplace in daily and classroom life.

Digital Native (*Prensky, 2001; Tapscott, 2008*). Digital natives are students and individuals born after 1980. These persons have grown up with digital technology in their daily lives, including instruction in school. They are accustomed to cell phones, instant access, instantaneous knowledge, and communication due to the availability and access to digital technology.

Digital Immigrant (*Prensky, 2001; Tapscott, 2008*). A digital immigrant is an individual born prior to 1980, who did not grow up with digital technology and are learning how to fully use technology in all aspects of their daily and work lives.

Digital Technology (Koehler & Mishra, 2008). Tools, techniques and knowledge which are applicable to education and utilize computer hardware, software, and architecture which are used in learning and teaching.

Problem

A perception exists that digital immigrants, especially those above 50 years old, have a difficult time adjusting and implementing effective digital technology into the classroom. As a practicing superintendent and former high school principal, I have observed a “digital divide” in the public institutions where I have been employed, based upon age of the teachers. Younger faculty members seem to be more comfortable with digital technology, and embrace and implement it effectively, while older faculty members tend to use traditional pedagogy and are selective users of technology in the classroom. Some digital immigrants have difficulty effectively using digital technology in the classroom. This creates a gap for classroom learning. “Our students today are all ‘native speakers’ of the digital language of computers, video games, and the Internet” (Prensky, 2001, p. 1). Effective use of digital technology in K-12 classrooms impacts student learning and achievement. Studies have shown that technology can improve standardized test scores (Bain & Ross, 1999), increase student motivation (Sivin-Kachala & Bialo, 2000), and boost students’ problem solving/thinking skills (CEO Forum on Education and Technology, 2001).

Federal No Child Left Behind (NCLB, 2001) mandates have directed public school districts across the United States to provide high quality education. Included in this mandate is the Enhancing Education through Technology program that focuses on implementing technology in all content areas to enrich student learning (U.S. Department of Education, 2001). State legislative initiatives (Iowa Department of Education, 2009) are requiring a shift

towards broader utilization of technology by students and staff in K-12 classrooms. State mandates are focusing on the importance “that current technologies be integrated into all teachers’ classroom practices and all students’ experiences” (Iowa Department of Education, 2009, p. 1). These mandates do not include the steps needed to overcome a pedagogical shift, especially with educators who had been trained and taught in traditional modalities. This pedagogical shift is one example of the digital divide that is present in K-12 education.

A body of research (Ahmed, 2007; Cheong, 2007; Cooper, 2006; Crang, Crosbie & Graham 2006; 2009; Hargittai & Hinnant, 2008; Hess & Leal, 2001; Hsieh, Rai, & Keil 2008; Martin & Robinson, 2007; Swain & Pearson, 2003; Thomas, 2008; Varma, 2009) is available on existing digital divides. The studies range from socio-economic, (Hsieh, Rai, & Keil, 2008) to region, (Hess & Leal, 2001) and age (Hargittai & Hinnant, 2008). There appears to be a limited amount of research on how to help digital immigrants effectively use digital technology in educational settings. Sadik (2008) found “no previous study has examined the potential of computer based multi-media applications...to integrate technology into the curriculum to engage students in technology-rich, active, and cooperative learning situations...” (p. 491). Even with digital natives “there has been a scarcity of researchers exploring the ways in which preservice teachers can be taught to effectively integrate computer-based technology within their instruction” (Kim, Jain, Westhoff, & Rezabek, 2008, p. 275). The existence of this gap is not widely argued, however, a focus on overcoming the gap and moving towards better integration of digital technology within all K-12 educational classrooms focusing on the impact, not the process should occur. In other words, the majority of research discusses the importance of effectively using technology not on how a system can overcome the digital divide.

However, “recent literature investigating the digital divide strongly suggests that teachers can influence access and instructional opportunities that students have with educational technologies and that there are practical steps all educators can take toward decreasing the digital divide” (Swain & Pearson, 2003, p. 326). Students are accustomed to having a large amount of technology in their daily lives. Therefore, it is difficult for them to adjust to an “unwired” world. The dilemma facing many classrooms in our K-12 educational structure is the need to work with all faculty members to fully understand the power of technology, embrace the use of technology as a learning tool, and to understand that technology will change quickly, and at times, dramatically (Friedman, 2007; Miller, Miller, & Dismukes, 2005/06; Prensky, 2001; Shaw, 2009; and Stallings, 2001).

Globalization, competition, and technology impact our shrinking world (Friedman, 2007; Snyder, 2004; Stewart, 2007). Technology has become a fixture of our society; locally, regionally, and globally. As technology evolves, so too must the educational system to help prepare all students to meet the changing dynamics of the global world.

Relationship to Topic

As a current district superintendent, former high school principal, and middle school classroom instructor, I have observed that some digital immigrants have shown a strong aptitude and ability to implement digital technology into the classroom, while others are reluctant. As a district leader, I am attempting to create greater expectations for the implementation and use of digital technology into all classrooms as mandated through federal and state legislation as previously discussed. Resistance occurs at times, due to the digital divide and fears associated with implementing digital technology into the classroom by some staff, especially digital immigrants in my district. To fully understand how a district can

assist and help move all digital immigrants towards more effective use of digital technology in the classroom, a study must be done to see how some digital immigrants have moved towards a model of technology immersion in teaching and learning.

Second, I have a passion for technology and support the research that technology increases student achievement (Hanna & De Nooy, 2003; Penuel, Fishman, Yamaguchi, & Gallagher, 2007; Shana, 2009; Shapely, 2000; Ravitz, 2009). Wagner (2008), discussed the view points of John Seely Brown, an influential writer. “Brown’s view is that the Internet will have as transformative an effect on how future generations learn, work, and play as the introduction of electricity had on daily life in the nineteenth century” (Wagner, 2008, p. 171). Technology does, and will continue to have a major impact on our world.

I was conscious of how my leadership role influenced this research. I believe that I will be able to listen, learn, and understand the different viewpoints of the participants and can allow their “voice” to come through separately from my beliefs. Consequently, I am fully aware and understand that “the researchers’ interpretations cannot be separated from their own background, history, context, and prior understandings” (Creswell, 2007, p. 39). Bogdan and Biklen (2007), state that some researchers can become immobilized by their concern for their personal biases, which I will not allow to occur. I will not be either unaware or immobilized due to my relationship with the topic. I will ensure that my focus will be the following; “The goal is to become more reflective and conscious of who you are may shape and enrich what you do, not to eliminate it” (Bogdan & Biklen, p. 38). In essence, I was a good listener and sought to understand the motivation behind the journey that these digital immigrants took to become effective users of technology in their classrooms.

The intent of this research was to allow a deeper understanding, through the voices of practitioners, on how they have become effective users of digital technology in their classrooms. Their lived experiences became the baseline that created the framework and formulated the findings for this study. “Experiential knowledge is knowledge gained from experience and that is the major contribution” (Willis, 2008, p. 216). To understand the thought processes, impetus to overcome possible fears, and ways digital immigrants have implemented and embraced technology in the classroom for student learning is vitally important for all educators to hear, comprehend, and understand.

Rationale

Willis (2008) highlighted several factors to consider when narrowing down an area to study. He stated one “factor I consider is what, in my opinion, is currently important to the field” (Willis, p. 152). It has become clear that there is a digital divide in skills and ability of practicing teachers. These data tend to manifest themselves based on age and delineation between digital immigrants and digital natives, however, some teachers have been able to cross the digital divide. These teachers seem to be able to use technology effectively for pedagogical benefit and for student learning.

Purpose Statement

The purpose of this study was to explore the perceptions, experiences, and catalysts of digital technology use in the classroom by digital immigrants. Digital immigrants did not learn how to use digital technology in their daily life as it was being introduced. Instead, they needed to learn new digital technology skills on the job. This can be equated into digital immigrants needing to “fix the plane while you’re flying it” (Gilkey, 2010 p. 1). By identifying competent individuals and their stories, I hoped to bring about a greater

understanding of how these practitioners bridged the digital divide, influence professional development to help all digital immigrant staff members move towards greater use of technology, and impact future policy.

Research Questions

The use and growth of digital technology in our daily lives continues to grow. The globalized world continues to shrink due to the interconnectiveness of most people through technology. A digital divide exists regarding the amount of technology students are allowed to utilize in secondary classrooms. This divide exists between digital immigrants and digital native educators. Some studies have exposed this divide however, there is a lack of research regarding the lived experiences of digital immigrants who are effective users of technology in their classroom.

The focus of this research project was to elicit lived experiences (Van Manen, 1990) from digital immigrants who use digital technology effectively in the classroom. These practitioners taught in K-12 public schools in multiple rural districts in a Midwest state. The research questions were intended to be open ended to allow for exploration and illustrative answers from the subjects.

There were two overarching research questions. Each of the overarching questions included sub-questions to illicit further exploration into the respondents' views and experiences regarding digital technology.

1. What are perceptions and experiences of digital immigrants using digital technology in their secondary classrooms?
2. What catalysts influenced the effectiveness of digital immigrants using technology in teaching and learning?

Overview of Research Design

Using a purposeful sampling method (Bogdan & Biklen, 2007) participants were selected from six rural Midwest school districts with a combined staff of approximately 750 certified grade K-12 teachers. Superintendents of each of the schools were asked to provide names of secondary teachers who are digital immigrants and effective users of technology. Each of the district superintendents and building administrators were provided definitions of digital immigrants and digital technology that were used throughout this study. School principals were then asked to review the names, provide additional names, or give feedback on the names provided by the school superintendents. Preference was given to digital immigrants who were fifty years of age or older. The six schools were a convenience sample (Creswell, 2007, p. 127) and were the six conference schools of the researcher.

Specifically, purposeful sampling snowball process (Creswell, 2007, p. 125) was used to find digital immigrants who effectively use digital technology in their classrooms. These participants were interviewed to explore their lived experiences (Van Manen, 1990) and the key catalysts that helped them become effective users of digital technology. After completion of individual interviews, themes and commonalities were extracted utilizing open coding and recoding strategies (Corbin & Strauss, 2008). Member checking (Creswell, 2007) ensured the essence of the participants experiences were captured. Lesson plans were collected as a data source for triangulation.

In conclusion, the world is changing rapidly. Legislation is dictating a larger use and integration of technology in K-12 classrooms. A digital divide is present between digital immigrant experienced teachers and digital native new teachers coming into the workforce. This study focused on how some digital immigrants have bridged the divide and become

effective users of digital technology in their classroom.

Chapter 2

LITERATURE REVIEW

Changing World

Thomas Friedman summed up the changing world when he stated to his wife, “Honey, he confided, I think the world is flat” (2007, p. 5). Friedman discussed his belief of the flattening world due to globalization and new technology trends that have allowed instantaneous contact, communication, and transfer of digital information across the globe in a matter of seconds. The flattening of the world has an impact on K-12 education. “The world into which today’s high school students will graduate is fundamentally different from the one in which many of us grew up” (Stewart, 2007, p. 9).

There are several trends that are affecting and changing our world, which in turn will affect education. “A new virtual (i.e., online) world has emerged out of the ether and become the focus of many of our kids’ attention” (Prensky M. , 2010, p. 1). This means the traditional pedagogical models will not always be the correct delivery model in current classrooms. The inability of some teachers to utilize many of the technological devices that students use in their personal lives can cause a failure to keep students’ attention and impact relevancy in the classroom setting. “Educating or evaluating students without these tools makes no more sense to them than educating or evaluating a plumber without his or her wrench” (Prensky, 2005-06, p.10).

Anne Shaw, founder and director of 21st Century Schools states “The new millennium was ushered in by a dramatic technological revolution...will have a greater impact on society than the transition from an oral to a print culture” (Shaw, 2009, p. 12). Today’s students are

raised with technology and digital devices. These devices allow for them to be creative, gather a wide range of information and knowledge, and network socially with people throughout and around the world.

The plethora of information sources, coupled with the ability of all people world wide to add content and knowledge through social networking sites, blogging, and posting of ideas has caused an explosion in information. “The world’s volume of information will soon be doubling every few hours” (Prensky, 2010, p. 1). Access to exponentially growing knowledge can occur quickly with technology, even to the extent of helping shape and define the new information as it is being created or reported.

“This is a generation that expects to actively participate in and through their media, hence the decrease in time spent by teens in viewing television and the corresponding increase in time spent on computers, gaming, and the Internet” (Beyers, 2009, p. 218). Beyers discusses the need for students to be engaged, actively, in their learning through technology. This requires all staff to be effective users of digital technology in their K-12 classrooms.

Students come to school with different backgrounds, information, and levels of knowledge that were not present prior to the use of digital technology. “Gone are the days of working with the unformed, featureless minds of learners of the philosopher of John Locke’s ‘tabula rasa’” (Beyers, 2009, p. 220). Students have a wealth of information already explored, learned, or easily accessed at their fingertips with a digital device. This difference between the generations has helped create the digital divides that are present in the world.

Digital Divide

The discussion surrounding the digital divide has been ongoing since the first personal computer was purchased. The digital divide manifests itself in many forms. A great amount of research has been conducted to explore the reasons and origins of digital divides and the potential political, economical or educational changes that must occur to eliminate or minimize the impact of these divides (Ahmed, 2007; Cheong, 2007; Cooper, 2006; Crang, Crosbie, & Graham 2006; Hess & Leal, 2001; Hsieh, Rai, & Keil 2008; Martin & Robinson, 2007; Thomas, 2008; Varma, 2009). The following are some of the subcategories of the digital divide that have been explored.

Urban Divides. Hess and Leal (2001) focused their study on access in urban districts. The study concluded that racial inequities occur throughout different urban settings. These inequities are usually based upon lack of funding and create a gap between more affluent urban settings and those that are economically disadvantaged. They concluded, “There is nearly universal agreement that, when properly used, computers and technology hold immense promise to improve teaching and learning as well as shape workforce opportunities” (Hess & Leal, 2001, p. 765). Their conclusions stated that “financial inequity does have an effect” (Hess et al., 2001, p. 775) on the divide and policymakers must focus on funding for proper training and implementation of technology for all K-12 classrooms.

