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Teaching with Technology: An Exploration of Techno Stress

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TEACHING WITH TECHNOLOGY: AN EXPLORATION OF TECHNO STRESS

by

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Chapter I

STATEMENT OF THE PROBLEM

Introduction

It is not uncommon for teachers to experience change in the classroom. Whether it is a new reading program, curriculum committee or discipline plan, the ideas distributed by concerned educators, administrators and political stakeholders are often aimed at resolving a previous challenge. Concepts such as No Child Left Behind, Education Reform, and President Obama's more recent Educate to Innovate Initiative all focus on improving education for students in the United States. Once these programs hit the classroom, however, it is the teacher that holds the power to initiate change.

One implementation that has brought great change to education in recent years and which is designed to improve the education of students, is that of technology in the classroom. With the adoption of educational technology tools, teachers can create a plan "backed by digital technology—to tailor learning to each student's needs" (Duncan, 2013, p. 70). But as teachers continue to adapt to the challenges of technological change over the years, there seems to be a new sense of uncertainty as the pros and cons of the ubiquitous nature of such technologies in the classroom are debated. While some people adapt well to the occasional impositions brought on by technology, others

struggle to complete their desired task and lose the balance between growth and stagnation of creative thought.

One potential contributor to such an imbalance is that of technophobia and its most common symptom, techno stress. These technological conditions encompass the fear or creation of technology-related stress brought on by information overload, changing technologies or a number of other factors (Tarafdar, Qiang, Ragu-Nathan, & B. Ragu-Nathan, 2011). As Tarafdar et al. (2011) went on to explain, "Professionals experience techno stress when they cannot adapt to or cope with information technologies in a healthy manner" (p. 114). This newly developed relationship with technology has, according to Michaelene Conner (2012), a notable author on the topic of techno stress, produced a society that is disconnected, depressed, lacking purpose and intimate relationships. What does this mean for the teachers who are now, more than ever, expected to adopt technology into their lessons?

As a number of professionals face anxiety, information overload and fear of changing information systems, K-12 teachers are also facing tremendous pressure to integrate such technologies into the 21st century classroom. Notably, two researchers discovered that because technology is viewed as such an important factor of school reform in the 21st century, a variety of technological resources have already been purchased adding to the high expectations on teachers (Palak & Walls, 2009). Unfortunately, Palak and Walls' (2009) research has shown that the attitude, confidence, and comfort of technology use by teachers can ultimately pose a threat to student achievement and can affect student access to techno-information. This paper analyzes

the current state of techno stress in teachers working in the classroom. It also considers the impact that this potential stress has on students and their access to techno-information in the classroom.

Background

While new technology tools continue to be introduced to education at a rapid rate, some studies such as Palak and Wall's 2009 study, Li's 2007 study and Yuen and Ma's 2008 study show that teachers' willingness to utilize such tools in the classroom has less to do with the availability of the technology and more to do with their pre-existing attitudes towards their use. These studies have identified teacher beliefs, attitude, and confidence as contributing factors to student access to technology and information, but it can be seen that further research is clearly needed to draw a distinct connection between a teacher's techno stress and its impact on their students' learning.

In 2007, a study by Qing Li explored the stark difference between teachers' techno-attitudes and students' contrasting techno-enthusiasm. Although important elements were revealed, there was no mention of a disconnect between the two which would suggest a possible negative impact on student learning. The study was, however, based on the foundation outlined by former researchers who claimed that teachers' educational beliefs about teaching strongly influenced the integration of technology in their classrooms which could leave one to believe that a connection is possible, although not specifically analyzed.

Although the secondary teachers who participated in the study were keenly aware of their students' excitement towards technology use, they tended to avoid classroom technology integration at all costs leaning heavily on their pre-developed and implemented personal beliefs. Ten of the 15 teachers expressed a belief that technology should only be used when necessary and often suggested that technology would only confuse or hinder their students' focus. Interestingly, these teachers felt that their weakest students would especially struggle from added technology in the classroom without considering the idea that such students could potentially benefit from retrieving classroom information in an atypical format that stimulated understanding through the technology they already embrace. In this particular study, the secondary teachers credited their apprehension towards technology use in the classroom to a number of factors stating that they would be more likely to take technological risks if they were teaching something with which they felt particularly knowledgeable of or confident with. This study concluded by unintentionally recognizing a sincere concern as teachers admitted to avoiding technology, as they feared their role would soon change from knowledge dispenser to facilitator and would ultimately be replaced completely by computers. The unfortunate conclusion here, as raised by the researcher, is that the teachers in this study failed to recognize the impact their polarized views would have on their students' future (Li, 2007).

Palak and Walls 2009 study further investigated the relationship between teacher beliefs and their technology-based instructional methods. The study utilized a mixed-method approach, which integrated information collected through qualitative research

methodology and classroom observations and interviews. The study aimed at ultimately answering the question of whether or not "teachers who frequently integrate technologies and work at technology-rich schools change their beliefs and consequently their instructional technology practices toward a student-centered paradigm" (Palak & Walls, 2009, p. 419). The study cited that the most important determinant of teachers' instructional technology choices was their pre-existing attitude towards technology use in the classroom.

Through four specific case studies, Palak and Walls (2009) further concluded that despite positive attitudes toward and access to technology, teachers' methods of instruction were not adjusted to meet the growing needs of a student-centered approach to technology. Palak and Walls went on to conclude that, "unless the focus of technology integration is explicitly on student-centered pedagogy, technology integration may continue to support teacher-centered practice with inadequate, highly controlled student use in the classroom" (p. 437). Again, it seems apparent that there is an emerging trend of teacher-centered technology use (i.e., using technology as a presenting tool, a place to interact with administration, a means for completing grades, etc.) and a complete divide between these teacher practices and the ramifications for students' lack of use.

A third study conducted by Yuen and Ma in 2008 used the foundation of the Technology Acceptance Model (TAM) to understand teachers' perceived ease of use and perceived usefulness of technology as key predictors of user acceptance. The study found that these two factors highly influence a teacher's intention to use computers as

outlined in the TAM and therefore require a digital mindset in the teaching profession. After collecting data from a group of in-service teachers studying postgraduate education, the study concluded that, "perceived ease of use was found significant and powerful in predicting intention to use . . . [and] although computer self-efficacy was found not significant in predicting intention to use . . . it had a significant direct positive effect on users' perceived ease of use" (Yuen & Ma, 2008, p. 237). This would suggest that a teachers' attitude and confidence towards technology has a direct impact on whether or not they intend to use such technology in the classroom and would subsequently provide or prevent student access.

Problem Statement

As studies like that of Tarafdar et al. (2011) indicated technophobia and techno stress are indeed evident in business professionals and academia. While technology continues to creep into classrooms, the lack of ability for K-12 teachers to manage such changes is a problem that could ultimately affect the future of those around them. Although one's personal stress related to technology can be written off as merely a threat to his or her own wellness, a noted relationship between technophobia and the ability to communicate would suggest that teachers' techno stress may affect their students' learning and access to information and, therefore, should be addressed early on. A lack of educator-specific techno stress, however, indicates a need for additional research to explore the idea that a teachers' techno-attitude could be a tool for ensuring the academic and technological success of an individual student or group of students. A

first and important step to dealing with the problem of techno stress in the K-12 classroom is simply identifying its existence in teachers. Through this initial identification, further data can be collected on its impact on students' access to techno-information.

Research Questions

1. Does the introduction of technology and its use in the classroom cause stress in teachers?
2. Does the fear of new technology (technophobia) prevent teachers from incorporating technology into their lesson plans?
3. Does the fear of technology failure prevent teachers from allowing their students to engage with technology in the classroom?
4. Does a teachers' technophobia create an inconsistent learning environment for students when compared to a classroom where technology is embraced and heavily used?

Significance of Study

Based on what little research is available on the topic, it is clear that there is a need for additional and current data that focuses specifically on technophobia and techno stress in the K-12 classroom. Although information from the examined studies suggests that a teacher's negative attitude towards and lack of confidence with technology could be due to resistance of use, there is no real evidence that acknowledges a direct relationship between these factors and technophobia. With such

information, further research can be conducted that would attempt to find a link between a teachers' techno stress and subsequent disinterest in technology implementation in the classroom and how this affects student learning.

As technology use continues to grow in schools, it will prove to be continuously important to recognize how it affects teaching methods and student responses. It is equally important to examine how the lack of technology use, stemming from teachers' technophobia, can potentially hinder student learning. The significance of recognizing these different learning outcomes from classroom environments that embrace technology and those that do not will help to understand the range of learning experiences students may receive in various situations and its impact on their real-world preparedness.

Assumptions

Assuming that techno stress and technophobia are recognizable debilitating conditions, this research was conducted in order to document its presence in teachers in the classroom. It was assumed that any presence of technophobia would have some sort of impact, whether negative or positive, on the students receiving an education from these teachers. Additionally, it was assumed that all teachers surveyed in this study had been offered equal access to educational technologies. Furthermore, in order for such research to be accurate, it was assumed that all participating educators would answer truthfully and thoroughly.

Definitions of Terms

Attitude. Personal thoughts and feelings outwardly expressed through negative or positive actions and words.

Computer Anxiety Rating Scale (CARS). An instrument developed in 1987 by Heinssen, Glass, and Knight to measure the anxiety, attitudes and thoughts/feelings about computers and all computerized technology.

Computer Self-efficace. The judgment of one's capability to use computer technology (Yuen & Ma, 2008).

Information and Communication Technology (ICT). Technology that can be used to access, communicate, store, manipulate and create information.

Second Level Digital Divide (SLDD). The gap in *how* technology is used (not to be confused with the Top-Level Digital Divide which refers to the gap between the technology "haves" and "have nots") (Reinhart, Thomas, & Toriskie, 2011).

Stress. A negative condition or response to something that may impact a person's physical or mental well-being.

Techno Stress. Constant worry caused by one's inability to cope or deal with information and communication technologies in a healthy manner (Ayyagari, Grover, & Purvis, 2011).

Techno-Information. Information and knowledge gathered through the means of technology.

Technology. Any relevant hardware or software that could be used for educational purposes, including but not limited to computers, projectors, doc cams, televisions, interactive white boards, mobile computing devices, student response systems, etc.

Technology Acceptance Model (TAM). **A** model for the acceptability of an information system (see Figure 1).

Technophobia . Complete fear of using technology, often resulting in resistance of use.

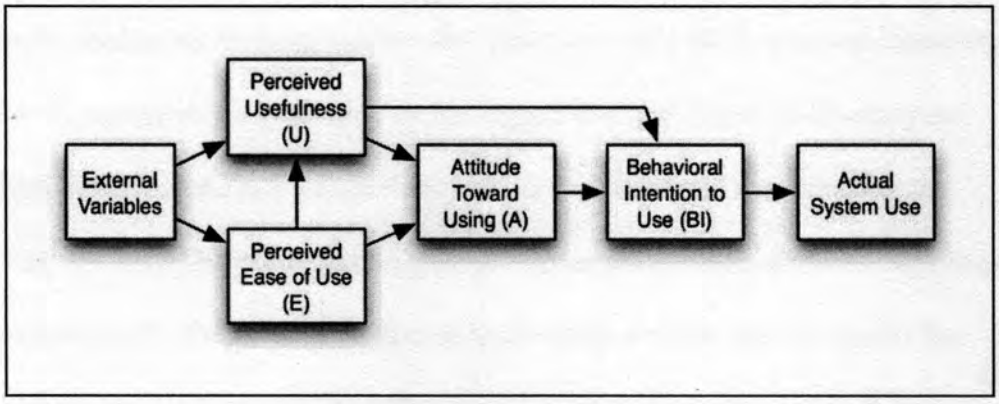


Figure 1

Technology Acceptance Model

Conclusion

It is clear that teachers are teaching in an era of change. Rigorous requirements for classroom implementation mean exciting opportunities for some and additional stress for others. While students are being brought up in the information age, having a teacher that fears using technology in the classroom could mean lagging a few steps behind their peers. The impact that one person's attitude towards technology may have

on those around him or her is one that must be explored as changing technology continues to grow in schools.

This study examines the impact of technology in the classroom by first recognizing the presence of technophobia and stress in teachers. Once this stress is identified, a further look at its relationship to student learning can be examined. This process is outlined in the following chapters.

Chapter II

LITERATURE REVIEW

Introduction

As technology continues to change the makeup of the contemporary K-12 classroom, numerous research studies like Yuen and Ma's 2008 study on *Exploring Teacher Acceptance of e-Learning Technology*, Palak and Walls' 2009 study on *Teachers' Beliefs and Technology Practices*, as well as others mentioned in the following review of literature have explored teacher acceptance, attitude, and use of such technologies. From these studies, it has become evident that the ability for educators to grasp ever-changing technology concepts has an impact on their instructional strategies. Whether or not these adjustments to instruction impact student learning and access to techno-information is yet to be determined. However, through a review of relevant literature and studies, it can be recognized that such relationships have been noted, although somewhat unsubstantially.

Centered on the overall theme of techno stress, this chapter examines additional research on sub-themes that attempt to answer subsequent questions that, when combined, provide a platform for further research focused specifically on techno stress in the K-12 classroom. Relevant sub-themes include exploring the existence of technology-affected behavior in K-12 teachers as well as students. This chapter also

explores whether or not fear of new technology prevents teachers from incorporating technology into their lessons and whether or not this fear affects their belief that student engagement with technology in the classroom is perceived as being beneficial for student learning. Additional research further explores the ideal characteristics of a 21st century learning environment and whether or not a teacher's technophobia contributes or detracts from this atmosphere and consequently creates an imbalance between the learning experience in technology-supportive and technology-resistant classroom

TECHNO STRESS

Techno Stress Defined

According to the Ayyagari at el. (2011) study, stress occurs when a person determines the demands placed upon them by his/her environment are more than he/she can handle with their current resources resulting in a perceived threat to his/her well-being. In this case, a technology-saturated environment has created new challenges that individuals may not yet have the resources to handle and may perceive as negative. There are a number of terms used today to describe someone's negative experiences with technology. These terms can be viewed as either being the problem or a symptom of the problem. Techno stress tends to illustrate the broad disorder while technophobia, computer-anxiety, technology-induced fear or techno overload represent symptoms. Similarly, there are varying definitions of the terms including one's stress built upon a reliance on technology devices like mobile phones, computers, or video games and the subsequent unease with a lack of constant stimulation (Conner, 2012). The actual term

of techno stress, however, was coined and first defined in 1984 by Brod in his book *Techno Stress: The Human Cost of the Computer Revolution*. Brod (1984) stated that techno stress, at that time, was a "modern-day disease of adaptation caused by an inability to cope with the new computer technologies in a healthy manner" (p. 16). Although there are no medical findings that confirm it as a disease, Brod's definition simply explains the phenomenon and has set the stage for a techno world that was perhaps unimaginable in 1984.

While these definitions have indeed paved the way for the information age, it is the symptoms and recognition of causes that continue to define the role of techno stress today. During her research on techno stress in librarians, Ennis (2005) outlined six primary causes of techno stress: (a) pace of change, (b) lack of training, (c) increased workload, (d) lack of standardization, and (e) changing role of librarians.

Similarly, a recent study on the creators, outcomes, and inhibitors of techno stress in the professional environment, site the requirement of people to work more and work faster through constant interruptions as a main cause of techno stress which ultimately leads to information fatigue and a stressful working environment (Tarafdar et al., 2011). It has become evident that the increased presence of technology at work and in personal realms due to mobile computing has caused an increase in technology related stress. Mobile computing in particular, has created a false sense of convenience, contributes to issues with time management and false expectations and is a leading cause of techno stress today. Such causes are vast and symptoms can vary for each individual user. However, Conner's 2012 article, *Technostress: A Sign of the Times*

shows a number of common symptoms of technological stressors such as (a) feelings of memory loss—forgetting what you started to do or why you walked into a particular room; (b) impatience with self and others; (c) lessened ability to relax or slow down, (d) anxiety over having lost access to your cell phone, Palm Pilot, TV or other techno-equipment; (e) headaches, stomach discomfort, back pain, ulcers and irritable bowel syndrome (IBS); (f) difficulty falling asleep; and (g) continuously checking your email, voicemail, and other applications, and not turning off the computer at night.

These and other symptoms may have a serious impact on a person's ability to perform tasks, communicate effectively and engage appropriately in meaningful face-to-face encounters (Conner, 2012). Such characteristics should be valued on both a professional and human level. The recognition of causes and subsequent symptoms combined with an understanding of its prevalence in certain target groups can play an important role in the treatment of techno stress in the work place.