Studies have also shown that in some urban settings there are areas where technology is limited. The shortage of use in some urban centers is based upon availability and lack of knowledge. Crang, Crosbie, and Graham (2006) suggested that poorer neighborhoods have a tendency to rely on traditional modes of communication and do not use digital means to communicate or socialize. They concluded this issue is largely due to the failure of

government to improve the technological framework in underprivileged areas but also that these individuals do not see the need to utilize technology.

Other urban studies have focused on how to overcome the digital divide through focused approaches. One such approach is implementation of one to one laptop computer models. “In response to these inequities, and with assistance from the private sector, several school districts in the U.S. have committed themselves to laptop technology programs as a means to improve access to digital resources...” (Mouza, 2008, p. 447). Attempts are being made to focus on areas that are socially disadvantaged to provide greater access and use of technology to provide increased opportunities for students to succeed in the 21st century. Data appear to be mixed on the impact on student achievement at this time (Norby, 2002; Sahin, 2003; Whetstone & Carr-Chellman, 2001).

Socio-Economic Divides. Hsieh, Rai, and Keil (2008) highlighted a digital divide between socio-economic groups. They focused on how affluent and lower socio-economic students utilized information and communication technologies. They noted several disparities in use and attitude through their quantitative study. Students from lower socio-economic households had poorer attitudes and used technology less often than students from higher socio-economic and more affluent families.

Other studies have been completed to explore divides in the United States that focus on the impact on students who are socioeconomically disadvantaged. For example, Thomas (2008) focused a study on students in the Mississippi Delta. The results from her study “indicate that students in low socioeconomic areas do not have the same computer access, use, or skill level as those living in middle or upper socioeconomic areas” (Thomas, p. 12). The researcher was concerned by these findings and stated “Because U.S. citizens now need

to compete globally for technology based jobs, the lack of technology skills means even more disparity between workers both within and outside of the country” (Thomas, p. 13).

Income has been the focus of several other studies. Monthly fees for service are a concern of some of these studies. “If the gap in Internet use between the ‘haves’ and the ‘have-nots’ is pronounced and lasts more than a few years, then differential access to the Internet may reinforce already high levels of income inequality” (Martin & Robinson, 2007, p. 1). Their conclusions show a need to improve access or eliminate cost to use the Internet and technology.

Additional studies have highlighted digital divides regarding access, especially in developed countries compared to underdeveloped countries. Ahmed (2007) studied this digital divide to focus attention on the need for expanded services. His study focused on entire countries, especially Africa, rather than specific urban areas or pockets of socioeconomically disadvantaged families. This provided a global perspective of the socioeconomic digital divide and the need to offset this gap due to the nature of globalization and a flattening world.

Gender Divides. “Female students had late exposure to computers both at home and in schools” (Varma, 2009, p. 48). This conclusion came from a study exploring the gender digital divide. The study explored, through a qualitative design, student experiences, availability and the differences between male and female student beliefs on computer use and access. This study focused on female students in the United States and concluded that females had less access and exposure to computers due to gender bias from home and at school.

Cooper (2006) researched the evidence presented in over 20 years of gender-based digital divide studies. In this study, the author stated “Everyday, we risk losing the talents of women as contributors to science, technology, and the arts because the advantages that technology provide are being conveyed disproportionately to men in modern society” (Cooper, p. 320). This study focused on the stereotypes that have long term effects and contribute to the gender digital divide. The stereotyping, according to this study, will lead to the self fulfilling prophecy that girls are less able to use technology and will lead to less use by females in the future. According to Cooper, throughout this 20 year data trail, women are at a disadvantage in relation to men when “learning about computers or learning other material with the aide of computer-assisted software” (p. 320).

A qualitative study by Cheong (2007) focused on self-reported narratives of 716 Internet users in Singapore. Her results showed “significant gender differences in the proportion of males and females who were confident of their Internet expertise” (Cheong, p. 218). Her belief was that this digital divide was more of a secondary digital divide and did not have as large an impact as socioeconomic or access digital divides. “Clearly, examining the relationship between gender and Internet use is incomplete when limiting the focus to only gendered differences in Internet use. Just as important are demographic, attitudinal, and capability factors” (Cheong, p. 224). However, she did conclude that better efforts must be made to reach out to the less educated, poor and other segments of the population to boost their knowledge and comfort level with technology.

Age Divides. Prensky (2001) first introduced the terms “digital natives” and “digital immigrants.” These two terms have been used to define the digital divide based on age. Several studies (Ahmed, 2007; Cheong, 2007; Cooper, 2006; Crang, Crosbie & Graham

2006; Hess & Leal, 2001; Hsieh, Rai, & Keil 2008; Martin & Robinson, 2007; Thomas, 2008; Varma, 2009) since 2001 have focused on the digital divide based upon use, knowledge, and ability regarding technology between today's students and older generations. Many of these studies, which are discussed later in this literature review, focused on the perceptions, learning styles and ability to effectively use digital technologies. Regarding K-12 education, earlier thinking was very stringently based upon age in classification as either a digital immigrant or digital native. However, some of these approaches have been refined recently to focus upon the effective use of digital technology to group that person into the digital native or digital immigrant category.

Digital Immigrants and Digital Natives

As each new generation comes into existence they are coined with a phrase or a name to explain their conduct, contributions, or impact on society. With the generation that was born in the early to mid 1980s there was much discussion on what to call or designate as a name for this generation. "But the most useful designation I have found for them is Digital Natives. Our students today are all 'native speakers' of the digital language of computers, video games and the Internet" (Prensky, 2001, p. 1). This was the first time the term Digital Native was used. Since this term was coined, Tapscott (2008) defined a digital native as someone born after 1980. His research focused on the advent and globalization of digital technology during the 1980s and 1990s, as this generation was the first to grow up in a digital environment.

Prensky (2001) coined the term "digital immigrants" at the same time he created the term "digital natives." He stated, "Those of us who were not born into the digital world, but have...become facinated by and adopted many or most aspects of the new technology are,

and always will be compared to the...digital immigrants” (Prensky, 2001, pp.1-2). Digital immigrants were described by the generation in which they belonged, singularly on age. Utilizing Tapscott’s definition (2008), digital immigrants would be individuals born prior to 1980.

However, there has been much debate on the impact digital natives, as students, have had and will have on the educational setting. “In many ways, much of the current debate about digital natives represents an academic form of moral panic” (Bennett, Maton, & Kervin, 2008, p. 782). However, much of the research and literature focuses on the changes and challenges that digital natives will have on the K-12 educational setting and teachers. Palfrey and Gasser (2009) say digital natives “are also utilizing digital tools to change politics” (p. 109). Many of these political changes appear to be directly affecting existing framework and structures in K-12 institutions.

Research (Beyers, 2009; Palfrey & Gasser, 2009; Prensky, 2001) showcases the fact that digital natives learn differently than students who grew up as digital immigrants. “Today’s students think and process information differently from their predecessors. These differences go far further and deeper than most educators suspect or realize“ (Prensky, 2001, p. 1). Even students recognize the cognitive differences between the digital immigrants and digital natives. Prensky (2009) quoted one of the students he interviewed as saying, “There’s so much difference between how students think and how teachers think” (p. 2). The digital divide that is present between digital immigrants and digital natives manifests itself in the classroom. Digital natives want and expect to be engaged with digital technologies. They want to be connected and wired at their school similar to how they are connected in their personal lives.

Impact on Digital Immigrants

Computers and technology are ubiquitous in society. Due to this increase in technology “a substantial amount of research conducted in the area of older people’s interactions with computers” (Broady, Chan, & Caputi, 2010, p. 473) has occurred. There are several misconceptions and stereotypical views that older adults can not learn and utilize digital technology. Several studies (Broady, Chan, & Caputi, 2010; Charness, Kelley, Bosman, & Mottram, 2001; Small, Moody, Siddarth, & Bookheimer, 2009; Marquie, Jourdan-Boddaert, & Huet, 2002; White & Weatherall, 2000) have shown that this is not the case. However, there are areas that need to be explored and understood more fully in order to help digital immigrants effectively use digital technologies.

Attitudes of Digital Immigrants

Igbaria and Chakrabarti (1990) showed that negative attitudes by elderly adults affect their use and interactions with technology. Prensky’s (2010) viewpoint based on a potential negative viewpoint of digital immigrants is that:

Every year of these students’ lives, the world’s information will explode anew: Tools will get smaller, faster, better, and cheaper; people will have access to more of these tools (and will change their behavior because of them); and schools and teachers will no doubt struggle to keep up. (p. 9)

Marquie, Jourdan-Boddaert, and Huet (2002) highlighted multiple studies that showed a negative effect on computer use by older adults. The limited use of older adults, however, is “caused or mediated by non-cognitive factors, such as fears of computerization and its consequences in the workplace, age-related negative stereotypes, attitudes and lack of confidence” (Marquie, et al., p. 273). However, work by Charness, Kelley, Bosman, and

Mottram (2001) showed that anxiety and fear do not have an effect on experienced technology users who are digital immigrants. These studies do show that if older adults have some anxiety and fear about technology they will be limited users, but can overcome those fears with proper training and time.

Experience or Cognitive Barriers of Digital Immigrants?

Small, Moody, Siddarth, and Bookheimer (2009) published a study focusing on Internet searches and brain activity for volunteers between the ages of 55 and 76 years old. Roughly half of the volunteers were experienced using Internet searches and the other half were not. The four researchers used magnetic resonance imaging (MRI)s to scan the subjects' brains as they were using the search engines. The findings were that members of the experienced Internet search group had about twice as much brain activity compared to the group that had little or no experience using search engines. Again, if digital immigrants have experience in using technology and feel comfortable with it, they are able to become effective users.

Another study focused on word processing and the ability to learn command keys while using a computer. "We showed that older adults take more time, make more errors, and score more poorly on both a performance evaluation and a multiple-choice quiz than do younger adults" (Charness et al., 2001, p. 117). They went on to share that age difference will affect a cognitive task. As age increases, the time necessary to complete a cognitive task, especially technologically, will increase. Many of these digital immigrants were not experienced in using digital technology prior to the study.

Many of the studies (Marquie, Jourdan-Boddaert, & Huet, 2002; White & Weatherall, 2000; Turner, Turner, & VanDeWalle, 2007) focusing on cognitive barriers indicated that

through proper training, instruction, and curriculum development digital immigrants can obtain the necessary skills to become effective users of technology. These studies have highlighted several factors that can cause digital immigrants to form positive attitudes towards technology, including a deeper understanding regarding relevance of technology, overcoming fear, and helping them use technology for information, communication and daily routines.

Technology Use in K-12 Classrooms

Effective use of technology in K-12 schools is gathering more attention due to the changing world as previously discussed. A theoretical framework, called technological pedagogical content knowledge (TPACK), (Koehler & Mishra, 2008) has grown to be the standard of effectively integrating technology into the classroom. This framework focuses on technology as one of three core areas in education and the other two are pedagogy and content knowledge. These three areas are components of effective teaching.

Koehler and Mishra (2008) originally explained the TPCK framework as a “complex interaction among three bodies of knowledge: content, pedagogy, and technology. We describe how these bodies of knowledge interact, in abstract, and in practice, to produce the type of flexible knowledge needed to successfully integrate technology in the classroom” (p. 3). Recently “the TPCK framework acronym was renamed TPACK for the purpose of making it easier to remember and to form a more integrated whole for the three kinds of knowledge addressed” (Schmidt, Baran, Thompson, Mishra, Koehler, & Shin, 2009, p. 123).

Studies (Pflaum, 2004; Cuban, Kirkpatrick, & Peck, 2001) have shown that even in schools that focus on technology integration, many pedagogical practices remain unchanged. Hofer and Swan (2006) focused on TPACK and integration of technology into middle

schools. They discovered difficulty with merging all three fields of knowledge. “It was only in the area where all the domains of teacher knowledge intersected-technological pedagogical content knowledge-that the teachers experienced significant difficulty” (Hofer & Swan, p. 195). These studies revealed the importance of researching how digital immigrants need to integrate existing digital technologies in their teaching and learning. By exploring their pedagogical and motivational experiences using technology, a deeper understanding of how a K-12 school system may be able to increase effective use by all faculty members.

Impact of Technology on Learning

Numerous studies (Burn, Brindley, Durran, Kelsall, Sweetlove, & Tuohey, 2001; Hoffenberg & Handler, 2001; Kearney & Schuck, 2004; Ryan, 2002; New, 2006; Reid, Burn, & Parker, 2002) have shown that technology can increase student learning, achievement and other aspects of the classroom learning environment such as motivation, engagement, creativity and authentic learning.

Technology has a positive impact on student achievement. Higher-order thinking skills and problem-solving techniques were shown to be increased through several studies (Berson, 1996; Chessler, Rockman, & Walker, 1998; Scardamalia & Bereiter, 1996; Wenglinksy, 1998). when exploring technology and the impact on learning. Student achievement scores, as measured through several studies, can increase with the use of technology integrated into the classroom (Cognition and Technology Group at Vanderbilt University, 1994; Coley, Cradler, & Engel, 1998; Mann, Shakeshaft, Becker, & Kottkamp, 1999; Sivin-Kachala, 1998). A study completed by Jenkins, Purushotma, Clinton, Weigel, and Robinson (2006) found that technology builds new non-academic skills. These skills

build on the foundation of traditional literacy, research skills, technical skills and critical analysis skills taught in the classroom. (p. 19).

Impact of Technology on Teaching

Technology has changed classroom teaching. Willis and Raines (2001) explain that “Education must move from the statistic, mechanical view of the teacher as giver of knowledge to teacher/learner as integrator, guide, architect and facilitator.” (p. 413) Use of technology in the classroom expands students ability to interconnect with people outside of the school setting, create and add to the knowledge base and generate authentic and new products. Several educators are tapping into the social networking tools for teaching and learning in the classroom. The National School Board Association (2007) found that approximately 96 percent of students 9-17 years of age have used social networking tools at some time, while 50 percent use it to talk about specific school work and 60 percent use it to talk about educational topics.