Prevalence

A thorough review of studies successfully recognizes specific target groups that are affected most by techno stress and its symptoms. Professionals employed in the field of technology where the use of numerous information systems are required to successfully complete tasks most often experience techno stress based on the simple factor of significant required use. Professionals on the other end of the spectrum who do not often use information systems in their daily tasks may still experience techno stress, as they fear a sudden increase in information systems and required use. These

workers may also feel threatened by information systems or others who may be more knowledgeable of information systems. According to a study by Tarafdar et al. in 2011, 80% of those surveyed felt that their work experiences were more stressful because of information systems and corresponding problems and errors. This study also found that men experience techno stress more often than women, as women tend to find information systems easier to use and choose to use them when they want to rather than when they have to. Older professionals and formally-educated users were also cited as experiencing less stress, as confidence that may come from experience or knowledge is a major influence on the absence of techno stress.

Treatment Options

Although Brod's (1984) definition of techno stress has a medical aspect to it, the condition has not widely been accepted as a disease and therefore offers no specific treatments. However, a review of the relevant literature notes a number of precautions that tech-users and employers can apply in an attempt to avoid the symptoms of technology-induced stress. Ennis (2005) suggested that teamwork and allowing a few employees to become experts on certain technologies is a great way to take the stress off of an individual user. However, Ethel Roskies (1991), author of *Stress Management: A New Approach to Treatment*, suggested that technology-induced stress starts in the brain and therefore requires a healthy level of cognitive fitness which may be exercised by taking short screen breaks every 30 minutes, building in margins for error or maintaining a realistic schedule for tasks. The most widely suggested method

for treating techno stress, nevertheless, is proper training. With well-rounded training in a non-threatening environment, professionals working with information systems can gain the knowledge and experience that will help them develop the confidence they need to manage techno-overload in a healthy way.

Summary

After reviewing the literature, it is evident that techno stress, although perhaps not medically confirmed, is very real for many working professionals, especially those working heavily with information systems. Causes, symptoms, and at-risk groups have been identified although, even with treatment options, the condition still exists as technology continues to expand and cross the boundary of work - personal life through mobile computing. Manageability of techno-overload largely depends on the willingness of individual users to accept change and of employers to provide appropriate training.

As such a large professional environment in the United States, the education sector has increased its technological demands on teachers, requiring them to employ technology in their classrooms and personal endeavors with or without said training. A look at techno stress and its causes and symptoms in the educational environment may provide additional options for treatment as well as a reflection on its impact on future generations.

Presence in the Classroom

While previously examined studies such as Conner (2012) and Tarafdar et al. (2011) have shown the prevalence of techno stress in the professional environment, it is apparent in the following literature review that there is no definitive evidence that supports the presence of technology-specific stress in K-12 teachers. An individual may be able to draw this conclusion through assumption, but additional research is clearly needed that focuses on this specific environment. However, literature that focuses on general student and teacher stress in the classroom is available and can begin to guide the researcher towards patterns and anecdotes that may ultimately reveal the presence of technology-specific stress in the K-12 classroom.

Student Sources of Classroom Stress

In 2009, a study set out to examine the sources of stress for students in high school, college preparatory and general education programs (Suldo, Shaunessy, Thalji, Michalowski, & Shaffer, 2009). Among the most common stressors experienced by the surveyed group were puberty, relationships, adolescent transitions, and environmental and academic strain. Within the academic setting, students in this study made no mention of technology as a factor of their stress but cited tests, academic performance (i.e., grades), attendance, interaction with teachers, and time management as elements that caused the most school-related anxiety. The question lies in whether this means that students do not view technology as a stressor in their lives and therefore may not be

directly affected by the presence or lack of technology use in the classroom. University of Calgary Associate Professor Qing Li's 2007 study creatively titled, *Student and Teacher Views About Technology: A Tale of Two Cities?* may shed some light on this question. Her findings concluded that, overall, today's youth are not only accepting of technology in the classroom, but are overwhelmingly enthusiastic about it suggesting that it does not cause them stress.

Teachers and Techno Stress

With all of the changes and expectations that they face, teachers experience a tremendous amount of stress in the workplace, especially during their beginning years of teaching. Perhaps the most startling statistic of the stress-related impact on teachers is the data that states that 25-50% of beginning teachers quit within their first 3 years in the field (Fleener, 2001; Roulston, Legette, & Womack, 2005). In the 1980s, a number of studies were conducted that found first-year teachers' largest source of anxiety to be built upon classroom discipline or relationships with students, cooperating teachers or parents. These studies also cited instructional concerns such as subject knowledge, instructional strategies and differentiated teaching methods (Bowers, Eicher, & Sacks, 1983). More recently, during a 2007 study, Rieg, Paquette and Chen surveyed and interviewed 44 pre-service and novice elementary teachers regarding their experiences with stress. Their responses were similarly focused on concerns with students, cooperating teachers and parents, pedagogical skills, workload, and other relationships. Although the data collected from this study clearly identified stress factors for teachers,

there seemed to be no evidence that pointed directly to the contributing role of technology. During one of five in-depth interviews with novice teachers, one individual did state that having a cooperative teacher available when something went wrong during pre-service experiences was a luxury, claiming that he now does not have anyone in the room to "fix it on the spot" like he used to (Rieg et al., 2007). Whether or not this statement is referring to technological difficulties is unclear.

A 2006 study from the British Psychological Society (Jepson & Forrest, 2006) greatly contributed to the already extensive research on stress in teachers in the public K-12 setting. However, the findings of this study produced similar results with no mention of technology as a contributing factor to stress but focused largely on the varying environmental, individual and intrinsic job factors. Worth noting, however, is the study's development of the Teacher Achievement Striving Scale (TASS). Within this scale, surveyed teachers were asked to respond via a Likert scale to a number of statements. Although not noted, two of the questioned statements may have underlying relevance to techno stress:

1. I feel discouraged when my ability to succeed is impaired by factors outside my control.
2. I find outside influences, such as parental concerns, paper work, etc. often impairs my ability to teach to my full potential.

Without access to interviewees or full text responses, there is no way of knowing whether or not participants considered technology as an outside influence contributing to their stress. Regardless, it is clear that the influence of stress alters a

teacher's ability to perform at their highest potential. Unfortunately, technology's role in teacher stress is still unclear although it is obvious that teachers feel very passionate about achieving and in turn often develop beliefs and strategies that help shape their educational philosophies.

The Impact of Teachers' Beliefs

One of the leading predictors of teacher use of technology in the classroom is based upon their educational philosophy and beliefs of the effectiveness of technology in the promotion of learning and student achievement. This piece of technology inclusion goes beyond teacher attitude, comfort and confidence. A study conducted by Palak and Walls (2009) found teacher beliefs to be the most important factor for their instructional technology decisions in the classroom. Based on a number of case studies, Palak and Walls found that despite variables such as gender, age, years of experience, and access to technology, a teacher's beliefs of how technology should be used in the classroom had a direct impact on how much technology was used in instruction and the methods that students were allowed to use the technology. For example, one teacher admitted to rarely using computers at all, as she believed a technology-free environment made it easier for her students to focus on the lesson at hand. Throughout this study, similar responses were received by teachers regardless of their self-perceived confidence with technology.

Another study (Tabata & Johnsrud, 2008) examined the impact of faculty attitudes toward technology, particularly distance education, at the university-level.

Although the majority of subjects surveyed had a high level of confidence using technology, their personal beliefs played a key role in whether or not they partook in distance education or went beyond emails and class-based websites to incorporate technology into their instruction. The study concluded that faculty who chose not to incorporate technology or distance education into their instruction were those who felt that technology did not enhance the traditional classroom methods (Tabata & Johnsrud, 2008).

Treatment Options for Teachers

Technology use in the education sector is viewed as a very important aspect of preparing students for the 21st century workforce. Fortunately, this means that many districts are committed to ensuring that their students receive the kind of technology preparation that they need to be successful. Much like the treatment options for techno stress in the general professional environment, training and technology-related professional development are viewed as the most successful methods for promoting teacher use of technology in the K-12 classroom. According to a 4-year research project conducted by the University of Bristol (Jones, 2013), 70% of participatory teachers reported having a positive outlook on technology use in the classroom after participating in an educational seminar. Similar literature confirms that a teacher's involvement in training and tech support can significantly boost their knowledge base, which subsequently boosts their confidence and makes them more likely to incorporate technology into their instruction (Jones, 2013).

In order for teachers to take advantage of such technology-based professional development, districts must provide the opportunities for them to do so. Unfortunately, research has shown a serious disconnect between government-required techno policy and practice. Although there is a large push for in-school access to the technology itself, there is a lack of proper training and ongoing support for teacher use. Teachers can personally combat techno stress through tips like prioritizing and embracing technology use (Jones, 2013), but the bottom line is that without pre-training, a solid technology plan and continual support, teachers will be more likely to fall into the patterns of techno stress and therefore will likely not incorporate technology into the classroom falling short of the goal of preparing students for the 21st century techno-savvy world.

Summary

Although it is evident that both teachers and students experience stress within the school environment, the presence of technology-induced stress has not been thoroughly documented. What has been noted through a review of literature is that teacher beliefs and educational philosophies play a role in their willingness to utilize technology in the classroom. Specifically, their understanding of the role of technology as a helpful tool versus a distraction or reward option makes a keen difference in their utilization. In contrast, the stressors impacting adolescents and young students seem to be completely unrelated to their beliefs and acceptance of technology, although as mentioned with teacher techno stress, the data is lacking. Whether or not this all has an

impact on student access to techno-information and subsequent academic success is yet to be seen.

CONCLUSION

Based on the resources examined, it is clear that further research is needed to explore technology-specific stress in the classroom. The data collected on techno stress in the professional workplace which points to an increase of technology-related stressors as our society continues to grow digitally, served as the basis for the survey that was carried out in this research project. As the importance of technology inclusion becomes increasingly critical for the 21st century student's future, the gaps created by technology-reluctant teachers and the call for change in the classroom must be bridged. The following chapter outlines the methods and strategies used for exploring the existence of techno stress and its stressors in teachers in the classroom and also suggests how further research may be needed to identify the impact on student's varying technology-inclusive learning experiences.

Chapter III

METHODOLOGY

Introduction

After examining previous research, a number of important elements have been recognized. Primarily, it can be noted through the definitions and literature, that techno stress is a recognized condition in the professional field. A number of employees working closely with Information Systems or Information and Communication Technology often experience techno stress and its corresponding symptoms. However, because there appears to be no substantial evidence pointing to the existence of techno stress specifically in the K-12 educational environment, initial data must be collected. By addressing the immediate question of whether or not techno stress exists among teachers in the classroom, the further impact on student learning and access can also begin to take shape. This chapter outlines the detailed approach and methods used for achieving such goals.

Participants

The population group for this study consisted of K-4 general education teachers. The more defined target population focused specifically on teachers instructing in the Belgrade School District located in Belgrade, Montana. This public school district

consists of three elementary (K-4), one intermediate (5-6), one middle (7-8), and one high school (9-12). For the purpose of this study, both male and female teachers of varying ages were surveyed as well as teachers with varying teaching experience including a range between first year and master teachers. The majority of participants within this population have similar access to educational technology tools as outlined by the district's technology plan and policies. Participants were ensured that their responses would be kept private and would have no effect on their personal or professional reputations.

Research Approach

When attempting to gauge the mere presence of an external factor in a given environment, a simple survey method may suffice. In this study, the initial information was collected by asking the target population questions that would potentially point to the existence or absence of teachers' technology-induced stress or anxiety in the classroom environment. The primary questionnaire was modeled closely after Heinssen's Computer Anxiety Rating Scale (CARS) and utilized various probing methods for retrieving responses through a Likert scale and open-ended questions (Heinssen et al., 1987). Because this initial component of the research project required the simple identification of techno stress in the given environment, it was important to rule out any contributing factors that may have skewed the data. This was done by ensuring that the questions within the survey were articulated in a way that prevented deviation from the topic at hand. These questions were distributed to participants via

email where they could anonymously follow the link to the questionnaire. Additionally, due to the topic being surveyed, a paper copy was also made available to participants who felt resistance towards completing an electronic questionnaire.

Limitations/Delimitations

Certain elements were beyond the control of the researcher and therefore a number of limitations had the potential to exist including:

1. Schools where surveyed teachers instruct may provide varying degrees of technology-related support.
2. Personal reaction to stressors may vary as it is challenging to accurately measure one person's response against another's via an all-encompassing scale.
3. Additional factors such as broadband and networks may contribute to the frequency of technology malfunctions and be inconsistent across classrooms and therefore be more or less common for certain teachers.
4. The sample population may be too small to obtain an accurate measurement and therefore confirm or deny the presence of techno stress in the entire K-4 setting.

Additionally, because the researcher chose to only survey teachers in the public school setting in one district in Montana, the study was bounded to the ensuing results and therefore cannot make a general comment regarding the topic's presence in alternative K-4 environments across the country.

Pilot Study

In order to check the survey instrument for errors in accuracy and breadth, a preliminary sample was emailed to a pilot group selected by the researcher. This group consisted of teachers who fit the profile of those who may participate in the actual study, but who would alternatively complete the sample survey as part of the pilot group. The pilot groups' responses to the survey as an instrument to gather data and not a specimen of opinion were analyzed and revised as necessary by the researcher.

Research and Data Collection Procedures

After continued review of literature and relevant studies, the researcher modeled successful methods and instruments and initiated this study by contacting individuals to be invited to participate in the sample. Initial contact was made to the school administrators where permission was requested to contact select general educators for the study. Upon approval from administrators, the cover letter and survey was submitted electronically to the personal email accounts of potential participants that fit the description of the target population (i.e., Public K-4 general education teachers). Paper copies were also made available in the mailboxes of such participants. Directions as well as a 2-week completion requirement were included within the cover letter. The responses to the survey were collected by the researcher anonymously through the restrictions pre-established by the survey instrument (i.e., Survey Monkey). Before the closing date, a reminder of the survey's deadline was emailed out to encourage any last minute participation. At the end of the survey, participants who completed the

electronic questionnaire received an automated message of gratitude for their contribution to the research study. Email addresses were kept on file for the distribution of final results to participants upon completion of the study. Compliance with St. Cloud State University's Institutional Review Board (IRB) was closely followed before and during execution of the study.

Data Analysis and Statistics

Data collected from survey participants was carefully analyzed by the researcher. Results and statistics are outlined formally via text as well as visually through diagrams, graphs and charts and are included in this paper. The presentation of data is organized in such a manner that important relationships and notable responses can be easily recognized and considered for further research. All answers are included in this study anonymously with indicative names and places removed by the researcher.

Instruments

As noted, the survey instrument used for this study followed the outline of Heinssen's Computer Anxiety Rating Scale (CARS) (Heinssen et al., 1987). Developed in 1987, this instrument is still widely used in research today as a guide for ongoing research on various technology-related topics. It consists of the following 19 statements that participants may respond to on a 5-point scale varying from a strong disagreement to a strong agreement:

1. I feel insecure about my ability to interpret a computer printout.
2. I look forward to using a computer in my job.

3. I do not think I would be able to learn a computer programming language.
4. The challenge of learning about computers is exciting.
5. I am confident that I can learn computer skills.
6. Anyone can learn to use a computer if they are patient and motivated.
7. Learning to operate computers is like learning any new skill – the more you practice, the better you become.
8. I am afraid that if I begin to use computers I will become dependent upon them and lose some of my reasoning skills.
9. I am sure that with time and practice I will be as comfortable working with computers as I am in working with a typewriter.
10. I feel that I will be able to keep up with the advances happening in the computer field.
11. I dislike working with machines that are smarter than I am.
12. I feel apprehensive about using computers.
13. I have difficulty in understanding the technical aspects of computers.
14. It scares me to think that I could cause the computer to destroy a large amount of data by hitting the wrong key.
15. I hesitate to use a computer for fear of making mistakes that I cannot correct.
16. You have to be a genius to understand all the special keys contained on most computer terminals.
17. If given the opportunity, I would like to learn about and use computers.
18. I have avoided computers because they are unfamiliar and somewhat intimidating to me.

19. I feel computers are necessary tools in both educational and work settings.

In order to avoid repeating past studies that produce broad results of techno stress among professionals in varying environments, the CARS instrument was adjusted through word-choice to specifically cater to this study of teachers in the classroom environment. Similarly, it was believed that statements in this newly edited instrument would better produce results related to the research questions specific to this study. Table 1 clarifies the direct relation between this study's research questions and the survey questions that were used, which ultimately expressed the need for the adjustments to the CARS instrument.

Table 1

Relationship between Research Questions and Survey Questions

RESEARCH QUESTION	CORRESPONDING SURVEY STATEMENT
Does the introduction of technology and its use in the classroom cause stress in teachers?	1. I feel insecure about my ability to use technology on the spot in my classroom. 2. I dislike working with machines that are smarter than I am. 3. I have difficulty understanding the technical aspects of computers and other devices. 4. It scares me to think that I could cause technology to destroy a large amount of data by hitting the wrong button. 5. You have to be a genius to understand all the special buttons and settings on most technology devices. 6. If given the opportunity, I would like to learn about and use educational technology.

Table 1 Continued.

RESEARCH QUESTION	CORRESPONDING SURVEY STATEMENT
Does the fear of new technology (technophobia) prevent teachers from incorporating technology into their lessons?	1. I look forward to using technology in my classroom and lessons. 2. The challenge of learning about new technology is exciting. 3. Learning to use technology is like learning any new skill – the more you practice, the better you become. 4. I feel that I will be able to keep up with the advances happening in the educational technology field. 5. I have avoided technology in the classroom because it is unfamiliar and somewhat intimidating to me.
Does the fear of technology failure prevent teachers from allowing their students to engage with technology in the classroom?	1. I am confident that I can learn classroom technology skills and pass my knowledge and expertise on to my students. 2. I feel apprehensive about using technology with my students. 3. I hesitate to use technology in the classroom for fear of making mistakes that I cannot correct.
Does a teacher's technophobia create an inconsistent learning environment for their students in the 21st century?	1. Anyone can learn to use technology if they have a patient and motivated mindset. 2. I am afraid that if I begin to use technology I will become dependent upon it and lose some of my reasoning skills. 3. I am sure that with time and practice I will be as comfortable working with technology as I am working with students in my classroom. 4. I feel technology is a necessary tool in the educational setting.

Summary

The information collected in this research study acts as a starting point for the further exploration of the existence of techno stress in the public school environment. As previously mentioned, the ever-growing presence of educational technology tools in the K-12 classroom requires a unique look at its impact on its most important users;

teachers and students. Through the utilization of a carefully created survey instrument, the goals of this research project were reached and its questions were answered.

Chapter IV

RESULTS/DATA

Introduction

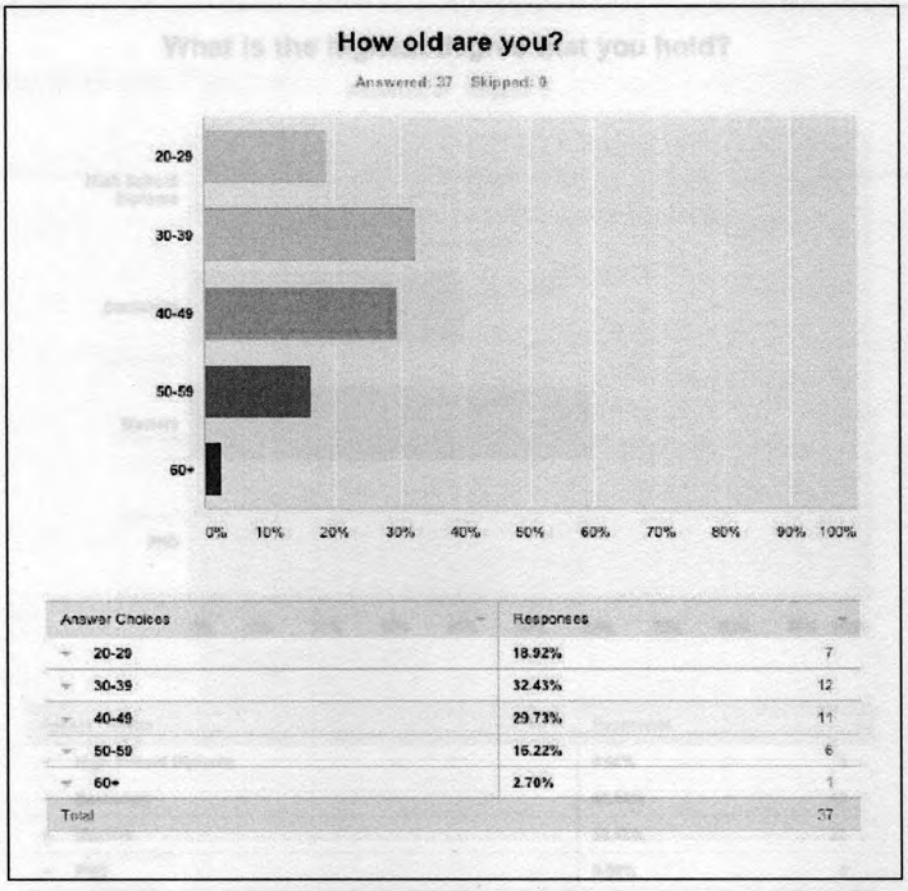
As outlined in the previous chapter on the methods and process for collecting data, a survey (see Appendix A) was distributed to teachers in a public school district in southwest Montana. The survey sought to collect data on the effects of technology-induced stress on the average classroom teacher. The school district involved was comprised of three elementary, one intermediate, one middle, and one high school. The writer chose to limit the survey distribution to a smaller subset of teachers, ultimately distributing the survey to the three elementary schools only.

The survey, available in both print and electronic format, was conducted over three weeks during September 2014. Of the 75 teachers who received access to the survey, 37 chose to participate, a response rate of 49%. The survey consisted of four demographic questions, a section requesting participants to respond to 18 statements on a Likert-rating scale and three short-answer questions which allowed for individual text-based responses. Of the respondents, 100% chose to participate via the electronic survey available online. Outlined in three major sections, the following is a detailed look at the results of this survey (see Appendix B).

Results of Demographic Information

In order to better understand the background knowledge and educational history of participants, the first section of the survey asked four questions in relation to participants' demographics.

Question 1: How old are you? Seven out of the 37 respondents (18.92%) were between the ages of 20 and 29. The majority of respondents (32.43% or 12 out of 37 respondents) were between the ages of 30 and 39. Closely following were those participants between the ages of 40 and 49 (11 out of 37 respondents or 29.73%). Six out of the 37 respondents (16.22%) were between the ages of 50 and 59 and one respondent, making up 2.7% of the respondent population, was over 60 years of age (see Figure 2).

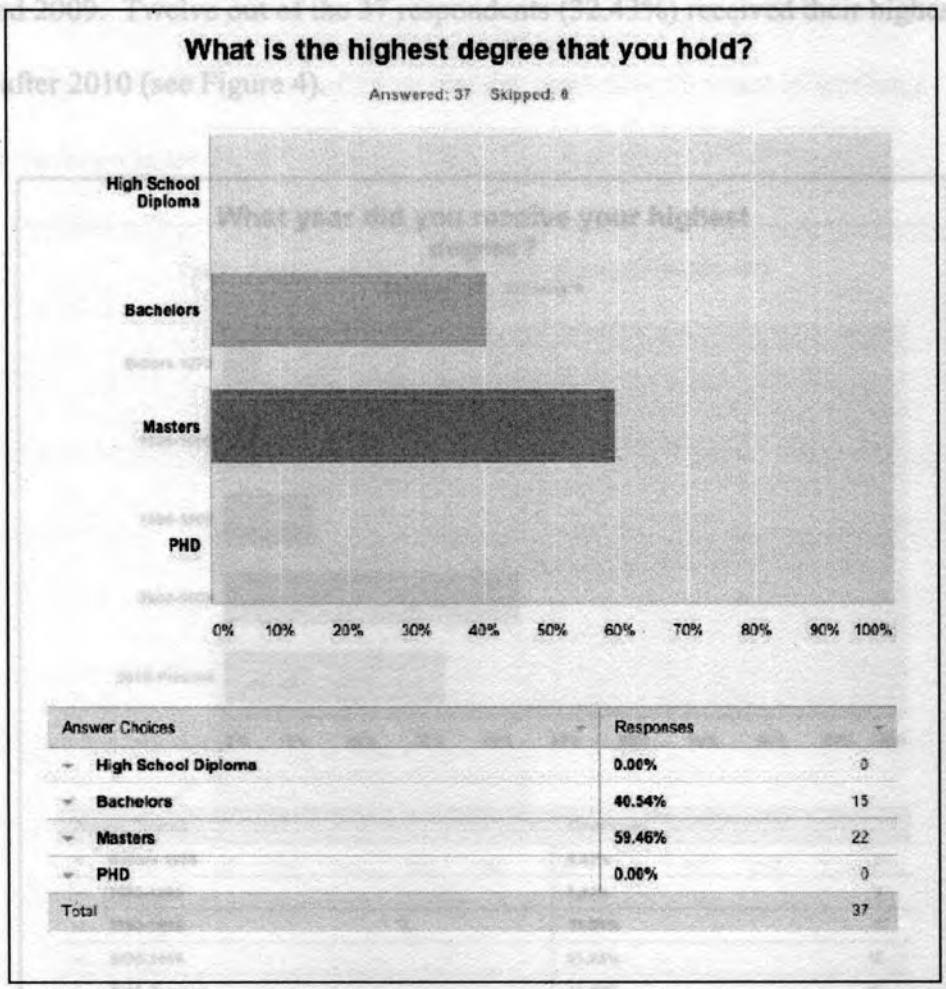


Answer Choices	Responses	
20-29	18.92%	7
30-39	32.43%	12
40-49	29.73%	11
50-59	16.22%	6
60+	2.70%	1
Total		37

Figure 2

Age Demographics

Question 2: What is the highest degree that you hold? Fifteen out of the 37 respondents (40.54%) reported having bachelor's degrees as their highest degree obtained. The majority of respondents (22 out of 37 or 59.46%) reported having a master's degree as their highest degree. None of the respondents reported their highest degree as either a high school diploma or a doctorate (see Figure 3).



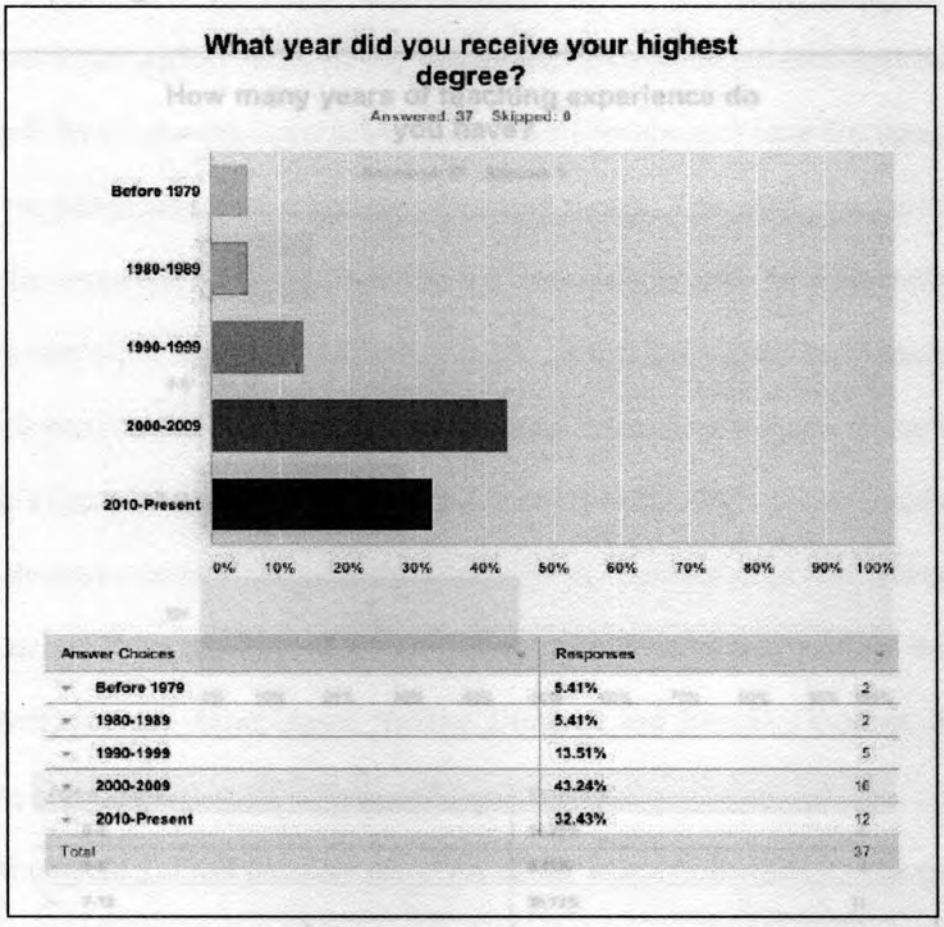
Answer Choices	Responses	
High School Diploma	0.00%	0
Bachelors	40.54%	15
Masters	59.46%	22
PHD	0.00%	0
Total		37

Figure 3

Highest Degree Demographics

Question 3: What year did you receive your highest degree? Two out of the 37 respondents (5.41%) received their highest degree before 1979 and another two respondents (5.41%) received their highest degree between 1980 and 1989. Five out of the 37 respondents (13.51%) received their highest degree between 1990 and 1999. The majority of respondents (16 out of 37 or 43.24%) received their highest degree between

2000 and 2009. Twelve out of the 37 respondents (32.43%) received their highest degree after 2010 (see Figure 4).



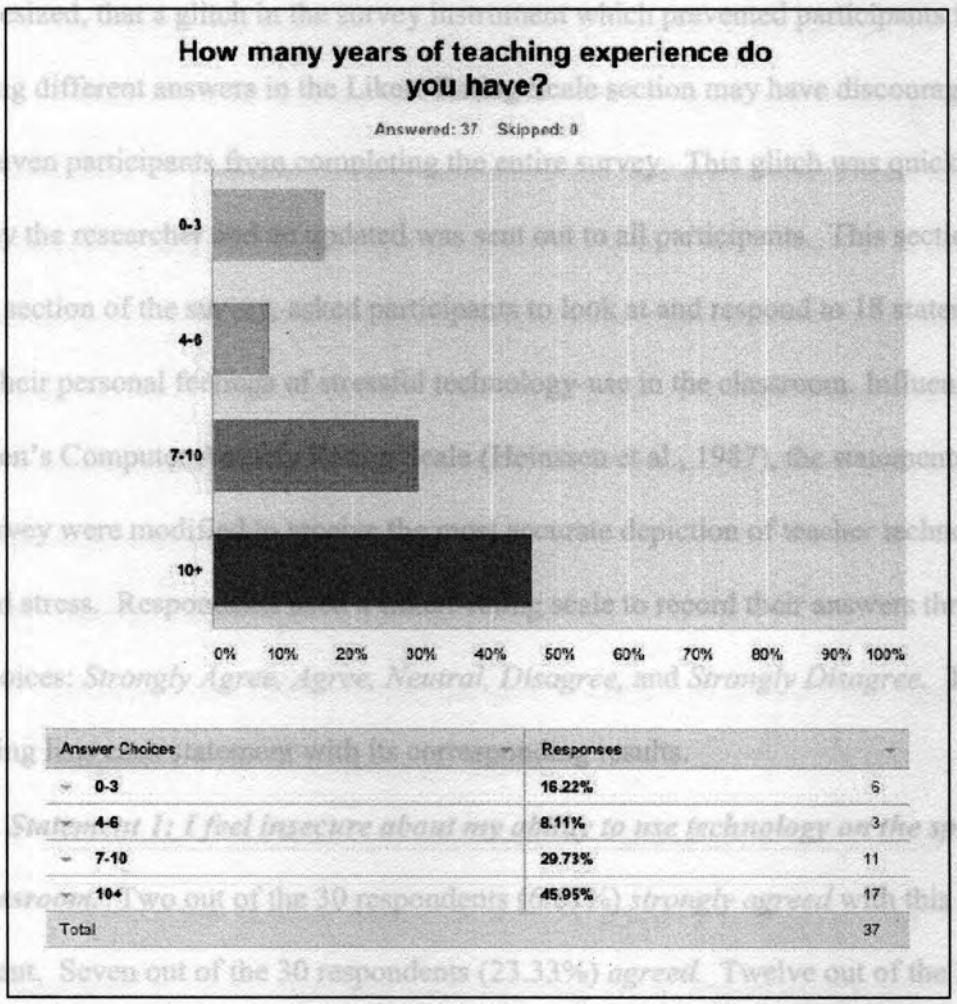
Answer Choices	Responses	
Before 1979	5.41%	2
1980-1989	5.41%	2
1990-1999	13.51%	5
2000-2009	43.24%	16
2010-Present	32.43%	12
Total		37

Figure 4

Year Degree Received Demographics

Question 4: How many years of teaching experience do you have? Six out of the 37 respondents (16.22%) reported having 0-3 years of teaching experience. Three out of the 37 respondents (8.11%) had 4-6 years of experience. Eleven out of the 37

respondents (29.73%) reported having 7-10 years of teaching experience while the majority of participants (17 out of 37 or 45.95%) had over 10 years of teaching experience (see Figure 5).