Groff and Mouza (2008) described why technology may not be integrated into classrooms. They discussed six factors, each with different variables, that interact with each other to cause difficulty in effectively utilizing technology. The factors are: (a) research and policy factors, (b) district and school factors, (c) factors associated with the teacher, (d) factors associated with the technology/project, (e) factors associated with the students, and (f) factors inherent to technology. The study focused on the idea that factors may limit the ability to incorporate technology into classroom teaching, however each factor can be overcome to produce rich, technology infused classrooms. Indeed, this has occurred in several classrooms and districts across the country.

View that Challenges Positive Technology Impact

Several studies and books have explored the opposite view the the impact technology has on learning. One book, Todd Oppenheimer's *The Flickering Mind* (2003) talks about the false promise technology encompassed and how we may be able to regain our classrooms and save learning. Another book by Jane Healy, entitled *Endangered Minds* (1999), explores the concept that technology is the cause why students are unable to think.

In 2003, SRI Internation, an indended research and design group, provided a final report based upon several studies. Their conclusion stated:

It is not yet clear how much computer-based programs can contribute to the improvement of instruction in American schools. For most technologies, the results are available only at selected grade levels, in selected subjects, and on selected instructional outcomes. The literature is too uneven for sweeping conclusions about the effectiveness of instructional technologies.

However, they did say that some of the research does show how technology my positively impact student learning, however, it was difficult to determine beyond that specific study.

Overview

Technology will continue to grow, expand, and be extremely impactful in all people's lives. The focus on technology growth and use in the global economy has been discussed previously in this document, and must be considered when we explore the needs of students in K-12 classrooms. Zhao describes the growing technology as a dimension that will expand rapidly across the world and affect people in their daily and work related lives. He fears that education will not keep pace with the technology growth. "But as one dimension of the future

world our children will very likely reside in, can we afford not to consider its implications for education?" (Zhao, 2009, p. 116).

In conclusion, the world is changing. In education, technology is becoming a necessary tool to promote student learning, thinking, and achievement. We know students must be prepared to engage technology in their career fields, so school staff must be comfortable and have the ability to integrate these digital tools into their classrooms. There is a digital divide in today's public classrooms between digital immigrant and digital native classroom teachers. The digital divide can be overcome. Digital immigrants do not lack the cognitive ability, but at times may lack the confidence or knowledge to implement technology effectively. It is important to bridge this divide, as studies have shown that technology has a positive impact on teaching and learning.

Chapter 3

METHODOLOGY

Rationale

Due to the exponential growth of digital technology worldwide (Friedman, 2007; Miller, Miller, & Dismukes, 2005/06; Prensky, 2001; Shaw, 2009; & Stallings, 2001) a study exploring how digital immigrants have become effective users of these tools in their classrooms was warranted. In this study, focusing on perceptions and experiences of the participants, a qualitative approach allowed for the appropriate instruments to fulfill all aspects of a proper and useful research study. In order to focus on the voices of the participants who are effective users of technology.

“Qualitative research for education takes many forms and is conducted in many settings” (Bogdan & Biklen, 2007, p. 2). Multiple approaches exist within the qualitative tradition (Creswell, 2007). Since this study was focused on exploring participant’s experiences and perceptions regarding effective use of digital technology in the classroom a phenomenological approach was the proper methodology to utilize. A “phenomenological study describes the meaning for several individuals of their lived experiences of a concept or a phenomenon” (Creswell, 2007, p. 57).

This qualitative phenomenological study explored the lived experiences (Van Manen, 1990) of digital immigrants who effectively use technology in their classrooms. Van Manen explains:

Lived experience is the starting point and the end point of phenomenological research. The aim of phenomenology is to transform lived experience into a textual expression of its essence in such a way that the effect of the text is at

once a reflexive re-living and reflective appropriation of something meaningful: a notion by which a reader is powerfully animated in his or her own lived experience (p. 36)

However, this methodological approach is best utilized when exploring “any phenomenon as a possible human experience” (Van Manen, 1990, p. 58).

The intent was to understand teacher experiences as effective users of digital technology in teaching and learning. This study captured the essence (Creswell, 2007) through the teachers’ words and experiences. The experiences that were collected from participants provided information and guidance on future professional development opportunities for districts, helping provide knowledge to assist all digital immigrants to effectively use digital technology in K-12 classrooms, and potentially change policy.

Once again, there will be two overarching research questions. Each of the overarching questions will have sub-questions to illicit further exploration into the respondents’ views and experiences regarding digital technology.

1. What are perceptions and experiences of digital immigrants using digital technology in their secondary classrooms?
2. What catalysts influence the effectiveness of digital immigrants using technology in teaching and learning?

Participants

The study focused on selecting a small sample of 6-12 classroom teachers who are digital immigrants and effective users of technology in the classroom through a purposive sampling process (Bogdan & Biklen, 2007). Bloomberg and Volpe (2008) asserted that the “logic of purposeful sampling lies in selecting information-rich cases, with the understanding

of the phenomenon under investigation [and] the participants' ability to provide information about themselves and their setting" (p. 69).

The participants were asked to take part in an individual interview to elicit information regarding their perceptions, experiences and catalysts that influenced the use of digital technology in the classroom. This study explored secondary public school teachers at six rural Midwest public school districts. As an acting superintendent in this rural geographical vicinity, I had communication access to each superintendent and administrative leaders in these six districts. Each superintendent was asked to recommend veteran secondary teachers (grades 6-12) who were considered effective users of digital technology (see Appendix A). The definition of digital technology and digital immigrant were provided with the intent to highlight staff that were considered to be strong users of technology in their district. The request for teacher recommendations from the six superintendents took place at our monthly superintendents' meeting. I followed up with two email requests to each of the district superintendents to request names following the monthly meeting.

From the names generated by the district superintendents, I then asked, via a phone call, for the building level principals to verify the names and add additional names that could be potential participants. I asked that each of these recommendations be based on the administrator's routine annual teacher evaluations. I asked each to focus on veteran teachers who utilize digital technology effectively for student learning in the classroom. This process verified the names of teachers given by both groups with additional possible recommendations.

Three of the six superintendents responded with names that were recommendations for potential participants. Two of the superintendents did not feel their districts had the

technology framework in place, in comparison to other districts involved in the study. They expressed a concern, even though I clearly articulated everything would be held in strictest confidence and districts would not be mentioned by name, that they might be compared unfavorably with these other districts. They felt, at this time, their district did not offer the support needed for their teachers and students to be considered effective users of digital technology. One superintendent did not respond.

I received a list of 12 teachers that three superintendents believed were digital immigrants who effectively used technology in the classroom. The building principals were contacted to verify and or add names via phone (See Appendix B). The list generated by the superintendents, in each case, was created with direction from the building principals and subsequently only two additional names were added to the potential pool of participants. A total of fourteen people comprised the subject pool.

Consequently, the recommended teachers from grades 6-12 received a recruitment email (see Appendix C) requesting their participation in this research study. Fourteen recruitment emails were sent to the recommended secondary teachers. Six responded that they were interested, six responded that they could not participate, and two failed to respond. A follow up email was delivered approximately one week later to the two who did not respond, in which no response was received.

Each of the six participants, who agreed to participate, received additional correspondence and meeting times were arranged for face-to-face interviews. During this correspondence, one of the participants was unable to continue due to some personal issues.

Each participant is considered to be a digital immigrant and were born after 1980 (Tapscott, 2008). Their ages and years taught varied, but all participants had taught more

than 17. Two of the participants were female and three were male. All the participants had earned a graduate level degree from a higher institution. All five of the participants are Caucasian.

Throughout the interviews and correspondences via email, detailed field notes and reflexive journaling took place. This allowed me to explore and record my personal reactions and thoughts that occurred throughout the data collection. Further information is provided in the data collection section. The following table 3.1 shows demographic information regarding the five participants. The names of the participants are pseudonyms. Each participant, according to Tapscott (2007) would be considered a digital immigrant.

Table 3.1 Participant Demographics

Participant (Pseudonym)	Areas Taught	Ethnicity	Years Taught	Gender
Beth	Fine Arts: Band	Caucasian	28 years	Female
Kathy	Gifted Reading, Critical Thinking, Current Events, and At-Risk Support.	Caucasian	17 years (then took 6 off education) and now 2 year of teaching again.	Female
Peter	Biology 1 and Biology 2	Caucasian	20years	Male
Rich	American Government, Economics, AP American History, and Psychology.	Caucasian	17 years	Male
Walt	Pre-Calculus, Pre-Trigonometry, and Finite Math	Caucasian	31 years	Male

The in depth interview format for the five participants was derived from Seidman (2006). The first correspondence, via email, with every participant explored the “participant’s

experience in context by asking him or her to tell as much as possible about him or herself in light of the topic up to the present time” (Seidman, 2006, p. 17), as I wanted each potential participant to know the study would focus on effective use of digital technology by experienced teachers at the 6-12 grade levels. The face-to-face interview focused on the phenomenon, in this study, becoming an effective user of digital technology. The final correspondence served as a member check on the previous interviews, and was done via email.

Questions were open ended in nature to allow dialogue and discussion to bring about their experiences in becoming an effective user of technology in their classroom (Appendix D). Additional questions were asked to follow-up on comments and/or answers to fully explore participants’ experiences. Every face-to-face interview took a different path. Participants were very willing to discuss their personal interest in technology and the technology catalysts that drove them to become effective users. Consequently, each experience prompted different questions, as if in a conversation.

The district superintendents gave verbal permission for their district to participate in this research study. There were, however, still *gatekeeping* (Creswell, 2007) issues that arose. The largest gatekeeper item was the fear of being compared unfavorably to neighboring districts. Three of the superintendents expressed this as a fear when further asked to provide names of individuals. Even with assurances no district would be named, or individual identified, this was still a fear. In my field notes I wrote, “I believe part of the fear is allowing another administrator into their district, from the outside, to see what is occurring. This can be unnerving.”

Another gatekeeping issue that arose was the ability to have individuals agree to participate. In some of the responses, four individuals said they did not feel they met the criteria of being an effective user of technology. Two individuals were uncomfortable talking about their teaching strategies with someone outside of their district. Two failed to respond all together.

Human Subject Compliance

Attention, throughout the study, was given to all schools and individuals in this study to ensure confidentiality and privacy. I completed the Human Participants Protection Education on Research Teams course, required by the National Institutes of Health (NIH) for research participation (see Appendix G). Each school district and individual was given a pseudonym to prevent identification or unintentional risk.

Every district and individual received the deserved respect and autonomy. Each participant was given an informed consent (Appendix E) that allowed him or her to understand the research process, purpose, procedures, risks, confidentiality, and the voluntary nature of the research. This informed consent was given to participants prior to any research being conducted. There was little doubt that “Informed consent is the principle means by which researchers guarantee that adult participants act absent coercion” (Combs, 2008, p.32). Every attempt was made to insure no one was coerced or felt pressure to participate in the research project or the interviews.

Participants were fully informed that they were able to discontinue involvement in the study at any time, without any questions. Participants were given a twenty dollar gift certificate to a local restaurant at the beginning of the face-to-face interview. The level of risk for all participants or schools in this study were minimal, as the nature of the study was to

gather information from semistructured and open-ended interviews to gather the lived experiences of digital immigrants who effectively use technology in the K-12 classroom.

All records, transcripts, lesson plan samples, and audio recordings were kept in a locked file cabinet. The researcher was the only individual who had access to the file cabinet with the original information. Each individual who was interviewed was given the opportunity for a member check to ensure their viewpoints had been properly explained and written. A member check (Creswell, 2007) is a form of validity check to insure participants have an opportunity to review and check the accuracy of the findings and interpretations. Not only did this provide validity, but it also provided for credibility in the final conclusions and recommendations at the end of this research project.

Instrumentation

Multiple data sources were collected for this study. Throughout the study, I was the primary instrument of data collection. Sample lesson plans from each participant were collected to use as a source of data in triangulation. Each participant brought, either on paper or digitally, a lesson plan that utilized technology for student learning in the classroom. The lesson plan provided a starting point for each of the face-to-face interviews, as participants were first asked to discuss the lesson plan, the components included, what technology was utilized, and why the staff member felt it was an effective use of technology. This process was not only insightful, but allowed a comfort level to be established with each participant.

Also, at the beginning of each interview, participants signed a consent form to participate in the study and a consent form to allow the conversation to be recorded. A transcription of each interview was created following each of the interviews and kept by the researcher as a historical data set. Email correspondences were also kept to analyze data on

communication, follow up questions that occurred from the face-to-face interviews, and follow up questions regarding the lesson plans.

I also kept two pieces of data, which I created, throughout the study. One was a reflexive journal in which I kept my personal observations, notes, biasness, and personal questions and beliefs that arose throughout the study. The second data source was a booklet of field notes. The field notes allowed me to record observations that occurred during the interviews. These observations were non-verbal cues, mannerisms, location, and set up interview location and other observations that were pertinent to record.

A *member check* (Lincoln & Guba, 1985) was completed with each of the participants to ensure their perceptions and lived experiences were showcased throughout the study. This process was done via email to each participant and included an overview; the four key themes and 12 horizons, (Moustakas, 1994) and verbatim quotes that I hoped to use from each of the participants.

Trustworthiness of the Research Design

Bogdan and Biklen (2007) addressed several concerns regarding quantitative research. “The data collected have been termed soft, that is, rich in description of people, places, and conversations, and not easily handled by statistical procedures” (p. 2). The major areas of concern tend to focus on reliability, validity, generalizability, and biasness of the researcher. Each area was reviewed to ensure there was no question that the process and findings would be reflective of the lived experiences of the participants of this study. These items are addressed below.