Answer Choices	Responses	
0-3	16.22%	6
4-6	8.11%	3
7-10	29.73%	11
10+	45.95%	17
Total		37

Figure 5

Teaching Experience Demographics

Results of Likert-Rating Scale

Thirty of the 37 survey participants (81%) chose to complete the second section of the survey while seven participants (19%) did not respond to this section. It is hypothesized, that a glitch in the survey instrument which prevented participants from choosing different answers in the Likert-Rating Scale section may have discouraged these seven participants from completing the entire survey. This glitch was quickly fixed by the researcher and an updated was sent out to all participants. This section, the largest section of the survey, asked participants to look at and respond to 18 statements about their personal feelings of stressful technology-use in the classroom. Influenced by Heinssen's Computer Anxiety Rating Scale (Heinssen et al., 1987), the statements for this survey were modified to receive the most accurate depiction of teacher technology-induced stress. Respondents used a Likert-rating scale to record their answers through five choices: *Strongly Agree, Agree, Neutral, Disagree,* and *Strongly Disagree.* The following lists each statement with its corresponding results.

Statement 1: I feel insecure about my ability to use technology on the spot in my classroom. Two out of the 30 respondents (6.67%) *strongly agreed* with this statement. Seven out of the 30 respondents (23.33%) *agreed.* Twelve out of the 30 respondents (40%) *disagreed* with the statement and four out of the 30 respondents (13.33%) *strongly disagreed.* Five respondents (16.67% of participants) were *neutral* to this statement. There were three additional comments attached to this statement:

- *Agreed: I don't do well with technology in the classroom and cannot just pull something out quickly to utilize in instruction. That bothers me!*

- *Strongly Agreed: Not because of my lack of knowledge but solely because our technology and WIFE access is completely unreliable.*
- *Agreed: In my previous teaching experiences, I haven't had access to technology and therefore I only know of a few educational programs available online that are my go-to when I need technology on the spot.*

Statement 2: I dislike working with machines that are smarter than I am. While none of the respondents strongly disagreed to this statement, four out of the 30 respondents (13.33%) *agreed* with this statement. Twelve out of the 30 respondents (40%) *disagreed* while nine out of the 30 participants (30%) *strongly disagreed.* Five out of the 30 respondents (16.67%) were neutral to this statement. There were three additional comments attached to this statement:

- *Neutral: Loaded question—hard to answer*
- *Neutral: I don't dislike them, but need to know how to easily use them for education. I use them easily for myself.*
- *Disagreed: I just need time and adequate training to become familiar with the machines. And for them to be working properly in the first place!*

Statement 3: I have difficulty understanding the technical aspects of computers and other devices. One out of the 30 respondents (3.33%) *strongly agreed* with this statement while nine out of the 30 respondents (30%) *agreed.* The majority of respondents (13 out of 30 or 43.33%) *disagreed* with this statement. Five out of the 30 respondents (16.67%) *strongly disagreed.* Two out of the 30 respondents (6.67%) were neutral to this statement.

Statement 4: It scares me to think that I could cause technology to destroy a large amount of data by hitting the wrong button. Out of the 30 respondents who participated, one person (3.33%) *strongly agreed* with this statement. Nine out of the 30 respondents (30%) *agreed.* Five out of the 30 respondents (16.67%) were neutral to this statement. Eight out of the 30 respondents (26.67%) *disagreed* and 7 respondents (23.33%) *strongly disagreed* to this statement.

Statement 5: You have to be a genius to understand all the special buttons and settings on most technology devices. While no one *strongly agreed* with this statement, one person (3.33%) *agreed* and one person (3.33%) was *neutral* to this statement. The majority of respondents (18 out of 30 or 60%) dis*agreed* and ten out of the 30 participants (33.33%) *strongly disagreed.*

Statement 6: If given the opportunity, I would like to learn about and use educational technology. Thirteen out of the 30 respondents (43.33%) *strongly agreed* and 14 out of the 30 respondents (46.67%) *agreed* with this statement. One person (3.33%) was *neutral* to the statement, one person (3.33%) *disagreed* and one person (3.33%) *strongly disagreed* with this statement. There was one additional comment attached to this statement:

- *Strongly Agreed: However, the opportunity cannot be when I have to do other things as then I cannot devote the time needed to learning the info.*

Statement 7: I look forward to using technology in my classroom and lessons. Six out of the 30 respondents (20%) *strongly agreed* with this statement. The majority of participants (17 out of 30 or 56.67%) *agreed.* One person (3.33%) *disagreed* and one

person (3.33%) *strongly disagreed* with this statement. Five out of the 30 respondents (16.67%) were *neutral* to this statement. There was one additional comment attached to this statement:

- *Agreed: But I don't have time to learn it on my own, and feel like once I've learned something cool, we don't have the hardware or software to use it effectively in the classroom. Some schools seem to have more access than others.*

Statement 8: The challenge of learning about new technology is exciting. Six out of the 30 respondents (20%) *strongly agreed* with this statement. The majority of respondents (19 out of 30 or 63.33%) *agreed* and five out of the 30 respondents (16.67%) were *neutral* to the statement. There were no respondents who chose to *disagree* or *strongly disagree* to this statement. There was one additional comment attached to this statement:

- *Agreed: Ditto the above comment. But I don't have time to learn it on my own, and feel like once I've learned something cool, we don't have the hardware or software to use it effectively in the classroom. Some schools seem to have more access than others.*

Statement 9: Learning to use technology is like learning any new skill – the more you practice, the better you become. Fourteen out of the 30 respondents (46.67%) *strongly agreed* and 15 out of the 30 respondents (50%) *agreed* with this statement. One person (3.33%) *disagreed* with the statement. No respondents were *neutral* and none *strongly disagreed* with this statement.

Statement 10: I feel that I will be able to keep up with the advances happening in the educational technology field. Two out of the 30 respondents (6.67%) *strongly agreed* with this statement. The majority of respondents (15 out of 30 or 50%) *agreed* with this statement. Nine out of the 30 respondents (30%) were *neutral* to this statement. Three out of the 30 respondents (10%) *disagreed* and one person (3.33%) *strongly disagreed* with this statement. There were three additional comments attached to this statement:

- *Disagree: Not without training.*
- *Agreed: I will use what I am comfortable with using, and works in my classroom.*
- *Strongly Disagreed: Again..this is due to the lack of devices available in our district and their lack of reliability.*

Statement 11: I have avoided technology in the classroom because it is unfamiliar and somewhat intimidating to me. While no one *strongly agreed* with this statement, five out of the 30 participants (16.67%) *agreed* with it. One person (3.33%) was *neutral* to the statement. The majority of participants (18 out of 30 or 60%) *disagreed* with the statement and six out of the 30 respondents (20%) *strongly disagreed.*

Statement 12: I am confident that I can learn classroom technology skills and pass my knowledge and expertise on to my students. Five out of the 30 respondents (16.67%) *strongly agreed* with this comment and 18 out of the 30 respondents (60%) *agreed* with it. Five out of the 30 respondents (16.67%) were *neutral* to the comment.

Two people (6.67%) *disagreed* with the comment but no one *strongly disagreed.* There was one additional comment attached to this statement:

- *Disagreed: Often they know more than I do.*

Statement 13: I feel apprehensive about using technology with my students. While no one *strongly agreed* with this statement, five out of the 30 respondents (16.67%) *agreed* with it. Another five out of the 30 respondents (16.67%) were *neutral* to the statement. The majority of respondents (17 out of 30 or 56.67%) *disagreed* with the statement and another three people (10%) *strongly disagreed.*

Statement 14: I hesitate to use technology in the classroom for fear of making mistakes that I cannot correct. One person (3.33%) *strongly agreed* with this statement and six out of the 30 respondents (6.67%) *agreed* with it. The majority of participants (20 out of 30 or 66.67%) *disagreed* with the statement and six out of the 30 respondents (20%) *strongly disagreed* with it. One person (3.33%) stated that they were *neutral* to the statement.

Statement 15: Anyone can learn to use technology if they have a patient and motivated mindset. Eight out of the 30 respondents (26.67%) *strongly agreed* with this statement. Eighteen out of the 30 respondents (60%) *agreed* with this statement. Two people (6.67%) were *neutral* to this statement and another two people (6.67%) *disagreed* with it. No one *strongly disagreed* with the statement. There were three additional comments attached to this statement:

- *Agreed: I also need the time to learn it!*
- *Disagreed: Time is a big factor.*

- *Agreed: . . .and resources.*

Statement 16: I am afraid that if I begin to use technology I will become dependent upon it and lose some of my reasoning skills. Fourteen out of the 30 respondents (46.67%) *disagreed* with this statement and thirteen out of the 30 respondents (43.33%) *strongly disagreed* with it. Three people (10%) were *neutral* to this statement. No one responded that they *agreed* or *strongly agreed* with this statement. There was one additional comment attached to this statement:

- *Disagreed. I am concerned, that technology negatively affects our social skills.*

Statement 17: I am sure that with time and practice I will be as comfortable working with technology as I am working with students in my classroom. Seven out of the 30 respondents (23.33%) *strongly agreed* with this statement and 19 out of the 30 respondents (63.33%) *agreed* with it. Three people (10%) stated that they were *neutral* to the statement. One person (3.33%) *disagreed* with this statement, but no one *strongly disagreed.*

Statement 18: I feel technology is a necessary tool in the educational setting. Thirteen out of the 30 respondents (43.33%) *strongly agreed* with this statement and 16 out of the 30 respondents (53.33%) *agreed* with it. One person (3.33%) was *neutral* to this statement. No one responded that they *disagreed* or *strongly disagreed* with this statement.

Results of Short-Answer Questions

The final section of the survey included three questions allowing for respondents to provide their own individual answers. There was no length requirement for their responses and each response was optional. Out of the 37 participants in the survey, eight people chose to skip the short-answer section, making a response-rate of 78%. The following lists each question with its corresponding answers.

Does using technology in your classroom stress you out? Why or why not?

- *It stresses me out because we can't depend on Internet connection in our school. There have been times when I'm ready to use a power point in reading groups, and the Internet connection has been lost. It is very frustrating!!*
- *At times, tech tools often cause unforeseen delays or challenges that can be stressful, but I have learned to approach this with a very unstressed attitude and I generally have a back-up plan. I have learned to say "oh well" and move on. This has really helped my stress.*
- *Only when the equipment doesn't work or we don't have access to the tools we need.*
- *No, just part of teaching today. Frustrating when it doesn't work but then you just have to model "rolling with it."*
- *Yes, I am sometimes stressed if the technology I plan on using does not work or if it is dependent on an Internet connection and the Internet is down. I*

also sometimes stress if I am using a new technology for the first time, especially if in front of other teachers.

- *No, but I am not a [traditional] classroom teacher.*
- *Yes, because there are many times there are things that don't work. I can do the things I know how to do, but when it doesn't work I don't know what to do to change/fix/redirect.*
- *Sometimes it does. It seems like when I have a great lesson planned using technology, then that's the time the internet is down, or glitchy. Sometimes it seems like it takes more time than it's worth.*
- *At times, because as I stated earlier out District's infrastructure is totally unreliable.*
- *I often worry about the effectiveness of utilizing technology with my students, especially for reading and math. As we have seen with the EasyCBM, students can click through and not think/reason with the content.*
- *What stresses me out is if something is new and I don't know how to use it, I worry about how much time it will take for me to get proficient at using it. I worry about having enough time in my already packed day to learn and practice a new piece of technology.*
- *It does not stress me out it is exciting. It is challenging to find the time to practice and learn more about what is available and how to use it.*
- *When the server is out it can be a pain. However, I just go back to what I used to do.*

- *No. It takes time to learn but is worth it.*
- *No. I understand how to use the technology that best fits with what I do.*
- *Sometimes. It is not so much the technology, but the planning and availability of it. I transferred from a school that had several computer labs and iPad carts, to a school that has 1 lab and no iPads for my grade level. In addition, I become very dependent on technology...and when it doesn't work, I sometimes forget how to teach without it!!*
- *No it does not. I feel confident using technology in the classroom.*
- *Using SOME forms of technology do. If I start to use some of the devices, and they are not working properly, the connections don't work, or the site goes down and I was dependent on that technology, I get very stressed. I have wasted time and must improvise on the spot, and that is very stressful. Depending on technology takes away my control over my lesson and my classroom. If it fails, or I cause a problem, I no longer have control over how the lesson goes or what gets taught.*
- *Yes, the thought of helping 21 students navigate technology scares me. I feel it will hinder my teaching in that I will spend so much time helping them use and navigate the technology, I won't get to or have enough time to teach what I need a teach. I use technology a lot in my teaching instruction, they students do not have it in their hands a lot.*
- *Only if it is something new and unfamiliar to me.*

- *Not always. When the technology I have is working properly, I am not stressed about it. The only time I tend to get frustrated and a bit overwhelmed is when I have something planned and go to use the technology and all of a sudden it does not work.*
- *Yes, because there is always issues with our technology.*
- *Sometimes it's stressful when something should work and it does not. However, I am more than capable of fixing most technological errors... I just don't always have the administrative passwords to do so. I am not stressed by the technology itself, mostly stressed by waiting for someone else to do what I could have done for myself.*
- *No, because we are limited on what is available. If there were more options, I could potentially stress out if it did not always work properly.*
- *The only thing that stresses me out about using technology is when I plan a lesson or unit that is technology centered and the technology isn't working. That is crazy to me in this day and age!!! The even crazier thing is that is happens a lot!*
- *It depends on the training I have had.*
- *No more than any other tool stresses me out. It can be a pain when it isn't working, but as an experienced teacher you know to always have a Plan B anyways, so...*
- *No ~ It enhances the learning and the students enjoy it*

- *Using the technology does not stress me out. The lack of technology available and cutting programs that uses it does.*

Do you think your lack of use or use of technology in your classroom affects your students? In what way?

- *Teachers need to use technology in the classroom because that is where our students are headed . . . in almost every aspect of their lives.*
- *This is a very complex issue, there are many competing factors and technology has a strong influence at times but can also just be a substitute or even a distraction.*
- *We shouldn't use technology just for the sake of technology. We don't need to read books on line just because we can. We have books too.*
- *I think students enjoy the change up and the use of technology as part of their learning environment. I think it provides motivation and gives them skills that they may need later on in life and in their education*
- *Yes, if students are used to using a certain type of technology in one setting, but I don't use that in my setting I think that could affect how or if students understand a certain concept or topic. Also, if I am not as skilled at using a technology as students are used to from another staff member those students may be at a disadvantage.*
- *No, but if I taught regularly I think I would need to incorporate more technology to give my kids tools to evolve and learn.*

- *The only thing I feel they miss is that nowadays that is the wave of the future and I'm not "on the wave" which in turn may give them a disadvantage. Otherwise I do believe I teach well and have many other things to offer.*
- *maybe, but valuable instructional time is also lost when things don't work.*
- *Yes ~ we are WAY behind in our district in using technology to supplement/enhance our student's learning and it is a huge disservice to them.*
- *Yes! Students are more engaged with technology. Our students are great at experimenting and figuring out technology, and I worry that my fears about deleting data and not knowing how to fix a problem if my students encounter one are prohibiting my students from accessing technology.*
- *I try to balance technology. I feel like my students get plenty of "Screen time" at home. I realize technology is necessary for the world we live in, however, I do try to get them to branch out and do more hands on activities because we learn by doing... not just pushing buttons or playing with the IPAD.*
- *I am torn, because I am not a classroom teacher and work with students in small groups... We do use the IPAD and computer.. but I know there are more available resources/apps that could benefit my sessions.*
- *The use of it seems to pull students in. However, they at times are disappointed that we are doing "educational" things rather than games.*

- *Yes. I'm used to having a smartboard that students can manipulate. They miss out when they can't use the tech as much as the teacher.*
- *I think the use of an iPad affects my students in a positive way. The majority of my students enjoy using the iPad and it is motivating for them.*
- *Absolutely. This generation of students is extremely hands on and requires new ways to teach and learn information. I believe our district has created a strong disadvantage for many of our schools (mostly elementary) because we do not have access to some of the amazing pieces of technology that others have.*
- *I think students benefit from the use of technology in my classroom.*
- *No. I use technology. Just not as much as some teachers. Technology can add to a lesson, provide motivation and excitement, and be fun. But it does not replace hands-on learning or teacher to student relationships. If I don't use technology the children are not going to suffer. Most of the technology I use in the classroom is teacher controlled. They are not controlling the technology source. When we go to computer lab they are in control.*
- *I don't think so. Class would probably be more exciting for them, but I do think I can teach them what they need to know without technology in their hands.*
- *I would like to use more technology as the students are very skilled in using it and are growing up in a world filled with technology. Although I feel that we don't have many options available such as smart boards etc.*

- *The ways I use technology in my classroom affects my students minimally. I only have the Hover Cam and projector. This makes whole group activities, online stories, videos/songs, etc. more possible and interactive. I do not use technology as much as I should by checking out the iPads for the students to use. This would affect my students learning in many ways. I feel that the earlier and more often students use technology in their lives, the more adept they are with it later in life. There are also a lot of really fun learning games for students to use.*
- *No.*
- *I think the use of technology in my classroom keeps the students more engaged.*
- *Some students may not have technology at home, so they may feel confused if they have to work with it in school and not be able to practice at home.*
- *I think using technology really helps our students. If they see me using it all the time and then they get to try it out for themselves, I believe it helps them become comfortable using it. Technology just becomes just the way things are done. Students need to be on computers and iPads so they learn how to use technology.*
- *Students seem to love technology. They don't know a world without it.*
- *I think we have digital kids walking into our classrooms now, so if I don't use technology I'm not going to reach them.*

- *No ~ I use quite a bit of technology. Of course I would love to learn more and continue to incorporate it in many new different ways.*
- *I think that with the results of the SBAC [Smarter Balanced Assessment Consortium] and other assessments coming up that use technology will be affected if students are not tech savvy.*

What do you think would help reduce technology-induced stress for those who are experiencing it?

- *More technology in-service*
- *Lots of training and support without pressure to be perfect.. Teachers should be given the tools and then offered multiple levels of support depending on their expertise and comfort level. I don't think teacher should be "allowed" to opt out so much. Having widely differing competencies with important technologies causes systemic stress which is hard on everyone even those comfortable with tech.*
- *Training. We are given equipment and programs and then not supported in their use.*
- *Training and support while using it—NOT doing it for them.*
- *More training and more time to train. More opportunities to work with others in my building with specific knowledge about certain technologies.*
- *Information on how to use it.*

- *Time, time, time . . . we need to have time to learn it and practice it so that when the kids are in the room, we can use it! There is never time to accomplish it all and that is what stresses me!*
- *Everyone is different, so I'm not sure.*
- *Getting reliable equipment in their hands frequently and letting them practice . . . WITHOUT THE WORRIES OF WIFE NOT WORKING OR EQUIPMENT FAILURES.*
- *TRAINING. Show us specific apps, specific programs, specific tools and how to utilize these in our classrooms. Simply giving someone a tablet or laptop does not promote its use.*
- *Allowing for time to experiment with new devices, trainings, etc.*
- *More time to explore/hands on practice with items - see what's available. Practice.*
- *Professional development!*
- *Training.*
- *Further education on the basics of how to use technology. Providing clear examples of what technology to use when so that individuals can clearly understand how it is best used to educate students and can take that back to the classroom to implement.*
- *1. Lots of training!!! 2. Availability of resources 3. Collaboration*
- *Step-by-step user friendly guides and workshops.*

- *It would help to have training from someone who understood that not everyone has the same background and knowledge in computer that your generation does. You are fortunate to have had computer training from a very young age, and had direct instruction throughout your school career. You have had opportunities to use all forms of computer skills on a daily basis. It has made you very skilled in computers and I admire you for that. What is VERY frustrating for me is to attend training or ask for technology assistance, and have someone fly through it, assuming I know exactly what they are talking about, but I don't, because I haven't had computer training since I was five, like my students this year are experiencing. I would like practical training done by people who are patient enough to explain things, and not some computer whiz with no patience who assumes you have the same computer background they do, and that you are an idiot if you don't. And that's all I've got to say about that!*
- *A tech class for the kids. Some sort of class to teach them computer basics such as mouse use, how to turn it on, word processing, etc.*
- *Education and training.*
- *Spend time using it and practicing.*
- *More consistent technology services*
- *I think many teachers are stressed because they do not know how to use their technology. One-on-one or small group lessons would help those teachers become more familiar with their devices in a calmer setting.*

- *Have a variety of options for technology use. Have employees from the technology department more available.*
- *I think first off our Internet needs to be reliable. There is nothing worse than having to change a lesson when our Internet isn't working. We shouldn't have to "punt" because of our Internet is unreliable. The thing I think our district has been good about doing is offering computer courses for credit. That has helped me by keeping me up to what educational tools are out there and how to use them in my classroom.*
- *Training!*
- *Time, training, and patience instead of being "mandated" to use it.*
- *Just more training and explanation . . . really demonstrate and apply hands on help!*
- *Many people in our school rely on others to help them or do the work on the computer for them instead of learning themselves. I think that the use of technology in classrooms should me mandated and staff should be trained accordingly. Some people will never use it if not forced to!*

Conclusion

This chapter presented the results of the classroom technology-induced stress survey conducted in September 2014. Employed within a public school district in southwest Montana, 37 teachers chose to participate in the survey. Although some chose to skip certain sections, the results were comprehensive. The following and final

chapter will offer a thorough analysis of the responses as well as draw conclusions on the data collected and make suggestions for further research.

Chapter V

ANALYSIS/CONCLUSIONS

Introduction

The results of data shown in Chapter IV have been carefully analyzed by the writer. Although the facts do not change, a closer look at the information from the writer's perspective as well as comparison and investigation into the relationship between questions, answers and reviewed literature, will provide a better understanding as well as ideas for further research. The following outlines these thoughts, suggestions and conclusions.

Response Rate

As noted in Chapter IV, of the 75 teachers who were invited to participate in the survey on technology-induced stress in the classroom, 37 chose to participate. Although this only created a response rate of 49%, the writer is aware how precious time is to teachers and was pleased with the willing participation of 37 teachers. The writer feels as though 37 participants is a sufficient number to provide a breadth and depth of responses, providing a fair sample of experiences within the surveyed district.

The fact that 100% of those who participated chose to do so via the electronic survey rather than a pencil and paper survey, is worth noting. The writer found it very

interesting, and perhaps ironic, that a survey about a teacher's relationship with technology was overwhelmingly chosen to be taken through the use of technology. The writer is unaware of any technological difficulties experienced by participants while taking the survey, but feels it would not be hard to believe that this would be possible and would therefore affect participants' responses. The writer wonders if, because of the nature of the survey, a paper and pencil collection method would have produced different results.

Reflection and Conclusions

Demographic information. Participants' responses to four demographic questions provided a better understanding of background knowledge and educational history that may be meaningful when looking at the responses to the other two sections of the survey (see Appendix B).

Question 1: How old are you? The majority of survey participants (62%) were between the ages of 30 and 49. This is not surprising as the majority of teachers at the surveyed schools are between the ages of 30 and 49. There are fewer teachers at the surveyed schools within the age brackets of 20-29 and 50-60+ so it is also not surprising that the participant responses mirrored the demographics of the schools. The writer does wonder, however, if there were fewer responses from those in their twenties as it can be assumed that this generation has had more experience with technology and therefore doesn't have as much techno-stress. Likewise, the writer wonders if there were fewer responses from the older generations as it can be assumed that these

teachers have had less experience with technology and therefore have more techno-stress and chose to avoid the survey altogether. Regardless of the truth, these are ponderings of the writer.

Question 2: What is the highest degree that you hold? The writer was surprised to learn that the majority of respondents (22 out of 37 or 59.46%) have master's degrees. The remaining participants (40.54%) hold bachelor degrees. Perhaps more relevant to this survey is when these teachers received their degrees.

Question 3: What year did you receive your highest degree? While 24.33% of respondents received their highest degrees before 1999, the overwhelming majority of participants (75.67%) received their highest degrees within the last 15 years. The writer would tend to believe that any 21st century secondary program focused on education would incorporate technology in some way. Whether requiring students, in this case the surveyed teachers, to produce and/or submit assignments electronically or offering specific courses on technology integration, it is likely that those teachers pursuing degrees after the year 2000 had some sort of contact with technology. Whether this provided more technology experience and therefore provoked less techno-stress is unknown and likely specific to each person's own educational experiences.

Question 4: How many years of teaching experience do you have? The majority of participants (75.68%) stated having more than 7 years of teaching experience. The remaining 24.32% had less than 7 years of teaching experience. The writer believes that a combination of teaching experience and the year in which teachers received their highest degree will have the greatest impact on their level of techno-stress. The writer

would tend to think that those with more teaching experience have less job-stress in general as they are more used to other classroom stressors such as classroom management techniques, curriculum understanding and observations from administrators.

Likert-rating scale statements. The purpose of the survey section containing Likert-rating Scale Statements was to provide the writer with a variety of individual responses to view side-by-side with others' responses to the same statements. It was believed that individual responses would later be viewed as a whole revealing common themes and similar experiences. Although the writer initially believed that each statement was unrelated to the next, after a closer look at these statements as a whole as well as time devoted to analyze participants' responses to these statements, it seemed as though some statements were far more similar than initially believed and as a result, created a narrative for understanding these teacher's relationship with techno-stress.

While a few of the statements received a range of responses across the board from strongly *disagreeing* to *strongly agreeing* and everything in between, many of the statements received heavily similar responses. As mentioned, the writer discovered a similarity between certain statements as well as a narrative that observed participants moving from a sense of hope to a genuine interest and willingness to try and finally expressions of confidence for the future of technology in the classroom. The following will explore these statements when placed together in this narrative.

Hope. While it is impossible to ignore the extra comments attached to a few of these statements, Statement 2 *(I dislike working with machines that are smarter than I am)* and Statement 5 *(You have to be a genius to understand all the special buttons and settings on most technology devices)* both seem to have illustrated a sense of hope by the respondents. Most of the participants disagreed to some degree with these statements making the writer believe that the majority of participants neither believe that machines are superior to their own knowledge nor doubt that their knowledge is insufficient to tackle the tasks necessary to utilize a technology device. The writer believes that if teachers already felt that computers and other technological devices were so advanced and daunting that there was no hope in the average person ever being able to touch the layer of understanding, then there would be no sense in even taking the next step to try and learn. Therefore, it could be said that because the majority of survey participants disagreed with these statements to some degree, they feel a sense of hope, not only for the future of technology in education, but in their own ability to play a role in the implementation of these technologies into the classroom.

Interest. Beyond the confidence it takes for a teacher to feel as though there is hope for their ability to use technology in the classroom, there must also, perhaps more importantly, be a genuine interest in making the thought a reality. The responses to Statement 6 *(If given the opportunity, I would like to learn about and use educational technology)*, Statement 7 *(I look forward to using technology in my classroom and lessons)*, and Statement 8 *(The challenge of learning about new technology is exciting)*

seem to suggest that the surveyed teachers are genuinely interested and perhaps even excited about educational technology.

Overwhelmingly, participants agreed with these statements making the writer believe that teachers are, at the very least, interested in these technologies, although a few of the additional comments allude to some of the underlying concerns that may be preventing them from taking the leap into utilization. One teacher declared that they agreed with these statements, but *". . . the opportunity cannot be when I have to do other things as then I cannot devote the time needed to learning the info*" while another participant agreed but was reluctant in saying *". . . I don't have time to learn it on my own, and feel like once I've learned something cool, we don't have the hardware or software to use it effectively in the classroom . . . ."* Although both of these participants agreed with the statements, the writer finds it hard to believe that these teachers will actually move onto the next step of being willing to try using technology in the classroom. Regardless of their interest, it seems as though these participants'' mentioned discouragement with lack of access to time, hardware, software or support may ultimately hold them back from actually being willing to try. Nonetheless, the writer feels encouraged by the overwhelming interest and excitement by the majority of teachers who took this survey.

Willingness to try. Once the initial interest is expressed, a genuine readiness to take the next step and try something out first hand is natural. However, as pointed out in the literature reviewed in Chapter II, a teacher's pre-existing beliefs about technology

may play a crucial role in their willingness to move forward with it. In fact, Palak and Wall's (2009) study found teacher beliefs to be the single most important factor for their instructional technology decisions in the classroom. Comments from some survey participants seem to support Palak and Wall's findings as a majority of them agreed to statements that imply an initial interest in educational technology. The following statements seem to suggest that many teachers already have a positive outlook on technology use and are willing to take the next step in trying out technology in their own classrooms.

The majority of participants agreed with Statement 9 *(Learning to use technology is like learning any new skill—the more you practice, the better you become)*, Statement 15 *(Anyone can learn to use technology if they have a patient and motivated mindset) and Statement 17 (I am sure that with time and practice I will be as comfortable working with technology as I am working with students in my classroom).*

In the writer's opinion, agreement with these statements shows that teachers recognize that using technology in the classroom is completely possible with a bit of practice, patience, and positive thinking. The writer believes that if a teacher is able to recognize and support these factors, they may be more willing to devote some time into trying them out. Unfortunately, for three participants, additional comments suggest that time and resources are a big barrier in their willingness to try out technology in the classroom.

Confidence for the future. When teachers believe there is hope for their ability to use educational technology, have an interest in doing so, and a willingness to try, the writer believes that stating confidence in a future where technology use is a tangible and common classroom occurrence is a final and encouraging option for reducing technology-induced stress. When asked to respond to Statement 10 *(I feel that I will be able to keep up with the advances happening in the educational technology field)*, most participants agreed or were neutral to the idea. Additionally, when asked to respond to Statement 12 *(I am confident that I can learn classroom technology skills and pass my knowledge and expertise on to my students)* most agreed. The writer believes that agreement or neutrality to these statements shows a broader outlook on the future of technology use in the classroom as well as a confidence of where the future of education is headed and the role that teachers will play in that future. It seems to the writer, that something that inflicts stress upon a person would be avoided at all costs. Therefore, an expression of confidence enough to pass on expertise to the future of our society would imply that for many teachers, using technology is not a stress-inducing relationship. Similarly, the agreeing responses to Statement 18 *(I feel technology is a necessary tool in the educational setting)* indicate to the writer that at the very least, teachers recognize the importance of technology in education and know that avoiding stress in an effort to embrace the inevitable will also be necessary.

Text-based questions. The final three questions of this survey requested personal answers through open text-based responses. While eight of the 37 respondents

chose to skip this section of the survey, the remaining 29 chose to participate and provided perhaps the most personal and honest look at the role of techno-stress in the everyday lives of teachers. The following looks at each question individually and attempts to understand each participant's reasoning behind their answers while simultaneously analyzing their answers in relation to the overall theme of this study.

Does using technology in your classroom stress you out? Why or why not? While taking a closer look at the responses to this open text-based question, the writer found that seven teachers said that using technology in their classrooms definitely stressed them out and almost an equal number of teachers (eight) said that it absolutely did not stress them out. Most teachers (14 out of 29) said that using technology in their classrooms stressed them out at least some of the time. If the numbers are grouped together, it is clear that the majority of teachers participating in this survey do experience some stress when using technology in their classrooms. The writer finds this very interesting, especially when considering the overwhelmingly positive outlook expressed by participants in their responses to the Likert-rating scale section of the survey. The reasoning behind this observation became clear when the responses were further examined.

For the most part, those that reported having absolutely no stress when using technology in the classroom seemed to cite confidence ("I feel confident using technology in the classroom") and experience ("I understand how to use the technology that best fits with what I do") as contributing factors to their lack of stress. More impacting on the writer was the positivity that flowed from these teachers' responses.