“If one assumes there are multiple realities, the notion of reliability is no longer as relevant” (Krefting, 1991, p. 216). The intent of this qualitative study was to bring about a

representation of viewpoints from individuals (digital immigrants) who use technology effectively in their classrooms and to ensure their voices were represented dependably. Authenticating was done by the member check, coding, and triangulation. This study is reflective of perceptions and experience and may not be indicative of other digital immigrants.

Validity, or authenticity, is more easily ascertained in quantitative design through data collection and statistical testing. In qualitative studies, to show validity the “standard has moved toward the interpretive lens of qualitative research, with an emphasis on researcher reflexivity and on researcher challenges that include raising questions about the ideas developed during a research study” (Creswell, 2007, p. 206). To show authenticity of the participants, triangulation of data, including member checks occurred. Personal reflexivity occurred throughout the study, to fully understand my biases and how they might impact the findings. Qualitative researchers do not remove their bias from their study (Johnson, 1997). However, I ensure the voice of each participant is meaningfully conveyed in the final narrative.

Bogdan and Biklen (2007) point out that most researchers, when using the term generalizability are “usually...referring to whether the findings of a particular study hold up beyond the specific research participants and the setting involved” (p. 36). This approach is based upon a quantitative philosophical research model. The findings from this study most likely will not be generalizable to all digital immigrants. However, the themes and codes may be useful in crafting potential questions, professional development and future studies to allow more digital immigrants to become effective users of digital technology in K-12 public school districts across the United States. The intent of this qualitative research was to create

thick, rich descriptions so the findings can be transferred to similar contexts (Ambert, Addler, Adler & Detzner, 1995; Krefting, 1991).

Saturation (Creswell, 2007, p. 240), the process of “finding as many incidents, events, or activities as possible to provide support for the categories...finally comes to a point at which the categories are no longer represented by new pieces of information”. Saturation occurred at the end of the coding and recoding process in this study.

Phenomenology as Methodology

A “phenomenological study describes the meaning for several individuals of their lived experiences of a concept or a phenomenon” (Creswell, 2007, p. 57). “Researchers in the phenomenological mode attempt to understand the meaning of events and interactions to ordinary people in particular situations. Phenomenological sociology has been particularly influenced by the philosophers Edmund Husserl and Alfred Schutz” (Bogdan & Biklen, 2007, p. 25). Individual interviews took place to understand and explore participants’ experiences and work to condense these experiences into the essence of the participants.

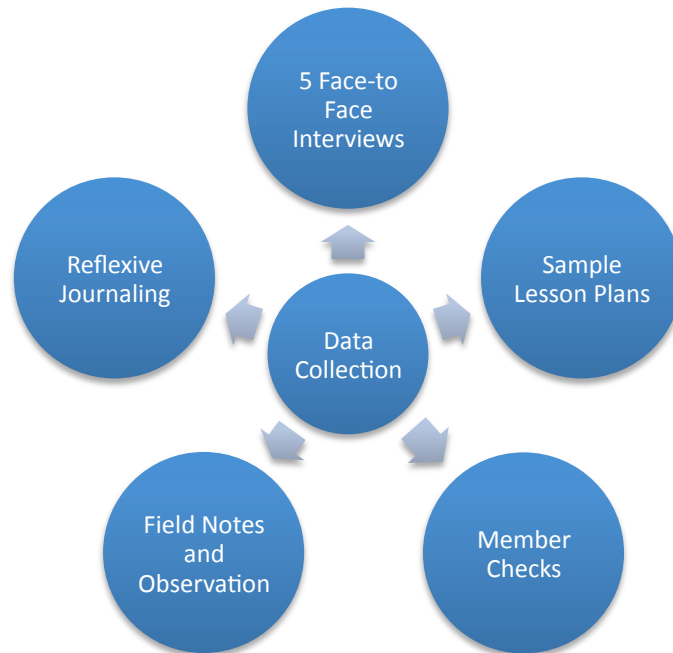
Moustakas (1994) focuses on bracketing in phenomenological research. Bracketing is the ability of the researcher to set aside personal views of the phenomenon being studied and to focus instead on the participants’ perspectives. This was difficult to perfectly achieve, however, I will be aware of bracketing concerns.

In summary, “qualitative research is vastly different from purely quantitative methods and deserves its own set of evaluation guidelines” (Ambert, Adler, Adler, & Detzner, 1995, p. 879). Unlike other types of qualitative research, phenomenology, “attempts to explicate the meanings as we live them in our everyday existence, our lifeworld” (Van Manen, 1990, p. 11). The structure was much more open ended with a qualitative approach. The hope was to

capture the essence of the participants to project their viewpoints and experiences. Through this method, I was able to understand what propelled this population of teachers to “cross the digital divide” and become effective users of digital technology.

Data Collection

Figure 3.1. Data Collection Points



I chose to study the phenomenon of digital immigrants who are effective users of digital technology in their classroom. This topic I believe is important to explore and does not have a great deal of research that has been undertaken regarding the topic or phenomenon. Since, in accordance with the design of a phenomenological qualitative study, the majority of the research was dependent on the experiences, perceptions and viewpoints of the participants and myself as the researcher. To ensure credibility, dependability, confirmability, and transferability (Anfara, Brown, & Mangione, 2002; Krefting, 1999; Lincoln & Guba, 1985) several data collection and data analysis components were developed. I fully understood my potential for bias, as a digital immigrant who utilizes and

embraces technology, so reflexivity (Creswell, 2007) was important in this study, as with all phenomenological research.

A reflexive journal and field notes were kept throughout the study. According to Bogdan and Biklen (2007), “field notes contain sentences and paragraphs that reflect a more personal account of the course of the inquiry. The emphasis is on speculation, feelings, problems, ideas, hunches, impressions, and prejudices” (p. 122). Field notes were kept and utilized immediately following each of the face-to-face interviews, throughout the coding process and during the verbatim transcription. My reflexive journal, kept throughout the entire research process, captured my personal thoughts, ideas and feelings.

Reflexive Journaling. As stated earlier, reflexivity (Creswell, 2007; Krefling, 1999; Van Manen, 1990) was an important aspect of this phenomenological study. My reflexive journal contained my personal thoughts, feelings, reactions, questions, concerns, and conclusions regarding the research and process. Throughout the reflexive journal, I included not only my thoughts on the interviews, but also on the email correspondences, conversations with fellow administrators, reflections on the sample lesson plans, and personal insights into the overall process of the dissertation and research study.

As I have read and reread the reflexive journal several times, it shows the wide range of emotions that occurred during this long process; from frustration to jubilation, personal learning that occurred throughout the data collection and analysis process and questions that arose that needed to be uncovered to further move the study forward. I strongly feel that the reflexive journal allowed me to gain a deeper insight into the phenomenon and to greater understand the participants perceptions and experiences by having taken the time to reflect on what they said and how it interacted with some of my experiences, viewpoints, and

potential biases. This process allowed for a greater ability for transparency, credibility, and validity (Ambert, Adler, Adler, & Dentzner, 1995; Johnson, 1999; Krefting, 1999) throughout the research process.

Face-to-Face Interviews. The individual, face-to-face interviews allowed me to gain insight into the phenomenon in which I was studying. Five interviews took place, focusing on the participants lived experiences. A semi-structured interview format was utilized (Appendix D). Questions were open ended in nature. “We ask open-ended research questions, wanting to listen to the participants we are studying and shaping the questions after we ‘explore’” (Creswell, 2007, p. 43).

Once participants agreed to an interview, I communicated with each of them via email and asked them to meet with me and set up a time and place for an interview. At this time, I also asked each participant to bring with them at least one sample of a lesson plan in which technology is utilized in their classroom. Four of the participants were interviewed in the school classroom in which they taught during the summer months. The classroom setting allowed us to have privacy and an uninterrupted time to fully explore the participant’s experiences. The summer months were the best time to be able to meet in the rooms of the participants, as each school was empty with no interruptions or distractions, but it also allowed them to showcase some of the technology used in the classroom (e.g., computers, iPads, mimeos, polycoms, digital projectors, etc), lesson plans, and also some samples of student work that were kept from the previous school year. The fifth interview took place in the participant’s home. In my reflexive journal, I wrote, “meeting in her home makes me very nervous and anxious, even to the point of asking if there was a better location to meet and explaining my hesitation.” Following the interview, I reflected that it was a positive

interview setting, as she had most of her teaching material at her home. Also, the participant's spouse, who was also an educator, was able to discuss some thoughts on technology in the classroom, even though his experiences were not included in the project.

At the beginning of the interviews, following introductions, participants were asked to review and sign the informed consent form (Appendix E). A copy was provided to each interviewee. Each participant was given a \$20 Applebee's gift card as a sign of appreciation for their time and each participant was informed the gift card was to be used even if they chose to not continue with the study. At this time, each participant was given a copy of the interview protocol as well. The protocol was described as a framework and not a prescribed sequence of questions.

The beginning of the interview started with me asking about their sample lesson plan(s). Participants began by highlighting the use of technology in their classroom. In each interview, it was surprising to see the detail and work that went into the lesson design. Every lesson plan was unique, which caused the interview protocol to take different directions in each interview. Several times, participants would go back and say, "Did I answer the next question on the list?" and I would remind them it was a conversation and we could address the questions in a non-linear fashion.

The interview protocol focused on open-ended questions to illicit participants' viewpoints, beliefs, perceptions and experiences in being an effective user of technology. During the interviews, additional questions were posed to provoke additional thoughts from participants. Each interview took different pathways, depending on the initial conversation that surrounded their sample lesson plans and the direction participants took based on their answers. Following each interview, I asked participants to choose a pseudonym. Four of the

five participants chose their own pseudonym, and I created one for the final participant. Within two days of the interviews I had written field notes and reflexive journaling completed.

I listened to each of the digital recordings the day following the interview, and again the second day following the interview. As I did not perform the verbatim transcription, a copy of the recorded interviews was made. A single transcriptionist was hired for the duration of the study. The copies that she used for the transcription were destroyed upon return. The single digital recording of the interviews that remains is stored on a password-protected folder on my home computer and will be destroyed upon completion of the dissertation process. All other hard copies of the data are stored in a locked file cabinet, in my home office, which I have the only key.

Following my first interview, subsequent interviews seemed to progress more fluidly. I believe I learned a great deal from each participant, but also from the interview process. Several questions seemed to arise from previous interviews that were incorporated into subsequent interviews that helped to probe deeper into the background or perceptions of the participants.

Lesson Plan Samples. To increase validity (Johnson, 1997) data triangulation was utilized. This came from the interview process, member checks, and sample lesson plans. Each interview started with a simple question, “Can you talk to me about the lesson plan you brought?” This allowed the participant to go into the lesson plan format and describe what technology was utilized and the extent to which it helped promote student learning. Every lesson plan was unique in design and format. However, each was similar in the detail and highly technological aspect that was included. Through the sample lesson plans, it was

obvious why all of the participants had received a recommendation from their superintendent and/or building principal.

One of the limiting aspects with asking for a sample lesson plan was that participants might have brought their most, and only, technology infused lesson plan. In my reflexive journal I wrote, “How many times does this technology occur in their classroom?”

Throughout the interviews it became clear that these participants infuse technology throughout the school year, but this may have been the lesson each participant was most proud of or enjoyed teaching the most compared to other technology infused lessons.

Field Notes. During and immediately following each of the interviews, I wrote field notes. “Fieldnotes—the written account of what the researcher hears, sees, experiences, and thinks in the course of collecting and reflecting on the data in a qualitative study” (Bogdan & Biklen, 2007, p. 118-119). These notes were focused to broaden the information than what could be heard on the audio recordings and read in the verbatim transcriptions. Many of the notes focused on the non-verbal communication that occurred throughout the interviews; facial expressions, body language, etc.

Each set of field notes detailed the surroundings of each of the interviews, the location and layout of the room as well as the images, decorations, and technology present. One field note detailed, “In this modernized classroom there are 4 desktop computers, a small laptop lab, an iPad, an overhead digital projector, a mimeo, and a speaker system visible when you walk into the room.”

I was also able to record mannerisms as well. Each participant was thoughtful, reflective, and mindful. Several times, in each of the interviews, participants would pause; rub their chin, look towards the ceiling, in obvious signs of thinking deeply about their

experiences. Embedded throughout the field notes are examples of passion and deep focus on student learning that could not be garnered from the written transcriptions. The nonverbal cues of hand gestures and leaning forward to show the strength of convictions were all noted throughout the field notes.

The reflexive journal, field notes, and interviews allowed me to enhance the data and correlate the data to better analyze and interpret the perceptions and experiences of the participants. Not only were these sources of information documents that could be reread and recounted several times, but they also increased credibility and confirmability (Krefting, 1999) to the data that were collected and used throughout this study.

Data Analysis

No single means of organizing data in a phenomenological study has been created (Creswell, 2007). However, Creswell states the purpose is to work toward “preparing and organizing the data for analysis, then reducing the data into themes through a process of coding and condensing the codes...in figures, tables, or a discussion” (p. 148). The focus throughout the data analysis was to ensure the participants stories, experiences, and perceptions were heard. Throughout the data collection I used Microsoft Excel® spreadsheets to track coding, organize data, cross reference the reflexive journal, interviews, and field notes, and to map the emerging themes.

Initial Coding. Following each of the face-to-face interviews I listened to the recording twice, one time each on consecutive days. The first time was to listen to dialogue and the participant’s answers to the questions. The second day, and second opportunity to listen to the full recorded interview, I had my field notes in front of me so I could cross reference some of my observations with the conversation and also to add additional

comments. This allowed me to gain a deeper knowledge and understanding of each participants voice regarding the phenomenon of being a digital immigrant and an effective user of technology in the 6-12 classroom. The recordings were then transcribed verbatim.

Once the verbatim transcripts were completed, I read each of the transcripts through once without any other documentation in front of me. I read each transcript a second time with my field notes in front of me to compare the written transcription and my hand written field notes to cross reference participants' voice and my notations on their non-verbal cues during the interviews. Each reading, the focus was to explore and record salient categories (Creswell, 2007). I wrote in my reflexive journal, "I am cognizant of validity of the data and want to ensure triangulation." This work was done throughout the initial coding phase so not only validity, but also dependability was occurring (Anfara, Brown, & Mangione, 2002).

Open coding (Corbin & Strauss, 2008) was applied to the transcripts using highlighters. During the second reading of the transcripts, a series of highlighters was used to code categories. Five highlighter colors were utilized; yellow, green, orange, purple, and blue. Each color had four markings that created separate categories; solid line, dashes, circle, and square. This process allowed me to have 20 total categories with the five colors, with two additional colors of highlighters if more categories were needed. This process allowed me to see participants experiences and support common themes and categories during the first coding.

A third reading was done with the same process to add any items to the coding that was not accounted for in the first two readings. Throughout this initial coding process, I kept my field notes, sample lesson plans, and reflexive journal close by and would cross reference the transcripts with my field notes. During the third reading in the initial coding phase, I wrote

in my reflexive journal, “This is very interesting to see how the themes emerge from the text.” It was exciting to see the lived experiences and perceptions of the participants come together and how well they seemed to blend.

Once again, as I worked through the initial coding phase, triangulation of all data points occurred to increase confirmability, credibility, and dependability of the data (Anfara, Brown, & Mangione; Krefting, 1999).

Recoding. Following the initial coding phase, I set aside the data for three weeks, as recommended (Krefting, 1999). This time away allowed me to come back to the data to view it again in a new light. This time away from the data allowed me to also utilize my reflexive journal and to further explore concepts for this dissertation in the literature review.

The initial coding was compared to the recoding process to compare the results. This process was used to increase the dependability of the results and to help ensure all of the common themes and categories had been fully explored and uncovered throughout the coding process.

During the comparison phase between the initial coding and the recoding, I looked for emerging horizons (Moustakas, 1994) and themes. The horizons, according to Moustakas, are clustered to form the key themes (1994). The intent was to continue to narrow the codes into themes that “describes the content of the notion...and reduces it an an understandable meaning” (Van Manen, 1990, p. 88). Initial categories and horizons (Moustakas, 1994) were recorded that focused on the participants’ viewpoints based on the interviews. These horizons were then clustered into key themes. Sixteen initial horizons were created from the coding/recoding process.

I continued to work through all of the data collected to fine tune the horizons. Through this process a second iteration of horizons occurred which condensed down the number of horizons from 16 to 14. This was a difficult process, as the lived experiences of the participants was at the forefront but the similarities among some of the horizons dictated they be combined together. After a third time of pruning the data using a constant comparative method (Anfara, Brown, & Mangione, 2002) 12 horizons emerged. These 12 horizons were grouped into four key themes.

At this time, saturation (Bogdan & Bicklen, 2007) of the data occurred. The four key themes and 12 horizons evolved from the perceptions, lived experiences, and voices of the participants. I wrote in my reflexive journal, “it was a tedious process to go through the coding/recoding process, but very rewarding to see the final themes, as I believe they reflect the participants voice.”

Member Checking. Krefting (1999) discusses the need for member checking to increase the trustworthiness of the results. Each participant was asked to review the horizons and key themes, as well as the quotes I intended to use underneath of the themes and horizons. All believed that their voices had been utilized effectively and that the phenomenon from their perspective had been explored.

Validity

“When qualitative researches speak of research validity, they are usually referring to qualitative research that is plausible, credible, trustworthy, and therefore, defensible” (Johnson, 1997, p. 160). In a phenomenological study, readers must consider the participants’ viewpoints, backgrounds, and biasness, as well as the researcher’s. In order to achieve valid results, thick descriptions of the participants’ perceptions include verbatim quotations from

the transcriptions of the interviews, field notes, reflexive journals and information from the sample lesson plans.

Each person who reads this study will need to examine the findings and conclusions based upon their own lens of the phenomenon as well as of their own perceptions and experiences. This study presents information based upon my interpretations of the participants' lived experiences and of my own perspectives. The results of this study may help other administrators or educators understand the phenomenon regarding why some digital immigrants become effective users of digital technology. Hopefully, this will allow a greater insight into helping close the digital divide that is present in many of our public school districts in the Midwest.

Limitations

One of the limitations of this study was researcher bias. Every attempt was made to be reflexive and understand that my experiences and perceptions were interwoven throughout this study. I engaged in reflexive journaling to bracket my bias and reported this throughout the study. The triangulation of the data through multiple data points helped to eliminate this, however it will be present throughout the study.

The small sample size was a limitation on the overall validity of the findings. The hope was to have six to eight participants. However, due to the uncomfortability or uncertainty of some districts and individuals, only five participants were able to be found and were willing to take part in this study. I believe data reached a point of saturation through the coding and recoding process and that the findings are valid, or in the case of qualitative data, the results are credible. I also believe that no new information was heard with additional participants and saturation was achieved with the five participants. The results may not

transfer to all digital immigrants who are effective users of digital immigrants, but do represent these five individuals.

Another limitation was the definition for digital technology, as this did not take into account the effective use and how this relates to the building or district culture surrounding the use of technology. It became evident that effective use was defined differently by different buildings, even at times, in the same district.

Chapter 4

Findings

Participant Insight and Overview

I thought it prudent to provide some information on each of the participants of this study. In a phenomenological study, the focus is on capturing the voices of the individuals who have been involved in the phenomenon. By describing the participants, a deeper understanding of them as individuals can occur by the reader.

Beth. Beth is an extremely focused educator who strives to utilize technology as a tool for student learning. She continuously strives to push her limits of technology knowledge through trainings, endorsements, and learning. She was very open to discuss the varying degrees and levels of achievement she has received, not in a boasting manner, but to show her passion for learning and teaching.

Extremely artistic in nature would be an excellent way to describe Beth. She showcased some samples of technology projects she has used in her classroom or created for her advanced degrees that have high levels of creativity. This may be attributed to her background in the fine arts, or her deep focus on continuous learning, but is conveyed throughout the conversation.

It is apparent that Beth enjoys conversing about education, especially technology. She enjoys the ability to show what her students are able to do, and raise to the level of achievement that is asked of them in her classes. In my perception it appeared that Beth would not be hesitant to talk about this topic with one individual or to a large group in a presentation hall.

Kathy. Kathy was deeply cerebral and mindful in her role as an educator. She had a strong sense and belief in her philosophical foundations as an educator. She talked deeply about helping students learn to be stronger and deeper thinkers and to push themselves to think analytically and critically. She felt technology was a tool that could help promote this philosophical framework.

She had a worldly viewpoint that stemmed from her work outside of education. She spent several years outside of education and understood the world in which educators must prepare student for success. This perspective added further dimensions to her success as a classroom educator.

Compassion is a word that I wrote as a descriptor in my field notes to depict Kathy. She had a deep belief that she was there to help students, learn and grow, in all areas. She believed strongly in her viewpoint that she was a teacher, a role model, and must support students, regardless of the time demands in anyway possible.

Peter. There is little doubt that Peter is a very outgoing and friendly person. An ex-college football player, he is large in stature and also large in personality. The interview started by him making small talk covering several topics. Peter would infuse funny comments and jokes into the conversation. His quick wit makes conversations flow quickly.

Peter was also very cerebral and deep in his thinking. He was cognizant of his pedagogy and the impact it had on the students. He prided himself on working diligently for his students and being impactful on their lives. The interview took place in his classroom, in which he had several boxes of student work in which he was sorting and categorizing during the summer months.

Rick. Rick arrived on his motorcycle and had the appearance of being a little free spirited, with his blue jeans and moustache, but was quite the opposite. Rick was a very concrete sequential thinker. He had asked to have the questions in advance so he could think on the answers and came prepared with answers to the questions. He was sequentially aligned with many of the answers and built upon the questions in an extremely thoughtful manner.

Rick was the first interview that I held for this study. Each interview seemed to flow more smoothly as I became more comfortable asking the questions and probing the participants. He had several profound examples of technology use in his classroom. If the interview took place third or fourth in the sequence, I would have probed much deeper into the context of the technology, but failed to do as good of job as I did later on in the interviews with other participants'. However, it was very obvious of his passion for history, students, and the learning that occurs in his classroom.

Walt. Walt is the quintessential retired coach. He is tall and well built, and appears younger than his years of experience would suggest. Friendly and outgoing is a good way to describe Walt. He exudes leadership and ability to be in control of a situation, but in a non-threatening way. Walt was able to give sports related analogies or stories in response to many of the questions that were asked in the interview. Walt was very quick to smile and laugh and truly enjoyed life.

He highlighted the focus on creating students who could think and use higher order skills. His passion was very evident when he talked about the work that was undertaken by his department to learn what colleges expected and wanted from his students. Technology, although he might have been the most reluctant technology user of the participants, was

important as he knew it was what his students would be expected to use in college and their careers.

Overview

Through this phenomenological qualitative study, I endeavored to better understand and explore the perceptions, experiences, and catalysts of secondary public school teachers at six rural Midwest public school districts. These secondary public school teachers are digital immigrants that are effective users of technology in the classroom. A digital divide (Prensky, 2001; Tapscott, 2008) does occur in our public secondary Midwest school districts. Districts must learn from digital immigrants that are effective users of technology to help minimize the gap between classroom teachers who are digital immigrants and those that are digital natives.

There were two overarching research questions. The first question was what are the perceptions and experiences of digital immigrants using digital technology in their classrooms? The second question was what catalysts influence the effectiveness of digital immigrants using technology in teaching and learning? I designed the study to help me understand what allowed these digital immigrants to become effective users of technology in their classrooms. As described later in this chapter, four main themes were evident based on the data analysis, described below. The four main themes were (a) motivation for being an effective technology user, (b) identity as a life long learner, (c) learner focused pedagogy, and (d) effective mentorships

As noted earlier, criteria for the study limited participation to individuals who were digital immigrants and were effective users of technology as seen recommended by the district and building administration and also through sample lesson plans. The 5 participants

represented a range of teachers from several districts, subject areas, and grade levels taught.

Table 4.1 provides a breakdown of participants' grade level and subject areas.

Table 4.1. Participants, Subject Areas, and Grade Levels Taught.

Participant (Pseudonym)	Subject Areas	Grade Levels Taught
Beth	Fine Arts: Instrumental Music	Middle School: 5-8 grades
Kathy	Gifted Reading, Critical Thinking, Current Events, and At-Risk Support	Middle School: 5-8 grades
Peter	Biology 1 and Biology 2	Senior High: 9-12 grades
Rich	American Government, Economics, AP American History, and Psychology	Senior High: 9-12 grades
Walt	Pre-Calculus, Pre- Trigonometry, and Finite Math	Senior High: 9-12 grades

Following the process of analysis of participants' experiences, I concluded that four main themes captured the essence of participants' lived experiences while exploring their perceptions, experiences and catalysts that caused them to be effective users of technology.

Table 4.2 summarizes these main themes and significant horizons (Moustakas, 1994).

Table 4.2. Key Themes

Key Themes—final iteration, August 2011
Motivation for being an Effective Technology User: <ul style="list-style-type: none"> • Personal interest in technology • Professional growth and learning • A need and belief of critical thinking opportunities
Identity as a Life-long learner: <ul style="list-style-type: none"> • Focused on learning new strategies and pedagogy • Exploring changing curriculum and new content knowledge • Not afraid of trial and error
Learner Focused Pedagogy: <ul style="list-style-type: none"> • Technology as a tool for learning • Increase focus on student interest level and engagement • Focus on raising student knowledge and thinking
Effective Mentorships: <ul style="list-style-type: none"> • Co-worker and administrative support • Early access to technology in career • Professional development opportunities and time

In subsequent sections of chapter four, I introduce each theme and unpacked its horizons through the words of the participants.

Motivation For Being an Effective Technology User

The first key theme that unfolded from the data collection focused on motivation for becoming effective users of technology. When exploring the reasons why each participant worked to be an effective user, each discussed the need to focus on the student learning components and keep current with the changing world. Each showed a deep passion for learning and teaching, with a primary focus on meeting student needs to provide greater opportunities. Some of the motivation was intrinsic and some was extrinsic in nature.

The interviews, sample lesson plans and document reviews indicated three motivational based horizons. These horizons were: (a) personal interest in technology and use at home, (b) professional growth and learning, and (c) a need and belief that students need deeper critical thinking opportunities.

Personal interest in technology and use at home. Each of the five participants discussed the use of technology in their personal life. The motivation to learn through personal expense and time was discussed as a strong need prior to the use of the technology into the classroom. Rich, a high school social studies instructor summed up the thoughts of many of the participants when he said “I think we owe it to students to model responsible uses of technology, effective uses of technology and if you find an old guy struggling to figure it out at least kids are seeing I’m figuring out and learning too.” To model effective use through learning how new technology can be impactful for student learning was a strong centerpiece of the participants’ interest in using technology

Peter, a high school science instructor, when asked if he considered himself a large user of technology in his personal life responded concisely with an “absolutely.” In my field notes I described the passion that Peter exhibited when talking about the technology he utilizes outside of his classroom and his belief in how it assists him in preparing for technology use in the classroom.

Kathy, a Middle School Language Arts and At-Risk Teacher, talked about the importance of personal technology use in relationship to effective use in the classroom. When asked if she saw a relationship between personal use and her professional use, she replied:

I think because I have access at home and because I own my own toys that give me confidence in my classroom because I have time. If I relied solely on an in-service that taught me how to fill in the blanks, I am not certain that I would feel like I wanted, or could, incorporate it.

Each participant discussed the strong feeling that in-service and training were important; however, they needed to have a strong understanding and time to personally use the technology to feel comfortable they were effectively using the technology for student learning and improvement.

Professional growth and learning. In addition to being motivated by personal use, a closely related horizon was a strong desire by participants to explore learning opportunities and new technology that may be used effectively in the classroom. In my field notes, it was a common theme to note the passion each participant had about continuous learning and professional growth to stay current on new technology.