One teacher explained, "It does not stress me out it is exciting" while another stated that "It takes time to learn but is worth it" and yet another said, " It enhances the learning and the students enjoy it." One teacher not only avoided techno-stress in the classroom, but recognized that it was ". . . just part of teaching today. Frustrating when it doesn't work but then you just have to model 'rolling with it.'"

These intensely positive reactions to this statement left the writer wondering if demographic information such as age, education, year of degree obtainment and years of teaching experience played a part in the lack of techno-stress experienced by these teachers. A closer look found a few similarities worth noting. All but one of the respondents who reported not getting stressed out by using technology was between the ages of 20 and 39. Additionally this entire group of respondents received their highest degree (a mix of bachelors and masters among them) after the year 2000. The writer believes that this latest factor may indeed have impacted the participants' responses as it may be assumed that a secondary education program in the 21st century would focus on or at least require contact with technology and therefore aid in providing experience with technology. As noted in Statements 9, 15 and 17 of the Likert-rating Scale section of the survey, experience using technology is believed to reduce any stress that it may cause. The respondents' overwhelming agreement with these statements as well as the fact that they received their degrees recently all affirm to the writer that their positive outlook on technology-use in the classroom may be credited to their history of use and willingness to use more classroom technology in the future.

A real focus should be given, however, on the remaining 21 teachers who commented on feeling stress by classroom technology-use some or all of the time. Four causes of such stress were prominent in almost all responses: lack of time, unreliable technology, lack of access and new technology. It seems to the writer that when looking at these particular responses, the demographics of these teachers seem less important. The writer believes that in this case, such responses could be felt by anyone regardless of their age, education or years of teaching experience. A closer look at these four sources of stress, subtly highlight a greater concern for these teachers.

One common worry for teachers experiencing techno-stress was the lack of time they felt they had to devote to using technology during their lessons. One teacher stated, "I worry about having enough time in my already packed day to learn and practice" while another confessed that, "I feel [technology] will hinder my teaching in that I will spend so much time helping [students] use and navigate the technology, I won't get to or have enough time to teach what I need [to] teach." This is of considerable concern because, as mentioned in Chapter I, a recent study on the creators, outcomes, and inhibitors of techno stress in the professional environment, site the requirement of people to work more and work faster through constant interruptions as a main cause of techno stress (Tarafdar et al., 2011). It seems to the writer that these concerns, although legitimate could be avoided with some additional support offered by the district. The writer wonders if proper training and available support could ultimately save teachers time and reduce stress when using technology in the classroom.

Perhaps the greatest symptom of techno-stress comes from teachers who devote the time to using technology in their classrooms, only to have it not work. Many responses tell a similar story, suggesting that,

> . . . there are many times there are things that don't work. I can do the things I know how to do, but when it doesn't work I don't know what to do to change/fix/redirect" or "It seems like when I have a great lesson planned using technology, then that's the time the internet is down, or glitchy.

Other teachers stated, "The only time I tend to get frustrated and a bit overwhelmed is when I have something planned and go to use the technology and all of a sudden it does not work." While another teacher gives a detailed account of how unreliable technology affects their teaching experience:

> If I start to use some of the devices, and they are not working properly, the connections don't work, or the site goes down and I was dependent on that technology, I get very stressed. I have wasted time and must improvise on the spot, and that is very stressful. Depending on technology takes away my control over my lesson and my classroom. If it fails, or I cause a problem, I no longer have control over how the lesson goes or what gets taught.

The writer empathized with these teachers and is again reminded of a concept introduced in Chapter I of this study by two researchers who discovered that because technology is viewed as such an important factor of school reform in the 21st century, a variety of technological resources have already been purchased adding to the high expectations on teachers (Palak & Walls, 2009). These teachers' comments seem to suggest that although they are given the tools, the district does not support the infrastructure to match their high expectations of teacher-use.

A less noted, but equally as important concern is when there is technology that teachers would like to use, but they don't have access to it. One teacher flatly stated,

"we don't have access to the tools we need" while another said, ". . . we are limited on what is available . . ." and yet another said, "Using the technology does not stress me out. The lack of technology available and cutting programs that uses it does." One teacher gives a keen insight on their experience stating that

> It is not so much the technology [that stresses me out], but the planning and availability of it. I transferred from a school that had several computer labs and iPad carts, to a school that has one lab and no iPads for my grade level.

The writer believes that because the teachers who participated in this survey were employed at three different elementary schools within one district, there may be some inequality of technology distribution among schools. This could explain why some teachers feel as though they do not have access to techno-tools while others don't complain of this as a problem for them. Regardless, it is clear that lack of access to technology is another contributing factor to those teachers experiencing techno-stress.

One final cause of technology-induced stress that was mentioned by a few participants was new technology. Some teachers seemed to feel that they were not knowledgeable or confident enough to implement technology into their teaching, stating that they get stressed "if it is something new and unfamiliar to me" or, " I . . . sometimes stress if I am using a new technology for the first time, especially if in front of other teachers." Another teacher said, "What stresses me out is if something is new and I don't know how to use it, I worry about how much time it will take for me to get proficient at using it." Although change is often stressful for many people, the writer again feels that proper training on and support for new technology can help alleviate a lot of techno-stress for teachers.

While it is now clear that a majority of surveyed teachers experience techno-stress at least some of the time during their day, the overwhelmingly similar responses to why this happens is encouraging to the writer. When the causes of stress are common among those experiencing it, it may be easier to create a plan for reducing this stress. The positivity expressed by those who did not report experiencing techno-stress might actually help encourage what these teachers seem to need most, training and support. This idea will be analyzed further when looking at the third text-based question.

Do you think your lack of use or use of technology in your classroom affects your students? In what way? Although it is at times unclear whether or not teachers take direct responsibility for their role in the effect of technology on students, it is very clear that teachers recognize that technology is an important part of students' lives and a large part of where technology will take them in their future education and occupations.

As suggested in the literature reviewed in Chapter I, Li's 2007 study found that teacher's are often aware of their students' excitement towards technology use, yet tended to avoid classroom technology integration at all costs, believing that it should only be used when necessary as it can confuse or hinder their students' focus. Within this study, this question was not answered directly by many, but it did seem to extract strong beliefs and opinions that resonate with Li's 2007 findings. The following is a closer look at the teachers' beliefs of positive and negative impacts of technology on students.

Based on the number of negative responses to the first open text-based question, the writer was not surprised to receive a handful of negative outlooks here. Although these teachers did not allude to their own use of technology in the classroom, a few stated that, "We shouldn't use technology just for the sake of technology" or, ". . . I feel like my students get plenty of "Screen time" at home." Another teacher felt as though technology ". . . has a strong influence at times but can also just be a substitute or even a distraction." The reasoning behind these teachers' somewhat negative feelings towards technology could have something to do with their own relationship with technology. When examined closer, the writer found that these three respondents reported sometimes feeling stressed by technology. The writer believes that this may have something to do with how they feel technology will impact their students as well as why they may be avoiding using technology themselves or denying their students to use it.

A similar group of teachers did not allude to their own use of technology in the classroom, but had a more positive outlook on their students' techno-use. One teacher believed that, "The use of [technology] seems to pull students in" while another said, "I think the use of an iPad affects my students in a positive way. The majority of my students enjoy using the iPad and it is motivating for them." A third teacher said, "I think the use of technology in my classroom keeps the students more engaged." This theme of motivation and engagement seems to be one that is embraced by these teachers as well as many who commented on the undeniable role that technology plays in the lives of 21st century students as they move forward into the techno-world they already live and flourish in.

Overall, the writer was encouraged to see that teachers recognized that regardless of its influence on their own lives, students are living in a world where technology is unavoidable. One teacher honestly stated that, "Teachers need to use technology in the classroom because that is where our students are headed . . . in almost every aspect of their lives" while another said that, "Students seem to love technology. They don't know a world without it." One teacher recognized the experiences of his/her students saying, "I think students enjoy the change up and the use of technology as part of their learning environment. I think it provides motivation and gives them skills that they may need later on in life and in their education." Additionally, a few teachers recognized the importance of modeling techno-use to this already techno-savvy generation stating, "I think using technology really helps our students. If they see me using it all the time and then they get to try it out for themselves. I believe it helps them become comfortable using it." A similar comment by a teacher stated that, "I think we have digital kids walking into our classrooms now, so if I don't use technology I'm not going to reach them." The writer found inspiration in these comments and those expressed in the Likert-rating section of the survey where teachers expressed a confidence and responsibility in their role in the future of the technology era students are already living in.

What do you think would help reduce technology-induced stress for those who are experiencing it? When asked how techno-stress could be reduced, a few ideas such as, "A tech class for the kids. Some sort of class to teach them computer basics such as mouse use, how to turn it on, word processing, etc.," time for

collaboration, or simply, "Getting reliable equipment" were all suggested. However, a few common themes were overwhelmingly expressed from participants. Above all, teachers feel that training, better support services and time for hands on practice with tech-tools would greatly reduce the stress that some are feeling when working with technology in their classrooms. These comments parallel the results from studies like those conducted by the University of Bristol over the course of 4 years that revealed 70% of participatory teachers reported having a positive outlook on technology use in the classroom after participating in an educational seminar. Similar literature reviewed in Chapter II confirmed that a teacher's involvement in training and tech support can significantly boost their knowledge base, which subsequently boosts their confidence and makes them more likely to incorporate technology into their instruction (Jones, 2013). The following individual teacher comments also emphasize that additional training, support and time could indeed help reduce stress and increase knowledge and confidence.

As noted, regardless of negative or positive outlooks on technology in the classroom, participants seemed to be clamoring for more training. When asked what they think would reduce techno-stress, one teacher said: "Training. We are given equipment and programs and then not supported in their use" while another said, "Just more training and explanation . . . really demonstrate and apply hands on help!" Another teacher, however, went into a bit more detail stating that they desire:

> Lots of training and support without pressure to be perfect. Teachers should be given the tools and then offered multiple levels of support depending on their expertise and comfort level. I don't think teacher[s] should be "allowed" to opt

> out so much. Having widely differing competencies with important technologies causes systemic stress, which is hard on everyone, even those comfortable with tech.

The writer believes this statement to be admirable as well as an archetype of all of the comments contained in this section as it not only expresses a great need for training, but provides an insight into how some teachers may be feeling about their current opportunities for training and also makes a suggestion to offer level-based support.

While most of the teachers' comments request training and some make subtle suggestions on how to enhance current training, this recent statement also contains an issue that comes up in a handful of teacher's responses. The idea of mandated training seems to be one that is both supported and rejected by many teachers. One teacher clearly requested, "Time, training, and patience instead of being "mandated" to use [technology]" while another teacher believes that, ". . . the use of technology in classrooms should be mandated and staff should be trained accordingly. Some people will never use it if not forced to!" It seems to the writer that although many teachers are begging for training, others may not be interested which can create inconsistency across a district. Inconsistency, the writer believes, that may produce stress.

Although the responses to this open text-based question allude to the tech service department that is already in place, the teachers participating in this survey seem to desire some adjustments to this support. A few teachers simply wish they had more support, asking for "More consistent technology services" or hoping to, "Have employees from the technology department more available." While it may be

challenging to reach each teacher individually, one teacher suggests that techno-stress may be reduced by the tech service department if they received, ". . . support while using it- NOT doing it for [me]." The writer strongly supports the idea of teaching how to do something rather than just doing it for them as this can aid in understanding and expertise that can ultimately reduce stress.

Finally, as mentioned in previous sections of this study, time is a very precious commodity to teachers and one that many teachers participating in this survey felt could aid in reducing techno-stress. Participating teachers suggested having, "More time to explore/hands on practice with items—[to] see what's available" and "time to experiment with new devices, trainings, etc." One teacher flatly stated that they need,

> time, time, time . . . we need to have time to learn it and practice it so that when the kids are in the room, we can use it! There is never time to accomplish it all and that is what stresses me!

As expressed throughout this study, the writer can empathize with teachers' great need for more time to achieve all of the goals set forth by themselves and their administrators. It is the writer's hope that teachers will be able to make a connection between the time given and the time that can be saved when some is dedicated to educational technology.

Suggestions for Further Research

After thoroughly analyzing all aspects of the survey distributed to K-4 teachers in a public school district in Southwest Montana, the writer feels as though an accurate depiction of techno-stress among teachers was received. Perhaps the most telling of all

areas of the survey was the first question in the text-based section of the survey. When given a question about whether or not using technology stressed them out and then being invited to freely provide an answer in their own words, teachers seemed to tell all. The responses, though varied, seemed to indicate to the writer, a legitimate problem with technology-induced stress.

As techno-stress was indeed identified among teachers, the writer believes that a further look into its effect on students would prove to be of utmost importance as both teachers and students move forward in the future of technology and its role in education. Does teachers' techno-stress directly impact student learning? Do students experience techno-stress? Further research may begin to answer these questions and help drastically change how school districts go about offering support for both technology and stress.

Sharing Research

Although participants of this survey were invited to contact the writer with any interest of the results, the writer works closely with the teachers in this district as well as its technology department and plans on using the data collected as a tool to communicate teacher concerns to the district technology team. The writer feels that the responses to the first text-based question about experience with techno-stress can be particularly helpful in opening the eyes of administrators and those in the technology department and therefore should be shared to express a need for change. Additionally, the writer feels as though the ideas and pleas brought forth in the responses to the third

text-based question about reducing techno-stress can help start a conversation about the revamping of district technology services already in place.

Conclusion

The process of completing this study has proven to be both challenging and rewarding. While the writer initially felt the lack of availability of similar research on the topic of technology-induced stress to be discouraging, she later found it to be incredibly interesting as techno-stress appears to play such an important part in teachers' lives yet goes somewhat unnoticed. As employers pressure employees to keep up with technologies to increase workflow, teachers are also being pressured to keep up with the changes in educational technology. Though not evident in the reviewed research, the writer now knows that teachers are indeed experiencing techno-stress and are not pleased with the support being offered to them by their employers. In addition, their experiences with techno-stress, lack of training and lack of time to devote to technology seem to encompass a wide range of opinions on how this all affects their students. As teachers recognize the techno-world that students are being raised in, will they ever recognize their role in fostering that growth? Will the teachers that see technology as a distraction and not a motivator ever be able to reach their students on this new level? As students embrace technology as a tool for learning, playing and communicating, teachers must increasingly learn to manage the stress this same technology brings for them.

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APPENDICES

APPENDIX A

Classroom Technology-Induced Stress Survey

Classroom Technology-Induced Stress Survey
Implied Consent Form

Greetings! You are invited to participate in this survey that explores the existence of stress caused by technology in today's learning environment. As a teacher, you likely experience change on a daily basis and have a keen insight on how these changes affect your level of stress. This survey strives to collect your responses in an effort to further understand how changes brought on by technology come into play.

Background Information and Purpose

This research project is being conducted by Angie Johnson, a candidate for a Master's Degree in Educational Media through the Information Media Department at St. Cloud State University. The purpose of this survey is to better understand how technology in the classroom affects teachers' levels of stress as well as their tendency to integrate technology into their lessons.

Procedures

If you choose to participate in this survey, you may click on the link below, which will take you directly to the online survey and specific directions. If you would prefer to complete a paper copy of the survey, you may find one in the teacher workroom. Your individual responses and identity will be kept completely anonymous from anyone, including the researcher. Participation should take no longer than 30 minutes. It is requested that your completion of the survey be conducted on your personal time, not during work hours. Completed paper copies may be placed in my mailbox located in the same workroom where the survey was found.

Risks

There are no foreseeable risks associated with your willingness to complete this survey.

Benefits

Although responses to the questions in this survey do not guarantee a change in policies and procedures in your district, the results will be shared in the hopes that administrators, stakeholders and other educators will better understand the relationship between technology and stress amongst teacher-users. By becoming more aware of this relationship, insight can be gained into professional development and strategies that can help support educators in their technology-use.

Confidentiality

You may rest assured that all responses and identification will remain anonymous. The district in which you work as well as your name and personal information are not required to complete the survey and will therefore not be available to the researcher or anyone reviewing the results.

Research Results / Contact Information
If you are interested in viewing the results of this survey or would like to request additional information about the survey or research project in general, please do not hesitate to contact the researcher, Angie Johnson via email (zean0501@stcloudstate.edu) or phone (605-691-1088). You may also contact my advisor, Dr. Marcia Thompson at mthompson@stcloudstate.edu with any questions or concerns

Voluntary Participation / Withdrawal
Participation in this survey is completely voluntary. You may choose to opt out at anytime. If you begin the survey and encounter a question that you do not feel comfortable answering, you may skip it or discontinue the survey all together. Remember, your participation is completely anonymous and your answers may help other educators using technology.