Beth, a Middle School Fine Arts Teacher, discussed the importance of growth and learning to keep up with new technology, "...to keep up with technology you have to keep getting out there and see what is new. There is always something new and that's what excites me as a learner." The personal focus and internal motivation to continuously learn was evident throughout the discussion with Beth. My field notes expressed her strong desire, evident through the multiple degrees and programs she has completed. Her strong desire to learn and to provide opportunities for her students resonated throughout the interview.

When asked why she continues to look for new pieces of technology that can be infused into the classroom effectively, Kathy discussed the need to learn and grow professionally that stems from an internal motivation:

It has to do first for me just curiosity. When the new bells and whistles come along, I will squeal saying 'look at this', who knew we would be able to do this! They are moving so quickly out there in the outside world. They keep us

constantly in awe. There's maybe an intellectual adrenaline rush that I get but that has to do with how my brain is really wired to wanting to learn.

The participants agreed, however, that not all technology can or should be effectively utilized in the classroom. Each had some reservations and hesitations about different types of technology; however, all agreed on the primary focus of determining when and why technology should be implemented.

A need and belief in critical thinking opportunities. The two previous horizons discussed the internal motivations behind participants becoming effective users of technology. Participants also discussed the external motivation behind becoming effective users of technology, which dealt with the belief critical thinking and higher order thinking skills could be taught and learned better through the use of technology.

Rich highlighted his viewpoint when asked about the role of technology in his classroom through an example he provided in his lesson plans. The focus was on using technology for a research project and comparing and contrasting information. He talked about how technology allowed for students to quickly and efficiently choose sources on topics in which they were interested. Then, he challenged the students, through a proper format, to explore which is a stronger resource. "How do you critique the validity of those two different sources, and how do you give more credibility to one over the other? And so again, really trying to encourage and teach a higher level thinking from students."

Exploring critical thinking from a different lens, Peter focused on the differentiation and ability for technology to allow for deeper discussions from more students.

From giving students a choice for their particular topics they are investigating the whole differentiation concept, to forcing students to discuss concepts at a

high level. Even those students who wouldn't say or wouldn't appreciate getting up in front of the class or raise their hand in a discussion, post on line. They can not only feel free to interject without fear of repercussion from their peers, but also they can formulate their thoughts several times before they post it.

Peter focused his discussion on the need to encourage students to discuss topics and challenge ideas posed by other students and the teacher. Technology, he believed, was a way he could bring deeper discussion and dialogue to his classroom in a safe environment and at a time the student felt was most appropriate.

Identity as a Life Long Learner

Life long learner has long been a buzzword in education, replicated in many district mission and vision statements. The focus has been on creating students who are life long learners and not directed towards the employees in the school system. A common component, or key theme, that came across from each of the participants was that they drove themselves to continuously learn and grow, especially in the realm of technology.

Three horizons sprung from the participant interviews. These three horizons all supported the continued learning of the participants and included: (a) focused on learning new strategies and pedagogy, (b) exploring changing curriculum and new knowledge in their content, and (c) not afraid of trial and error in the classroom. The participants had several examples regarding their learning, with several discussing the fourth key theme of a mentor, which will be discussed later in this chapter.

Focused on learning new strategies and pedagogy. Walt, a high school math teacher who teaches higher-level math via a polycom to surrounding districts, discussed the

dilemma faced in his curricula area. “It is kind of a continuous battle in the math department. How much of the old way do we teach and how much technology do we bring in that may undermine some key concepts?” Walt’s comments followed a discussion about setting up a summit with the local college to discuss and ask, “what pencil/paper things don’t we need to teach anymore. Teaching technology can take time so what things can we throw out that we used to spend a lot of time on so we have more time teaching technology.” With Walt leading the way, the entire department was trying to learn and grow through the discussions with the college to determine what strategies were best suited for their students to prepare them for the future.

Beth epitomized a digital immigrant striving to learn new strategies and pedagogy and utilizing technology in the classroom. As a 28-year educator she has gone back to receive a master’s degree in education technology, and received two certificate degrees. One of Beth’s degrees is in online teaching and learning, and the second educational certificate is in educational media design and technology. Also, Beth finished her National Board Certification in the last five years. “Those were some of my learning opportunities...once again they were really practical applications to my classroom.” In my field notes I noted that Beth continuously took advantage of professional learning opportunities, always looking at new ways to impact her classroom. “I don’t know if I’ve really ever come across anything that just doesn’t work. Music is so creative. As technology keeps changing, my ideas of what I can do keeps changing.”

Learning new technology was important for Kathy. “It was how I was best going to serve my lessons, my presentations, my students, and so forth.” She expanded and explained that there is a constant learning and growth that must occur to continue to implement

technology effectively. My field notes described Kathy as being cerebral and a strong philosophical based educator. For her to utilize and implement technology it must be done with an end in mind. “I want to choose it (technology) mindfully, intentionally for purpose and reason.” Kathy discussed always striving to find new pieces of technology through learning and exploration that could be used for student growth and exposure.

Exploring changing curriculum and new content knowledge. Each participant discussed the changing curriculum, information, and/or content knowledge in each of their subject areas. The need to use technology to help decipher the new knowledge and information that is accessible to students was addressed by Peter. “Science is seeking out what is true and learning should be the same. Technology gives us a chance to do that. A chance to do that for every kid.” In my field notes I recorded a statement during this discussion that I believed explained Paul’s focus “he has a passion to use technology to help all students delineate good information from poor information and to have students critically reflect what is true and proper learning.”

Rich discussed the impact technology has in his content area of social studies. He discussed the limited access to information and knowledge, for many years, was through print materials. Referencing the House of Representatives changing every two years and the government printing “red books” that provided information on the representatives, Rich said:

And now with two clicks you are on senate.gov, house.gov and being able to find a biography on where they stand on issues. So just in time access is wonderful as opposed to the archaic nature of books. From a research effect, having kids walk through that periodical index, you never had any idea whether or not they were finding something useful. Being able to use various

search engines to come up with and access information cuts that process by 100% in terms of the time and availability of information.

Rich believed that technology provided efficiency while giving students and teachers access to a greater variety of information and knowledge.

Not afraid of trial and error. Participants, in various forms, discussed a predisposition to try technology in a new lesson, understanding it may not be as successful as they hoped or planned. This horizon presented itself in several ways but each could be classified underneath participants' striving to be life long learners through trial and error. The range of trial and error differed significantly among participants'. However, each talked about the need to improve and try new strategies that stretched them as educators.

Walt, during the conversation about teaching kids via the polycom, and allowing Ipads to be used for a calculus activity, discussed two students who were partnered together for an activity. Every student was in his or her own classroom twenty miles apart and the teacher challenged them to collectively come up with the volume of a vase that only one of the partners could hold. "The students found conversions through a new app [sic] that automatically calculated the volume in centimeters from their measurements in inches." Through this trial and error and allowing students to research and explore how they can use technology differently to reach the correct answer highlights the ongoing life-long learning that Walt exhibited.

Kathy summarized the essence of the participants' viewpoints regarding the use of trial and error in the classroom. She was talking, similar to Walt, about a new application that she discovered that could be used in the classroom for student learning. The application

allowed students to replace traditional note cards into an online game simulation that was interactive in nature to help students learn spelling words, facts and figures, etc.

But it's a new age note card. I haven't figured out how to do that yet, as you can see here's my first attempt, but you see that is the other thing; I'll figure it out. In order to do this I have figured out I have to do that. So I will. Then the point is that will satisfy my need to learn something new but I will actually use with my 5th and 6th graders.

Later in the interview with Kathy she came back to the topic of trial and error. She shared that trial and error can cause great breakthroughs in learning for the teachers and the students. "Sometimes you don't know what you are doing and you do it anyway. And that's been the way you get from the buggy to the car, the car to the airplane, or whatever." The motivation and desire to learn new technology that can be implemented and then striving to try it for the first time in the classroom was a strong motivator for these effective users of digital technology.

Learner Focused Pedagogy

Utilizing technology effectively in the classroom for student learning was a key theme that arose throughout this research. Throughout my field notes I commented about the student focus and the importance from each participants' view to utilize technology to help students learn and achieve at higher levels. Three key horizons emerged from the coding process. These three horizons were: (a) utilization of technology for student learning/tool for learning, (b) increase focus on student interest level and engagement, and (c) focus on raising student knowledge and thinking.

When probed to describe why technology is chosen it continuously came back to being student focused. Each key horizon focused on an aspect that arose from the desire to always be attentive to the needs of the students and a desire to be learner centered, not teacher centered.

Technology as a Tool for Learning. In my field notes, I wrote “technology as a tool for learning”, for four of the five participants. It was a common horizon that reverberated during the conversations, especially when participants were asked how they chose and decided if technology should be used in a lesson plan. Ultimately, the answer came back that the first priority was student learning through choosing the right approach or tool. Technology tended to be a tool that was preferred, but it was not the only tool that could be utilized, and would not supersede another tool that could be used if it was better for student learning.

Rich discussed how he believed the tool allowed him to reach all students in his classroom. “I can see that my lower level students enjoyed the computer lab and so for me it has always been a tool that can effectively reach a different level of learner”. In my reflexive journal, I wrote “An ability to differentiate?” This topic came up later with Rich and indeed he saw that technology can be a tool that is used to allow all level of students to showcase their learning through unique and authentic means.

The key theme, in which this horizon is under, was learner focused. The participants felt strongly that the curriculum, based on what students needed for their learning, drove the lesson plan. Technology should be a compliment to the lesson plan. Beth explained this concept very well. “Even though technology is really pervasive in my life it is

still just a tool. It's not technology it's the curriculum. The curriculum drives the technology. Not the other way around."

Beth continued to talk about the need to explore technology as a tool. "We have garage band to record our performances in a number of ways. We talk about how you should sound and create a virtual concert and share the work with our parents at our spring concert". The curriculum and focus is to help students learn and grow as musicians to perform well. A tool that allows that to happen is technology; to create multiple opportunities for students to perform, record, and showcase their best work.

Increase focus on student interest level and engagement. Each participant discussed the perceived increase in student engagement and interest when technology was presented and used in the classroom. Beth talked about the transitioning from an older, traditional lesson plan to one that included technology as a tool to bring about better engagement. "I had to find a better way for the students to use the technology, a more effective way. I needed to be more student centered so they do the majority of the work and are engaged".

Walt focused on when he first started to transition toward utilizing technology in the classroom. "Kids thought it was cool to have technology being used so they're anxious to learn. You rarely, when you teach technology, have the kids dragging their feet. They like it". He believed that students were more engaged and willing to use technology, especially with the new applications on Ipads and the graphing calculators.

When discussing, early in his career, the opportunity to observe a co-worker who was using technology, Peter said, "When I did stop in to observe there were no discipline issues, there was no disengagement, there was no one complaining about what they were

doing. Every kid's nose was eight inches from the screen." This observation, as Peter discussed, was a motivating factor in his movement towards greater technology use in the classroom.

Focus on raising student knowledge and thinking. Throughout my field notes and the reflexive journal I had notes that said; "raising the bar", "focused on critical thinking", "higher order thinking skills a priority", and "technology expected to raise learning level". These notes were recorded throughout each of the five participant interviews. It was such a strong theme, it may have stood on its own as a key theme, but I felt it was best suited underneath learner focused.

"Even though technology is going to change drastically, what we are really trying to do as teachers is instill critical thinking skills in our students and use technology towards that end" described Rich. In my field notes, I wrote that Rich focused on "the strong need for students to exhibit and learn critical thinking skills" as he mentioned this on three occasions during the course of the interview.

Kathy, who teaches a critical thinking class for middle school students, focused on how technology allows her to meet her classroom goals. "In teaching critical thinking topics has made me feel even more strongly about what I am going to do [with technology], what I am asking my kids to do and is it worth their time to challenge their thinking at a deeper level".

As a high school math teacher, Walt focused on critical thinking as a need for students to be successful in life. "I think the number one thing employers appreciate about a good math student is their ability to logically think and maybe grind a little bit and be able to recognize something isn't right, is it a reasonable answer?" When using technology, he

focused on how it would add to students ability to solve problems, balanced with the students need to understand the deeper concepts in higher-level mathematics.

Peter discussed his early access to technology, through a classroom visit to a mentor, as being an important event that helped solidify the belief that technology can cause students to learn and think at higher levels. When talking about in class technology simulation, “These kids are actually solving problems with the simulation and thinking the whole time”. The focus was on the problem solving the students were doing; due to the technology they were using, that helped cause him to become a more effective user.

Effective Mentorships

Several times throughout the interviews, field notes, and in my reflexive journaling, a strong mentor and/or a catalyst that motivated these individuals to be effective users of technology emerged early in their career. Each individual had a person, an event, or a combination of both that they remember helped push them towards effective use of technology. This early influence was a catalyst that either propelled the participants into a leadership role or caused them to be seen as a valuable member of the school system in which they worked. Each person reflected positively on these memories and with clarity as a point in time that helped them become a stronger educator and technology user.

The mentor may not have been one individual. Each time this key theme was broached in the discussions, each person would reflect about the impact. In my field notes, in response to Peter talking about a mentor, I wrote, “very passionate about his early mentor and you can tell he has a strong connection to him.” Each person who had a mentor had the same zeal and affection for what that person did, in some cases unintentionally, to help them early in their careers.

The catalyst early in each of their careers, outside of a mentor, varied and is described in great detail later in this section. Several motivators were discussed, interwoven throughout the conversations. Some have not been listed in this section, as they seemed like a traditional catalyst that in which all-early educators would have access. However, the early catalysts that helped shape and direct the participants towards becoming effective users of technology, and caused them to think differently about technology were noted.

This key theme, after a great deal of coding and recoding, had three horizons. Those three horizons were: (a) co-worker and administrative support, (b) early access to technology in their career, and (c) professional development opportunities and time. Each of the horizons evoked strong emotions from the participants as they relived, and reflected, on the influence these events had on their professional, and some cases, personal lives.

Co-worker and administrative support

As previously discussed, Peter had a powerful opportunity when he was a young teacher. “I had a very important mentor in my early teaching years who regularly said every generation has a chance to get it right.” In my field notes, I noted how mindful Peter was regarding his feelings of appreciation and gratitude he had for this individual. He went on to explain further how impactful this person was to him at the time, and even now later in his teaching career. “Probably six or seven years in to my career I taught with a gentlemen that let me watch his class and was a strong experience that caused me to see what technology could do in education.”

Another high school teacher, Rich, had a staff member that had a passing conversation with him that was a catalyst to help him become an effective user. The conversation took place with a mentor and was a discussion that took place regarding the first

computer they had installed in their school district. “Oh you will pick it up fine, you are willing to push buttons and find out what to do. And that was a real positive encouragement to me, to be seen as tech savvy from my mentor.” Rich said this was a time when he felt he was viewed as someone who could learn technology quickly and can help other staff members learn it as well.

At times, it was not another teacher that was the mentor. Kathy felt her school superintendent, who she believed was an early catalyst for her to become a more effective user of technology, gave her an opportunity. “My superintendent invited me to be a part of the STAR school training. That was a big deal. If my superintendent has enough faith to send me, I must not be a total loss, and that is a confidence builder.” In my field notes, I wrote that Kathy was very reflective and solemn when speaking about this event. Obviously this individual was a mentor who helped her see and understand how to be a leader, and in this case, with technology in the classroom.

Early access to technology in career

It became apparent that a catalyst for a majority of the participants was early access to technology, either early in life/up-bringing or in their professional career. Each participant discussed curiosity as a personality trait. The desire to learn and grow, always focusing on what piece of technology may be an asset to help promote student learning, was a common viewpoint. In my reflexive journal, I wrote the question, “Does early access promote curiosity, or does curiosity dictate creating and finding opportunities for early access?” It appeared that curiosity drove these participants towards early access.

Rich discussed both of these concepts when asked about where he believed his interest in technology originated.

As a child I'm not sure what moved me in that direction. What moves those people that are my contemporaries, those that throw up their hands and say I will never use an iPad. I know when Atari first came out, I was one of the first to have those, I think it is curiosity and enjoyment of new technology.

Rich expressed frustration that some of his co-workers do not fully explore the learning opportunities that may be present with a higher degree of technology integration.

Exposure in high school while taking a technology related class is a memory that Peter recollected in our interview. When asked about where he believes his passion originated, which was evident throughout the interview, he responded, "it comes from having been exposed pretty young. Sophomore year of high school I had the chance to take a programming class. I gained an intrigue for problem solving." Peter discussed his inquisitive mind and that the programming class provided an avenue to engage that passion. This was a specific moment he felt propelled him into becoming an active user of technology.

Three of the participants discussed the first computer that was purchased by the district in which they were working at the time. Kathy, a middle school teacher, said,

It has to do first for me with curiosity. We had one computer that all faculty got to use and I was one of the few that used it. I had friends in Antarctic that we could email back and forth daily, when regular mail took weeks. I do believe there is an addictive element.

She was an early user and saw it as a way to make communication easier, as a tool to accomplish an act quicker than what could be done before the computer. This was something that caused her curiosity to increase as new technology arose, and was

one reason why she continues to explore new technology to promote student learning.

Beth also discussed the first computer in her district as being an important aspect. “I’ve literally been using technology since 1984. I was involved with a pilot program with one computer at school.” She was able, through this early access, to learn and have some training that helped spur her to further explore how digital technology may be used in the classroom.

Professional development opportunities and time

Professional development opportunities also were a factor that four of the participants discussed. Throughout the interviews, professional development opportunities were interwoven into the conversation with early access, as training occurred when the district first obtained digital technology. However, two participants had specific experiences that fell outside of the early access horizon.

Walt, a high school math teacher, remembered the first opportunity to utilize the new calculator technology. “We were able to receive some training through our Area Education Association (AEA) and attending a couple of the regional National Council of Teachers of Mathematics (NCTM) meetings.” He felt that this was highly valuable, as it gave an opportunity to see, outside the traditional pedagogy, what could be done to promote and streamline student learning in the classroom. I wrote in my reflexive journal, “This was an important training opportunity, as it gave a wider lens in which to view technology.”

Beth, who holds several degrees in technology, equated some of the coursework as professional development opportunities. A great majority of the classes were focused on technology and integration. “Several professional development opportunities occurred

through my Masters degree, two certificates, and National Board certification.” In my field notes, I wrote, “Wow, she is truly focused on her own learning and striving to improve each day.”

Time was noted throughout the interviews by each of the participants’. Time is needed to learn the technology, understand how it can be implemented into the classroom and reflect on the effectiveness regarding student learning. The five participants discussed their willingness to take time, at the sacrifice of other personal aspects, but this is not always the case. Time during the school day, through professional development is not enough to fully implement the technology was spoken by each participant.

In conclusion, out of the data analysis came four key themes. Those key themes were 1) motivations for being an effective technology user, 2) identity as a life-long learner, 3) learner focused pedagogy, and 4) effective mentorships. Each of these key themes had three significant horizons that were clustered to create the four main themes. Saturation did occur as no significant additional knowledge was obtained with further interviews and the coding and recoding process created the same horizons and key themes.

Chapter 5

CONCLUSION

Overview

Teaching and learning is an ongoing learning experience, not only for the students, but also for the adults. I am a career educator and now a third generation administrator in rural, public K-12 school districts in the Midwest. I have spent the last 11 years as an administrator striving to impact increased use of technology in the educational classroom to increase student learning. Each year, I see evidence of the digital divide (Prensky, 2001) as we have new, younger digital native teachers come into the work force compared to some of our veteran, digital immigrant teachers. Each district has digital immigrants who are effective users of digital technology and some that were reluctant users.

As I have worked to lead school wide, and district wide change I have noticed that some digital immigrants are reluctant to embrace the challenges and changes that come with digital technology use in the classroom. In my attempt to discover why some digital immigrants become successful users of digital technology, I found a limited amount of data and research. Hoping that the lived experiences of effective technology use by digital immigrants could add to the collective knowledge in the field for all practitioners, this study was undertaken.

As more pressure, due to society and mandates, occurs to increase technology use and literacy by students in the classroom, I have concluded that all districts must consider how the digital divide can be overcome or at least reduced. K-12 school districts must be prepared to help all staff, but primarily digital immigrants to become more effective users of digital

technology. When teachers and administrators have a better understanding of how individuals perceived their experiences, more specifically what are the perceptions and experiences that have helped some digital immigrants to be effective users of digital technology, a deeper understanding may occur. If these lived experiences are understood, then measures may be taken to help aid future districts to cope and improve on this phenomenon and work to close the digital divide that may be present in their district.

As readers review and understand the phenomenon of digital immigrants who are effective users of technology, they must deliberate on the divergent characteristics and perceptions of the researcher and participants, which ultimately affects the readers' evaluation of the results. The transferability of this phenomenon occurs as the reader examines the study for its situational uniqueness and applicability to specific circumstances. Dense descriptions of the participants' perceptions include numerous excerpts from verbatim transcripts, field notes, and reflexive journaling.

Throughout this study, I was able to gain insight into the participants' viewpoints and experiences as they saw, remembered, and perceived them at the time of the study. From their accounts and narratives, I assembled four key themes. These key themes will help school leaders to potentially understand and be impactful when working to close the digital divide. Also, as we look to continue to create educators who are passionate, life-long learners, this may impact how we prepare future educators through teacher preparation programs and mentoring programs as they enter the profession.

My passion as a K-12 educational leader is a factor in this study. I have grown up discussing and exploring impactful and beneficial changes in education to improve student achievement. I have seen the positive influence digital technology can play in increasing

student achievement. I have been around technology since I was young, even though I am considered a digital immigrant from the work by Prensky (2001) and Tapscott (2008). Also, my focus on systemic change and implementing best practice has been honed through several years of discussions, learning, and upbringing in a family focused on educational leadership, coursework and professional experiences. I regularly speak to my colleagues about the digital divide, have taught technology immersion courses in the districts in which I have worked, and am on technology integration committees at the regional level. However, I do understand the frustration and at times fear that some staff, especially digital immigrants, have in using technology effectively in the classroom.

During the past 11 years, I have discovered that some digital immigrants become highly effective users of digital technology, while others, at times become adamantly opposed to using technology as a tool for student learning. Through this study and analysis of the lived experiences of digital immigrants who are effective users of digital technology, I discovered common themes that will be helpful to current digital immigrants and administrators.

Throughout this study, participants expressed common themes from their technological experiences. These experiences suggest that digital immigrants who are effective users of digital technology in their classroom are life long learners, strive to challenge their students thinking at higher levels, have early access and mentoring, and are highly motivated individuals. However, each of the participants did express the view that technology is a tool and does not supersede their curriculum.

Digital immigrants, administrators, and district administrators who understand the perceptions and lived experiences (Van Manen, 1990) of digital immigrants who effectively

use technology in the classroom will be better equipped to move more digital immigrants towards greater use. As school systems continue to look at increased integration of technology, understanding this phenomenon will help add to the knowledge base and increase the effectiveness of change.

Reflections

I believe humans, as learners, generate viewpoints, knowledge and meaning through the experiences that occur from our interactions with our surroundings and ideas. This philosophy of learning is based upon the constructionist view, posited by Jean Piaget (Creswell, 2007). Constructivism allows for learning to occur through each interaction, experience, and idea. Each and everyday, throughout this research, and through my personal and professional roles, I attempt to approach each of these interactions as an opportunity to learn. These learning opportunities are constructed through my own understanding and interpretations, which will vary from others. As individual people read this research, they may make, and take, different meanings and learning's away from this study. To understand this concept, from a constructionist viewpoint, allows each individual to continue to grow and learn as we interact with others viewpoints and understand the lens in which they interpret. Creswell stated that constructivists “seek understandings of the world in which they live and work...meanings [that are] varied and multiple, leading the researcher to look for the complexity of views rather than narrow the meanings into a few categories or ideas” (p. 20).

Throughout this study, I was mindful to understand that each participant had a unique lens in which they viewed their perceptions and background in becoming an effective user of digital technology. Throughout the interviews, reflexive journaling, and field notes, it was apparent that an inherent, intrinsic motivation occurs in each of the participants. The intrinsic

motivation manifested itself in multiple forms, but ultimately was focused on how to increase student learning. This common theme was a bond that was interwoven throughout and was obvious by the passionate response present with each of the participants.

School support, although not a key theme or horizon, seemed to be somewhat significant. Each of the districts represented had several supports; modern technology, technology internationalist/technology directors, and modernized facilities capable of handling digital technology and connectedness. This was not part of the discussion, and was only brought up by one participant, however, was evident in each of the districts I was able to visit during the interviews. More prevalent was the support of mentors early in the careers, and the support from the districts at that time to implement technology, even though it may have been a single computer.

Camaraderie, similar to the district support, was another aspect that was not a theme or horizon that arose, but was mentioned as an afterthought by two of the participants. Even though they had a high degree of personal use, were comfortable integrating and using new technology, they felt that the support from their peers was immeasurable. Fostering a school environment that supports innovation through collaboration has an impact, although one not fully explored during this study.

Throughout this research project, I was surprised by the willingness of the participants to discuss their use, perceptions, and background with technology. They were very willing to bring, and fully discuss, sample lesson plans regarding how they have utilized technology effectively for student learning. Three of the participants had student work samples they shared. Each of the samples were digital work that students created and were stored on a website.

It seemed like there was a sense of pride that each person had, as they felt they were effective teachers and had come to embrace the use of technology for student learning. Each pathway was different. I would say this is due to each person learning from his or her individual experiences and seeing the world through their individual lens. Although not the focus of this study, I feel this is the time to provide a caution that I do not believe that technology made the participants' better teachers. Each of the participants were good teachers prior to digital technology being integrated into classrooms.

Literature Review and Findings

In the literature review, research has shown that technology is changing our world. We are more interconnected and globalized than in the past. Federal and state mandates for integration of technology into the classroom are present across the country. Each of these participants understood the dynamics of the changing world and the impact it has now and for our students in the future. They embraced the challenges of integrating technology into the classroom for student learning, but also as a means to prepare them for the flattening world.

As we look at the digital divides that are present in all districts, these participants showed it is possible to bridge the divide and be a digital immigrant and an effective technology user. Each had different experiences and somewhat different catalysts but proved that the digital divide is a divide that can be minimized or eliminated.

The research shows that technology has a positive correlation and impact on teaching and learning. Each of the participants affirmed this research, not only in the conversations, but also in their lesson plans and subsequent examples of student work. The integration that was occurring by these teachers was done mindfully to have the greatest impact on student

learning. It not only elevated the expectation for student achievement, but also raised the level of teaching. As the participants talked, it was amazing how they felt technology positively impacted the classroom, from the students to the teacher.

Recommendations

Even though the findings included in this study are limited to a small population of digital immigrants with similar backgrounds, their perceptions and lived experiences lead to the following recommendations that can be utilized in public school districts to help narrow the digital divide that may be present. Each staff member discussed peer relations that were present in order to be collaborative. Districts should work to have collaborative time for staff to discuss and explore technology that may be integrated into the classroom.

Technology use in the home was prevalent throughout the discussion with the participants. Districts, when working to integrate technology into the classrooms, should allow the teachers to take home the technology to build their comfort level. Many times, if the participants felt they did not have ample time to “play” with the technology it was not utilized effectively in the classroom.

Internal motivation was one of the driving factors that were a theme seen throughout this study. The motivation perpetuated itself in the struggle to continue to learn as a life-long learner, continue to challenge students to think and learn at higher levels, and to adapt the curriculum to best-fit students in the 21st century. Districts must work to show and give professional development that builds on teachers’ internal motivations to constantly improve and show how it will be beneficial to the learning that is ongoing in any classroom.

Districts must work to build a culture of trial and error in order to move toward effective use. Participants discussed this concept in several aspects, but talked about the

support and culture that was in place in their districts to try out new pedagogical strategies, especially through technology. This focus and culture allowed these participants' to develop a trial and error mentality and eliminate the fear of failure attitude that may be present in some districts.