Acceptance to Participate
If you accept this invitation to participate in the survey, please click on the link below anytime between September 8th and 30th, 2014.

Thank you for your time

Survey Link* https://www.surveymonkey.com/s/79L2JW2

*Please note that by clicking on this link you confirm that you are at least 18 years of age and are therefore able to consent as an adult to participate in this study.

Classroom Technology-Induced Stress Survey

The following survey was created to measure whether or not technology has an impact on your level of stress in the classroom. For the purpose of this study, technology is defined as any relevant hardware or software that could be used for educational purposes, including but not limited to computers, projectors, doc cams, televisions, interactive white boards, mobile computing devices (e.g. iPads), smart phones, student response systems, etc. Please answer the following questions by clicking the appropriate choice.

1. How old are you?

20-29 / 30-39 / 40-49 / 50-59 / 60+

2. What is the highest degree that you hold?

High School Diploma / Bachelors / Masters / PHD

3. What year did you receive your highest degree?

Before 1979 / 1980-1989 / 1990-1999 / 2000-2009 / 2010-Present

4. How many years of teaching experience do you have?

0-3 / 4-6 / 7-10 / 10+

Please consider and rate the following statements. You may add comments to support your answer (optional).

Strongly Agree / Agree / Neutral / Disagree / Strongly Disagree

- I feel insecure about my ability to use technology on the spot in my classroom.
- I dislike working with machines that are smarter than I am.
- I have difficulty understanding the technical aspects of computers and other devices.
- It scares me to think that I could cause technology to destroy a large amount of data by hitting the wrong button.
- You have to be a genius to understand all the special buttons and settings on most technology devices.
- If given the opportunity, I would like to learn about and use educational technology.
- I look forward to using technology in my classroom and lessons.
- The challenge of learning about new technology is exciting.

- Learning to use technology is like learning any new skill – the more you practice, the better you become.
- I feel that I will be able to keep up with the advances happening in the educational technology field.
- I have avoided technology in the classroom because it is unfamiliar and somewhat intimidating to me.
- I am confident that I can learn classroom technology skills and pass my knowledge and expertise on to my students.
- I feel apprehensive about using technology with my students.
- I hesitate to use technology in the classroom for fear of making mistakes that I cannot correct.
- Anyone can learn to use technology if they have a patient and motivated mindset.
- I am afraid that if I begin to use technology I will become dependent upon it and lose some of my reasoning skills.
- I am sure that with time and practice I will be as comfortable working with technology as I am working with students in my classroom.
- I feel technology is a necessary tool in the educational setting.

Please answer the following questions by writing your responses in the space provided.

1. Does using technology in your classroom stress you out? Why or why not?

2. Do you think your lack of use or use of technology in your classroom affects your students? In what way?

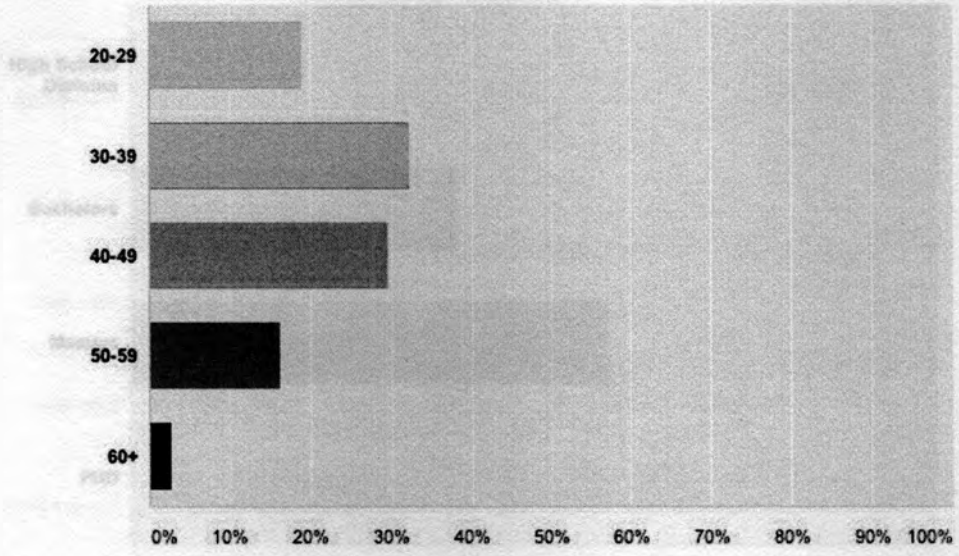
3. What do you think would help reduce technology-induced stress for those who are experiencing it?

APPENDIX B

Results of Classroom Technology-Induced Stress Survey

How old are you?

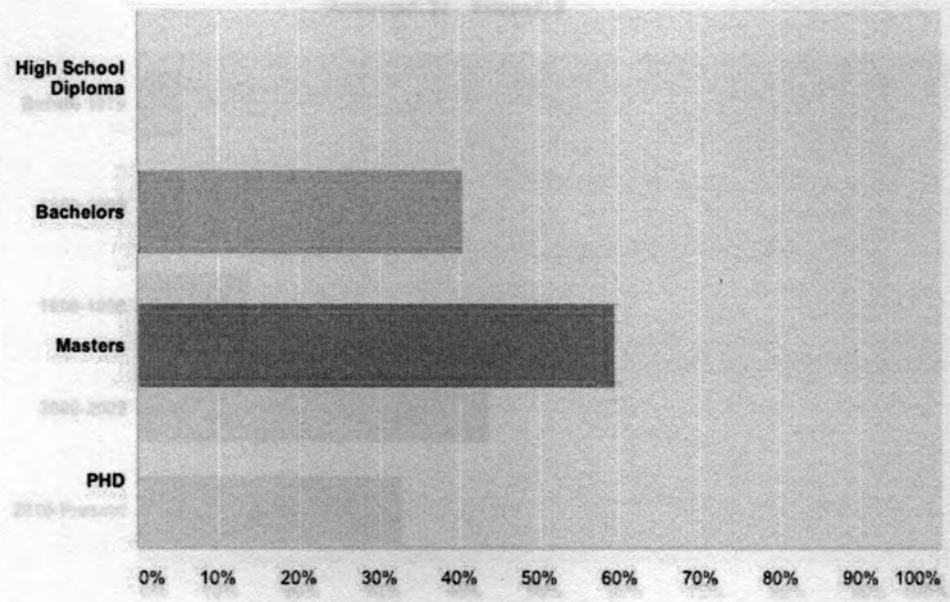
Answered: 37 Skipped: 0



Answer Choices	Responses	
20-29	18.92%	7
30-39	32.43%	12
40-49	29.73%	11
50-59	16.22%	6
60+	2.70%	1
Total		37

What is the highest degree that you hold?

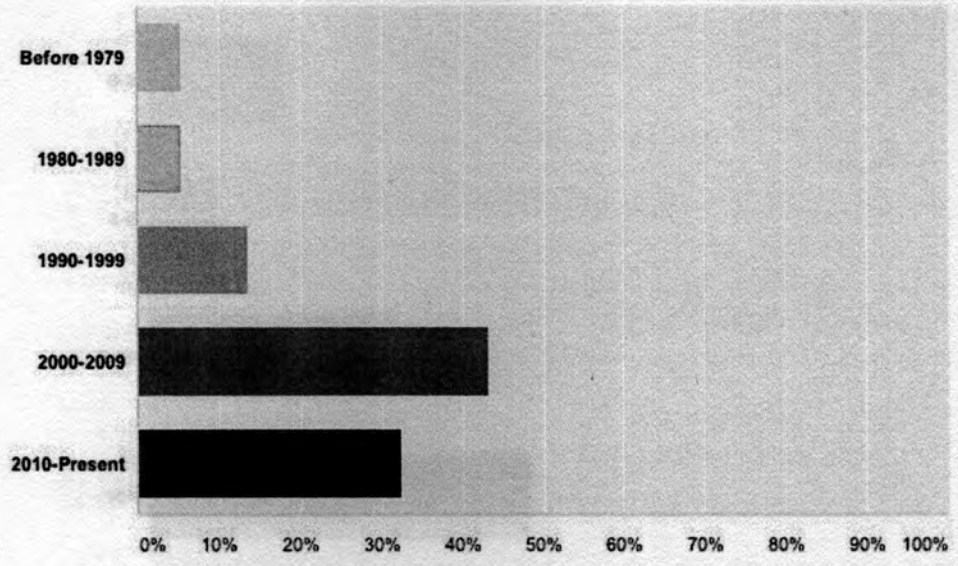
Answered: 37 Skipped: 0



Answer Choices	Responses	
High School Diploma	0.00%	0
Bachelors	40.54%	15
Masters	59.46%	22
PHD	0.00%	0
Total		37

What year did you receive your highest degree?

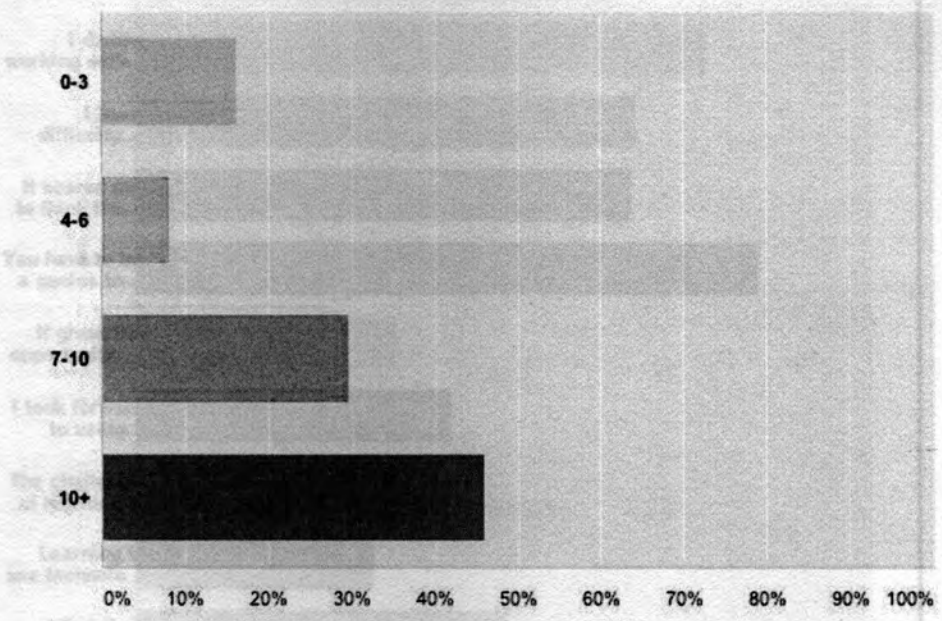
Answered: 37 Skipped: 0



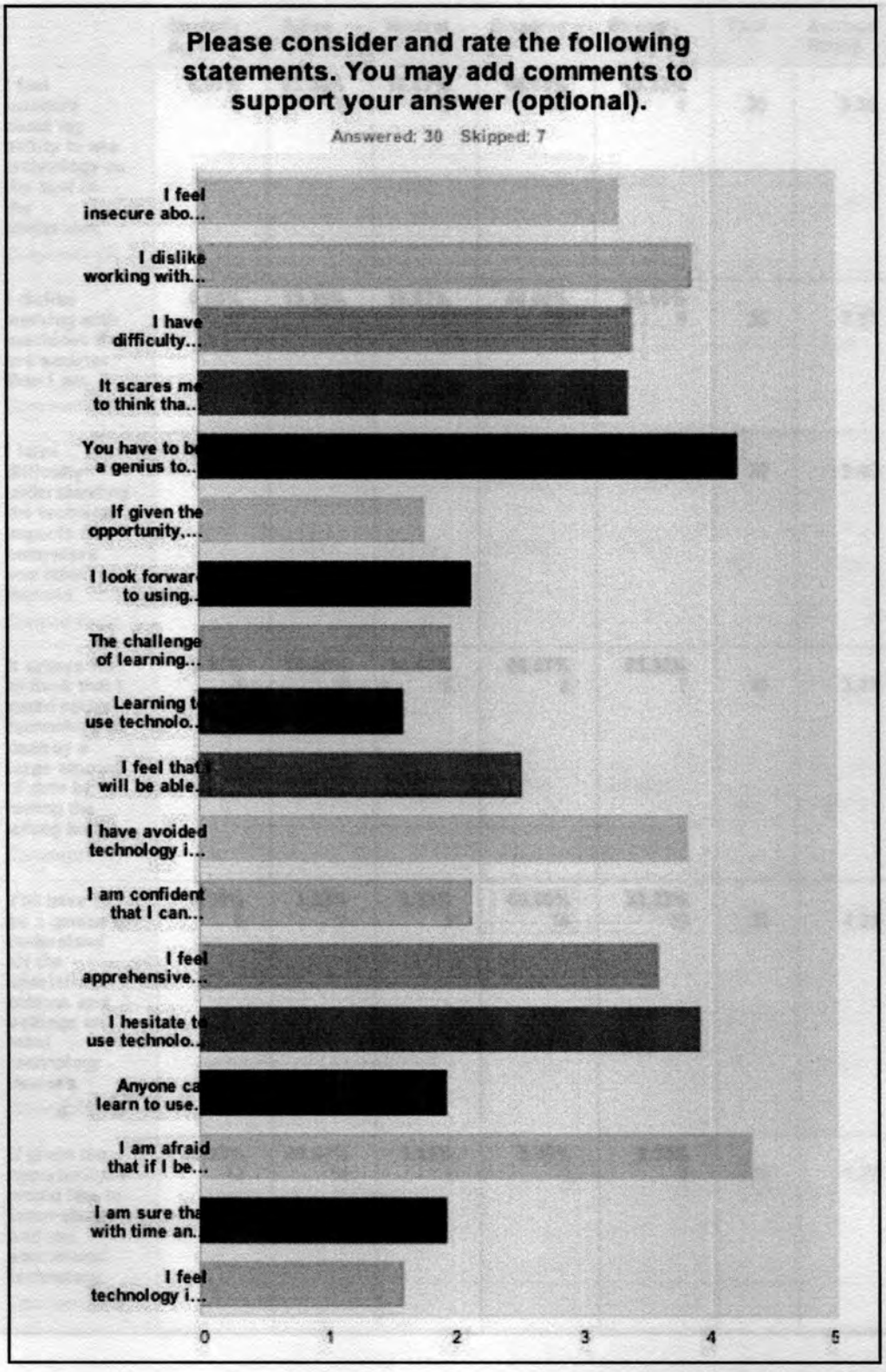
Answer Choices	Responses	
Before 1979	5.41%	2
1980-1989	5.41%	2
1990-1999	13.51%	5
2000-2009	43.24%	16
2010-Present	32.43%	12
Total		37

How many years of teaching experience do you have?