Finally, time is important. Participants talked about the time to find and implement effective technology tools into the classroom. Each was willing to give the time necessary, but it must be given at the sacrifice of other priorities in their lives. Time, similar to the ability to collaborate, should be explored in the school day or school year. This is an important factor and may be combined with a partner or mentor. If time in the day is unable to be provided, potentially a digital mentor, providing guidance, suggestions, and technology tools that may be implemented into the classroom.

Implications for Future Study

This study does not offer generalizations for the entire population of digital immigrants across the country. This study was limited to the lived experiences of digital immigrants in rural Midwest districts. The participants were similar in age and demographic background. Future studies should address diverse demographics of digital immigrants such as urban, rural, and international participants. Researchers should consider the demographics of participants, including socioeconomic status, gender, race, and early access to technology.

Also, researchers should look at the educational environments of participants' schools. The cultures within the schools tend to be an indicator of technology use. This is either due to the culture of the district in which they work or the amount of technology that is present for staff to utilize in the classroom.

Finally, each of these districts was a rural district. One aspect that may need to be explored is the transient nature of teaching staff and the effect access to digital technology may have on retention of younger staff. It appears a greater number of younger families desire to live in urban/suburban settings and this will have an effect on retention of staff. A study may be needed to determine if retention can occur if a greater access to technology is available for digital natives.

Final thoughts

This study highlighted the voices of digital immigrants that are effective users of digital technology in the classroom. Throughout the study, my thoughts as a researcher were interwoven. The lens in which we see the world is determined by elements all around us. As a constructivist, my worldview explores making meaning from experiences, both past and present, to find meaning. As an educational administrator, I see a digital divide present in school districts. This study was focused on obtaining information and lived experiences about how some digital immigrants have become effective users of digital technology.

This study presented a phenomenon through the interpretations of both the participants experiences and perspectives, as well as my own. It is hoped the lived experiences of participants in this study may guide future research and growth in overcoming the digital divide and helping digital immigrants, or reluctant digital natives become more effective users of technology in the classroom.

Most important, however, this study highlighted the voices of digital immigrants who are effective users of technology in the classroom. Participants shared their stories with enthusiasm and honesty, expressing thankfulness for the opportunity to reveal their experiences and to talk about the passion they have for education and youth. Hopefully

digital immigrants, and educators, will gain insight into their own experiences and perceptions through the experiences and stories of these participants.

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APPENDIX A. SUPERINTENDENT CONTACT

Dear Conference Superintendent;

As each of you are aware, I am currently working on my dissertation through Drake University for completion of my doctoral degree. The title of the dissertation is: Effective Use of Digital Technologies of Secondary School Teachers as Digital Immigrants in Six Rural Public Schools.

I would like to request that you would work with your middle school/junior high and high school administrators to recommend some veteran teachers who effectively use digital technology in the classroom. Below are the questions I am exploring, as well as, the definitions that are being used throughout this research study.

I would also like to follow up with the building principals in the next few weeks if you are comfortable providing names of teachers. If you are not comfortable, I completely understand, as this is voluntary in nature.

Research Questions:

1. What are perceptions and experiences of digital immigrants using digital technology in their secondary classrooms?
2. What catalysts influence the effectiveness of digital immigrants using technology in teaching and learning?

Definitions:

Digital Divide (*Prensky, 2001*). The digital divide is between the generation that has grown up with digital technology and have had the ability to use it on a daily basis compared to those that grew up in previous generations without digital technology access. The digital divide separates individuals who have grown up with digital technology from individuals who grew up in an era without digital technology. The latter are learning how to use digital technologies later in life, as it has become common place in daily and classroom life.

Digital Native (*Prensky, 2001; Tapscott, 2008*). Digital natives are students and individuals born after 1980. These persons have grown up with digital technology in their daily lives,

including instruction in school. They are accustomed to cell phones, instant access, instantaneous knowledge, and communication due to the availability and access to digital technology.

Digital Immigrant (*Prensky, 2001; Tapscott, 2008*). A digital immigrant is an individual born prior to 1980, who did not grow up with digital technology and is learning how to fully use technology in all aspects of their daily and work lives.

Digital Technology (Koehler & Mishra, 2008). Tools, techniques and knowledge which are applicable to education and utilize computer hardware, software, and architecture which are used in learning and teaching.

Once again, thank-you for your consideration in assisting me with my research project. If you are comfortable emailing me the names at andy.pattee@gmail.com or by bringing them back to our next monthly meeting, it would be appreciated.

APPENDIX B. PRINCIPAL CONTACT

Dear Principal;

As each of you are aware, I am currently working on my dissertation through Drake University for completion of my doctoral degree. The title of the dissertation is: Effective Use of Digital Technologies of Secondary School Teachers as Digital Immigrants in Six Rural Public Schools.

I know your superintendent has worked with you and has provided me with the following potential participants:

- Participant A
- Participant B
- Participant C

I would like to ask if you still believe these potential participants are effective users of digital technology, based upon your classroom observations and evaluations, and if individuals were born prior to 1980. Also, I would like to inquire if you feel there are other staff members that you would recommend that would be good participants for this study.

Below is my contact information and also the research questions and definitions that are being utilized throughout this research study. If you have any questions, please do not hesitate to contact me. Participation is completely voluntary in this project.

Research Questions:

1. What are perceptions and experiences of digital immigrants using digital technology in their secondary classrooms?
2. What catalysts influence the effectiveness of digital immigrants using technology in teaching and learning?

Definitions:

Digital Divide (*Prensky, 2001*). The digital divide is between the generation that has grown up with digital technology and have had the ability to use it on a daily basis compared to those that grew up in previous generations without digital technology access. The digital

divide separates individuals who have grown up with digital technology from individuals who grew up in an era without digital technology. The latter are learning how to use digital technologies later in life, as it has become common place in daily and classroom life.

Digital Native (*Prensky, 2001; Tapscott, 2008*). Digital natives are students and individuals born after 1980. These persons have grown up with digital technology in their daily lives, including instruction in school. They are accustomed to cell phones, instant access, instantaneous knowledge, and communication due to the availability and access to digital technology.

Digital Immigrant (*Prensky, 2001; Tapscott, 2008*). A digital immigrant is an individual born prior to 1980, who did not grow up with digital technology and is learning how to fully use technology in all aspects of their daily and work lives.

Digital Technology (*Koehler & Mishra, 2008*). Tools, techniques and knowledge which are applicable to education and utilize computer hardware, software, and architecture which are used in learning and teaching.

Once again, thank-you for your consideration in assisting me with my research project. Please do not hesitate to contact me via email (andy.pattee@gmail.com) or telephone (641-670-1070).

Sincerely,

Andy Pattee, Ed. S

APPENDIX C. RECRUITMENT EMAIL

Dear (*insert name*),

As a doctoral candidate in the Educational Leadership Program at Drake University, I am currently working on my dissertation study entitled the Effective use of Digital Technologies Among Digital Immigrants in Six Rural Public Schools.

I am exploring the experiences of veteran secondary teachers who are effective users of digital technology in their classrooms. I will explore how some teachers use digital technology for teaching and learning, in an effort to explore and better understand their experiences, perceptions, and catalysts that influenced their success. This will be a case study that will interview and study several individual teachers who are effective users of digital technology.

In collecting data for this project, I will interview classroom teachers at the secondary level (middle and high school) at six school districts in the Midwest. Since you are currently a secondary teacher who is an effective user of technology, I would like to invite you to participate in this study. Your participation would last approximately three (3) weeks. During that time, I would schedule one interviews and a follow-up email exchange approximately 2-3 weeks later. Each exchange will take approximately 45-60 minutes. The first interview would be in person and the last, approximately, two to three weeks following the initial interview via email. The face-to-face email will be in your community at a location of your choice: school, public library, quiet restaurant, etc. I would also ask that you would provide a sample lesson plan that you use that incorporates digital technology into the classroom at the first interview.

I appreciate your participation in this study. I fully understand that this is a time commitment on your part; however, the information collected from the interviews will provide great benefit and information to other teachers who are working towards becoming effective users of digital technology in their classrooms.

Your participation in this study is voluntary. You may withdraw at any time. If you are interested in participating, please contact me via email at: aapattee@gmail.com or my cell phone 641-670-1070.

Sincerely,

Andrew R. Pattee. Ed.S.
Doctoral Candidate, Drake University
Superintendent of Charles City School District

APPENDIX D: INTERVIEW PROTOCOL

Based upon Seidman's (2006) work, semi-structured interviews will occur with each participant to gather data and experiences. The following questions are a framework to help guide the three interviews. Each participant will be asked to send a sample lesson plan that utilizes technology prior to the face-to-face interview.

Face-to-Face Interview: Background information, personal history, and focus on digital technology use.

- I. Background information:
 - a. Please tell me about your educational background.
 - b. How did you decide you wanted to be an educator?
 - c. How long have you been a classroom instructor?
 - d. What is your philosophy on teaching?
 - e. Tell me about the lesson plan you sent me via email.
 - f. What role does technology play in your teaching?
 - g. What types of technology do you utilize in your classroom? Why?
 - h. What brought your awareness of technology and use to the forefront?
- II. What are the perceptions and experiences of using digital technology in the classroom?
 - a. When and how did you start to use digital technology in the classroom?
 - b. What barriers (internal or external) did you feel you needed to overcome to fully implement technology effectively in the classroom?
 - c. How did you overcome those barriers?
 - d. Did you feel you had supports in utilizing technology in the classroom?
- III. What catalysts influence the effectiveness of digital immigrants using technology in teaching and learning?
 - a. What caused you to start utilizing those technologies; was there a catalyst?
 - b. Did you ever feel opposed to using technology or that there was a transition in your own mind to embrace technology more fully, if so how did that happen?
 - c. What do you feel has been your biggest support for utilizing technology effectively?
 - d. Was there a person or professional development, situation that helped spur you forward to using more technology?
 - e. What strategies have you found most useful when implementing technology into the classroom?
 - f. How do you determine if technology will enhance a lesson? Do you have a specific process that you go through?
- IV. What differences exist between digital immigrants and digital natives in using technology in classroom teaching and learning?

- a. Do you remember the feelings you had when you first tried to implement technology into the classroom, what were those?
- b. Do you see a difference between yourself and younger teachers who just start teaching?
- c. How do you continue to explore and learn about digital technologies that can be used in the classroom?

APPENDIX E: INFORMED CONSENT DOCUMENT

Participant Consent Form: Case Studies of Effective Technology Use by Digital Immigrants

Dear Participant,

The following information is provided for you to decide whether you wish to participate in this study. You should be aware that you are free to decide not to participate or to withdraw at any time without affecting your relationship with the researcher or Drake University.

The purpose of this multiple case study will be to explore the lived experiences of digital immigrants (individuals born prior to 1980 and did not grow up using digital technology on a daily basis (Prensky, 2001)) who effectively use digital technology in the classroom. The intent is to explore how professional development may be potentially impacted to help all digital immigrants utilize technology more effectively. This will be a case study that focuses on several classroom teachers' experiences and perceptions of being effective users of digital technology.

Your participation in this study will involve being interviewed with regard to your view of technology, implementation, and how you have seen your evolution in regards to utilizing technology in the classroom. The single face-to-face interview will generally last 45-60 minutes. At this interview, I would ask that you bring a sample lesson plan that incorporates digital technology that you have used in the classroom. The face-to-face interview will be in your community at a location of your choice: school, public library, quiet restaurant, etc. Following the interview, approximately two or three weeks later, you will receive an email asking you to read through the written summary to ensure it reflects your viewpoint and experiences accurately. This process should take approximately 50-60 minutes. Please do not hesitate to ask any questions about the study either before or during the time that you are participating. I will be happy to share my findings with you after the research is completed.

I would like to record each of the interviews. Each recording will be kept confidential and will be destroyed within six months following the interview. You may choose to participate in the study, but decide to not be recorded. Extensive notes will be taken throughout the interview if it is not recorded.

The risk to you as a participant in this study is minimal. Risks associated with the confidentiality of study participation and your reflections will be addressed by the researcher. Your confidentiality will be protected through the use of pseudonyms for both you and your school district. All interview notes and transcripts will be stored on a password protected

computer accessible only to the researcher. Your participation in this study will not be disclosed to anyone in your district nor outside your district. The expected benefits associated with your participation are the opportunity to share your stories and experiences in a study to advance best practices, inform and empower school leadership decisions, and positively impact and enlighten public policy. A \$20 gift certificate will be given to all participants. Withdrawing from the study at any time will not result in loss of this benefit.

Signature of participant

Date

I agree that the interview can be digitally recorded. I understand that the recording will be destroyed within six months of the interview. The recording will be kept confidential and will be used by the researcher to accurately reflect the experiences, perceptions, and catalysts of the participant.

Signature of participant

Date

Andrew R. Pattee, Ed.S., Drake University Doctoral Student and Project Researcher: (641) 670-1070 or at: apattee@gmail.com

Sally Beisser, Ph.D. Dissertation Chair and doctoral faculty at Drake University

Should you have any questions regarding your rights as a participant in this study, feel free to contact the Drake University Institutional Review Board at IRB@Drake.edu.

APPENDIX F: MEMBER CHECK

Interview Three: Reflections and member checking of participants.

- I. Reflections:
 - a. What do you believe it means to be an effective user of digital technology?
 - b. What do you believe is the future for technology in the classroom?
 - c. How would you help move staff, who struggle with technology use, to become effective users of technology in the classroom?
 - d. Is there anything more you would like to share regarding your experiences?
- II. Member Checking:
 - a. Would you please review some of the notes and highlights from our previous interviews to see if I have captured your experiences and voice?

At the conclusion of the interviews the participant will be thanked for their participation through a gift certificate. Participants will also be asked if they would be interested in receiving the final documentation and data collection at the end of the process.

APPENDIX G: HUMAN SUBJECT COMPLIANCE