Answered: 37 Skipped: 0



Answer Choices	Responses	
0-3	16.22%	6
4-6	8.11%	3
7-10	29.73%	11
10+	45.95%	17
Total		37


Please consider and rate the following statements. You may add comments to support your answer (optional).
Answered: 30 Skipped: 7
I feel insecure abo...
I dislike working with...
I have difficulty...
It scares me to think tha...
You have to be a genius to...
If given the opportunity,...
I look forward to using...
The challenge of learning...
Learning to use technolo...
I feel that I will be able...
I have avoided technology i...
I am confident that I can...
I feel apprehensive...
I hesitate to use technolo...
Anyone can learn to use...
I am afraid that if I be...
I am sure that with time an...
I feel technology i...
0
1
2
3
4
5

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	Average Rating
I feel insecure about my ability to use technology on the spot in my classroom. Comments (3)	**6.67%** 2	**23.33%** 7	**16.67%** 5	**40.00%** 12	**13.33%** 4	30	3.30
I dislike working with machines that are smarter than I am. Comments (3)	**0.00%** 0	**13.33%** 4	**16.67%** 5	**40.00%** 12	**30.00%** 9	30	3.87
I have difficulty understanding the technical aspects of computers and other devices. Comments (0)	**3.33%** 1	**30.00%** 9	**6.67%** 2	**43.33%** 13	**16.67%** 5	30	3.40
It scares me to think that I could cause technology to destroy a large amount of data by hitting the wrong button. Comments (0)	**3.33%** 1	**30.00%** 9	**16.67%** 5	**26.67%** 8	**23.33%** 7	30	3.37
You have to be a genius to understand all the special buttons and settings on most technology devices. Comments (0)	**0.00%** 0	**3.33%** 1	**3.33%** 1	**60.00%** 18	**33.33%** 10	30	4.23
If given the opportunity, I would like to learn about and use educational technology. Comments (1)	**43.33%** 13	**46.67%** 14	**3.33%** 1	**3.33%** 1	**3.33%** 1	30	1.77

I look forward to using technology in my classroom and lessons. Comments (1)	**20.00%** 6	**56.67%** 17	**16.67%** 5	**3.33%** 1	**3.33%** 1	30	2.13
The challenge of learning about new technology is exciting. Comments (1)	**20.00%** 6	**63.33%** 19	**16.67%** 5	**0.00%** 0	**0.00%** 0	30	1.97
Learning to use technology is like learning any new skill – the more you practice, the better you become. Comments (0)	**46.67%** 14	**50.00%** 15	**0.00%** 0	**3.33%** 1	**0.00%** 0	30	1.60
I feel that I will be able to keep up with the advances happening in the educational technology field. Comments (3)	**6.67%** 2	**50.00%** 15	**30.00%** 9	**10.00%** 3	**3.33%** 1	30	2.53
I have avoided technology in the classroom because it is unfamiliar and somewhat intimidating to me. Comments (0)	**0.00%** 0	**16.67%** 5	**3.33%** 1	**60.00%** 18	**20.00%** 6	30	3.83
I am confident that I can learn classroom technology skills and pass my knowledge and expertise on to my students. Comments (1)	**16.67%** 5	**60.00%** 18	**16.67%** 5	**6.67%** 2	**0.00%** 0	30	2.13

I feel apprehensive about using technology with my students. Comments (0)	**0.00%** 0	**16.67%** 5	**16.67%** 5	**56.67%** 17	**10.00%** 3	30	3.60
I hesitate to use technology in the classroom for fear of making mistakes that I cannot correct. Comments (0)	**3.33%** 1	**6.67%** 2	**3.33%** 1	**66.67%** 20	**20.00%** 6	30	3.93
Anyone can learn to use technology if they have a patient and motivated mindset. Comments (3)	**26.67%** 8	**60.00%** 18	**6.67%** 2	**6.67%** 2	**0.00%** 0	30	1.93
I am afraid that if I begin to use technology I will become dependent upon it and lose some of my reasoning skills. Comments (1)	**0.00%** 0	**0.00%** 0	**10.00%** 3	**46.67%** 14	**43.33%** 13	30	4.33
I am sure that with time and practice I will be as comfortable working with technology as I am working with students in my classroom. Comments (0)	**23.33%** 7	**63.33%** 19	**10.00%** 3	**3.33%** 1	**0.00%** 0	30	1.93
I feel technology is a necessary tool in the educational setting. Comments (0)	**43.33%** 13	**53.33%** 16	**3.33%** 1	**0.00%** 0	**0.00%** 0	30	1.60

Likert-Rating Scale Additional Comments

I feel insecure about my ability to use technology on the spot in my classroom.

- *Agreed - I don't do well with technology in the classroom and cannot just pull something out quickly to utilize in instruction. That bothers me!*
- *Strongly Agreed - Not because of my lack of knowledge but solely because our technology and WIFE access is completely unreliable.*
- *Agreed - In my previous teaching experiences, I haven't had access to technology and therefore I only know of a few educational programs available online that are my go-to when I need technology on the spot.*

I dislike working with machines that are smarter than I am.

- *Neutral - loaded question - hard to answer*
- *Neutral - I don't dislike them, but need to know how to easily use them for education. I use them easily for myself.*
- *Disagreed - I just need time and adequate training to become familiar with the machines. And for them to be working properly in the first place!*

If given the opportunity, I would like to learn about and use educational technology.

- *Strongly Agreed - However, the opportunity cannot be when I have to do other things as then I cannot devote the time needed to learning the info.*

I look forward to using technology in my classroom and lessons.

- *Agreed - But I don't have time to learn it on my own, and feel like once I've learned something cool, we don't have the hardware or software to use it effectively in the classroom. Some schools seem to have more access than others.*

The challenge of learning about new technology is exciting.

- *Agreed - Ditto the above comment - But I don't have time to learn it on my own, and feel like once I've learned something cool, we don't have the hardware or software to use it effectively in the classroom. Some schools seem to have more access than others.*

I feel that I will be able to keep up with the advances happening in the educational technology field.

- *Disagree - Not without training*
- *Agreed - I will use what I am comfortable with using, and works in my classroom*
- *Strongly Disagreed – Again, this is due to the lack of devices available in our district and their lack of reliability*

I am confident that I can learn classroom technology skills and pass my knowledge and expertise on to my students.

- *Disagreed - Often they know more than I do.*

Anyone can learn to use technology if they have a patient and motivated mindset.

- *Agreed - I also need the time to learn it!*
- *Disagreed - Time is a big factor.*
- *Agreed - ...and resources.*

I am afraid that if I begin to use technology I will become dependent upon it and lose some of my reasoning skills.

- *Disagreed -I am concerned, that technology negatively affects our social skills.*

Results of Text-Based Questions

Does using technology in your classroom stress you out? Why or why not?

- *It stresses me out because we can't depend on Internet connection in our school. There have been times when I'm ready to use a power point in reading groups, and the Internet connection has been lost. It is very frustrating!!*
- *At times, tech tools often cause unforeseen delays or challenges that can be stressful, but I have learned to approach this with a very unstressed attitude and I generally have a back-up plan. I have learned to say "oh well" and move on. This has really helped my stress.*
- *Only when the equipment doesn't work or we don't have access to the tools we need.*
- *No, just part of teaching today. Frustrating when it doesn't work but then you just have to model "rolling with it."*

- *Yes, I am sometimes stressed if the technology I plan on using does not work or if it is dependent on an Internet connection and the Internet is down. I also sometimes stress if I am using a new technology for the first time, especially if in front of other teachers.*
- *No, but I am not a classroom teacher.*
- *Yes, because there are many times there are things that don't work. I can do the things I know how to do, but when it doesn't work I don't know what to do to change/fix/redirect.*
- *Sometimes it does. It seems like when I have a great lesson planned using technology, then that's the time the internet is down, or glitchy. Sometimes it seems like it takes more time than it's worth.*
- *At times, because as I stated earlier out District's infrastructure is totally unreliable.*
- *I often worry about the effectiveness of utilizing technology with my students, especially for reading and math. As we have seen with the EasyCBM, students can click through and not think/reason with the content.*
- *What stresses me out is if something is new and I don't know how to use it, I worry about how much time it will take for me to get proficient at using it. I worry about having enough time in my already packed day to learn and practice a new piece of technology.*
- *It does not stress me out it is exciting. It is challenging to find the time to practice and learn more about what is available and how to use it.*
- *When the server is out it can be a pain. However, I just go back to what I used to do.*
- *No. It takes time to learn but is worth it.*
- *No. I understand how to use the technology that best fits with what I do.*
- *Sometimes. It is not so much the technology, but the planning and availability of it. I transferred from a school that had several computer labs and iPad carts, to a school that has 1 lab and no iPads for my grade level. In addition, I become very dependent on technology . . . and when it doesn't work, I sometimes forget how to teach without it!!*
- *No it does not. I feel confident using technology in the classroom.*
- *Using SOME forms of technology do. If I start to use some of the devices, and they are not working properly, the connections don't work, or the site goes down and I was dependent on that technology, I get very stressed. I have wasted time and must improvise on the spot, and that is very stressful. Depending on technology takes away my control over my lesson and my classroom. If it fails, or I cause a problem, I no longer have control over how the lesson goes or what gets taught.*
- *Yes, the thought of helping 21 students navigate technology scares me. I feel it will hinder my teaching in that I will spend so much time helping them use and navigate the technology, I won't get to or have enough time to teach*

what I need a teach. I use technology a lot in my teaching instruction, they students do not have it in their hands a lot.

- *Only if it is something new and unfamiliar to me.*
- *Not always. When the technology I have is working properly, I am not stressed about it. The only times I tend to get frustrated and a bit overwhelmed is when I have something planned and go to use the technology and all of a sudden it does not work.*
- *Yes, because there is always issues with our technology.*
- *Sometimes it's stressful when something should work and it does not. However, I am more than capable of fixing most technological errors . . . I just don't always have the administrative passwords to do so. I am not stressed by the technology itself, mostly stressed by waiting for someone else to do what I could have done for myself.*
- *No, because we are limited on what is available. If there were more options, I could potentially stress out if it did not always work properly.*
- *The only thing that stresses me out about using technology is when I plan a lesson or unit that is technology centered and the technology isn't working. That is crazy to me in this day and age!!! The even crazier thing is that is happens a lot!*
- *It depends on the training I have had.*
- *No more than any other tool stresses me out. It can be a pain when it isn't working, but as an experienced teacher you know to always have a Plan B anyways, so . . .*
- *No ~ It enhances the learning and the students enjoy it*
- *Using the technology does not stress me out. The lack of technology available and cutting programs that uses it does.*

Do you think your lack of use or use of technology in your classroom affects your students? In what way?

- *Teachers need to use technology in the classroom because that is where our students are headed...in almost every aspect of their lives.*
- *This is a very complex issue, there are many competing factors and technology has a strong influence at times but can also just be a substitute or even a distraction.*
- *We shouldn't use technology just for the sake of technology. We don't need to read books on line just because we can. We have books too.*
- *I think students enjoy the change up and the use of technology as part of their learning environment. I think it provides motivation and gives them skills that they may need later on in life and in their education*
- *Yes, if students are used to using a certain type of technology in one setting, but I don't use that in my setting I think that could affect how or if students*

understand a certain concept or topic. Also, if I am not as skilled at using a technology as students are used to from another staff member those students may be at a disadvantage.

- *No, but if I taught regularly I think I would need to incorporate more technology to give my kids tools to evolve and learn.*
- *The only thing I feel they miss is that nowadays that is the wave of the future and I'm not "on the wave" which in turn may give them a disadvantage. Otherwise I do believe I teach well and have many other things to offer.*
- *Maybe, but valuable instructional time is also lost when things don't work.*
- *Yes—We are WAY behind in our district in using technology to supplement/enhance our student's learning and it is a huge disservice to them.*
- *Yes! Students are more engaged with technology. Our students are great at experimenting and figuring out technology, and I worry that my fears about deleting data and not knowing how to fix a problem if my students encounter one are prohibiting my students from accessing technology.*
- *I try to balance technology. I feel like my students get plenty of "Screen time" at home. I realize technology is necessary for the world we live in, however, I do try to get them to branch out and do more hands on activities because we learn by doing... not just pushing buttons or playing with the IPAD.*
- *I am torn, because I am not a classroom teacher and work with students in small groups... We do use the IPAD and computer.. but I know there are more available resources/apps that could benefit my sessions.*
- *The use of it seems to pull students in. However, they at times are disappointed that we are doing "educational" things rather than games.*
- *Yes. I'm used to having a smartboard that students can manipulate. They miss out when they can't use the tech as much as the teacher.*
- *I think the use of an iPad affects my students in a positive way. The majority of my students enjoy using the iPad and it is motivating for them.*
- *Absolutely. This generation of students is extremely hands-on and require new ways to teach and learn information. I believe our district has created a strong disadvantage for many of our schools (mostly elementary) because we do not have access to some of the amazing pieces of technology that others have.*
- *I think students benefit from the use of technology in my classroom.*
- *No. I use technology. Just not as much as some teachers. Technology can add to a lesson, provide motivation and excitement, and be fun. But it does not replace hands-on learning or teacher to student relationships. If I don't use technology the children are not going to suffer. Most of the technology I use in the classroom is teacher controlled. They are not controlling the technology source. When we go to computer lab they are in control.*

- *I don't think so. Class would probably be more exciting for them, but I do think I can teach them what they need to know without technology in their hands.*
- *I would like to use more technology as the students are very skilled in using it and are growing up in a world filled with technology. Although I feel that we don't have many options available such as smart boards etc.*
- *The ways I use technology in my classroom affects my students minimally. I only have the Hover Cam and projector. This makes whole group activities, online stories, videos/songs, etc. more possible and interactive. I do not use technology as much as I should by checking out the iPads for the students to use. This would affect my students learning in many ways. I feel that the earlier and more often students use technology in their lives, the more adept they are with it later in life. There are also a lot of really fun learning games for students to use.*
- *No.*
- *I think the use of technology in my classroom keeps the students more engaged.*
- *Some students may not have technology at home, so they may feel confused if they have to work with it in school and not be able to practice at home.*
- *I think using technology really helps our students. If they see me using it all the time and then they get to try it out for themselves I believe it helps them become comfortable using it. Technology just becomes just the way things are done. Students need to be on computers and iPads so they learn how to use technology.*
- *Students seem to love technology. They don't know a world without it.*
- *I think we have digital kids walking into our classrooms now, so if I don't use technology I'm not going to reach them.*
- *No—I use quite a bit of technology. Of course I would love to learn more and continue to incorporate it in many new different ways.*
- *I think that with the results of the SBAC and other assessments coming up that use technology will be affected if students are not tech savvy.*

What do you think would help reduce technology-induced stress for those who are experiencing it?

- *More technology in-service.*
- *Lots of training and support without pressure to be perfect.. Teachers should be given the tools and then offered multiple levels of support depending on their expertise and comfort level. I don't think teacher should be "allowed" to opt out so much. Having widely differing competencies with important technologies causes systemic stress which is hard on everyone even those comfortable with tech.*

- *Training. We are given equipment and programs and then not supported in their use.*
- *Training and support while using it. NOT doing it for them.*
- *More training and more time to train. More opportunities to work with others in my building with specific knowledge about certain technologies.*
- *Information on how to use it.*
- *Time, time, time . . . we need to have time to learn it and practice it so that when the kids are in the room, we can use it! There is never time to accomplish it all and that is what stresses me!*
- *Everyone is different, so I'm not sure/*
- *Getting reliable equipment in their hands frequently and letting them practice . . . WITHOUT THE WORRIES OF WIFE NOT WORKING OR EQUIPMENT FAILURES.*
- *TRAINING. Show us specific apps, specific programs, specific tools and how to utilize these in our classrooms. Simply giving someone a tablet or laptop does not promote its use.*
- *Allowing for time to experiment with new devices, trainings, etc.*
- *More time to explore/hands on practice with items - see what's available. Practice.*
- *Professional development!*
- *Training.*
- *Further education on the basics of how to use technology. Providing clear examples of what technology to use when so that individuals can clearly understand how it is best used to educate students and can take that back to the classroom to implement.*
- *1. Lots of training!!! 2. Availability of resources 3. Collaboration*
- *Step-by-step user friendly guides and workshops.*
- *It would help to have training from someone who understood that not everyone has the same background and knowledge in computer that your generation does. You are fortunate to have had computer training from a very young age, and had direct instruction throughout your school career. You have had opportunities to use all forms of computer skills on a daily basis. It has made you very skilled in computers and I admire you for that. What is VERY frustrating for me is to attend training or ask for technology assistance, and have someone fly through it, assuming I know exactly what they are talking about, but I don't, because I haven't had computer training since I was five, like my students this year are experiencing. I would like practical training done by people who are patient enough to explain things, and not some computer whiz with no patience who assumes you have the same computer background they do, and that you are an idiot if you don't. And that's all I've got to say about that!*

- *A tech class for the kids. Some sort of class to teach them computer basics such as mouse use, how to turn it on, word processing, etc.....*
- *Education and training.*
- *Spend time using it and practicing.*
- *More consistent technology services.*
- *I think many teachers are stressed because they do not know how to use their technology. One-on-one or small group lessons would help those teachers become more familiar with their devices in a calmer setting.*
- *Have a variety of options for technology use. Have employees from the technology department more available.*
- *I think first off our Internet needs to be reliable. There is nothing worse than having to change a lesson when our Internet isn't working. We shouldn't have to "punt" because of our Internet is unreliable. The thing I think our district has been good about doing is offering computer courses for credit. That has helped me by keeping me up to what educational tools are out there and how to use them in my classroom.*
- *Training!*
- *Time, training, and patience instead of being "mandated" to use it.*
- *Just more training and explanation . . . really demonstrate and apply hands on help!*
- *Many people in our school rely on others to help them or do the work on the computer for them instead of learning themselves. I think that the use of technology in classrooms should me mandated and staff should be trained accordingly. Some people will never use it if not forced to!*