

MINDSET AS IT RELATES TO IMPLEMENTATION
OF MOBILE DEVICES FOR INSTRUCTION

by

Mark Anthony Martinez

Presented to the Faculty of the Graduate School of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

December 2018

Abstract

MINDSET AS IT RELATES TO IMPLEMENTATION
OF MOBILE DEVICES FOR INSTRUCTION

Mark Anthony Martinez

The University of Texas at Arlington, 2018

Supervising Professor: James C. Hardy

Teachers who become frustrated with the use of new mobile technology may have a predisposition toward the use for classroom instruction. The teacher's mindset may be an indicator of whether they choose to implement new mobile instructional technology and see it through, or simply revert to familiar teaching models with which they feel more comfortable at the first signs of difficulty. The purpose of this quantitative study was to compare the relationships between 145 elementary teachers' mindsets and their openness to instructional technology. In addition, mindset and attitudes toward instructional technology were measured in terms of gender, age and years of teaching experience, allowing for multiple levels of analysis. The researcher employed descriptive statistics, correlational analysis, and regression analysis to understand and evaluate the data.

ACKNOWLEDGEMENTS

First and foremost, I would like to recognize the excellent work and support of my Dissertation Chair, Dr. James Hardy. It has been such an honor to learn from him during the pursuit of my Ph.D. He has always been there for me to call, email, or text, to give me advice or a word of encouragement to keep me moving forward. He is truly a gentleman and friend that I have been fortunate to encounter in my lifetime. Next, to acknowledge my dissertation committee members, Dr. Casey Brown and Dr. Diane Patrick, thank you for your guidance, support and for accepting my invitation to be members of my committee. I would like to acknowledge Dr. Steve Bourgeois for the discussions and guidance, who demonstrated that persistence can get the job done. Then of course, I especially want to acknowledge Dr. Carol Dweck for allowing me to use the survey she developed named the Dweck Mindset Instrument or DMI. Professor Dweck, thank you.

Finally, I would like to acknowledge The University of Texas at Arlington and all the extraordinary professors who have supported and guided me through my journey, Dr. Ernest Johnson, Dr. Barbara Tobolowski, Dr. Rhonda McClellan, Dr. Ryan McCoy, and so many others to thank. I hope that all of you know how much you are appreciated. These relationships, that have been forged through this experience, are why I hold my university in such high regard, thank you UTA.

December 2018

DEDICATION

I dedicate this Doctoral Dissertation to everyone who has helped and guided me along this journey. Thank you to my loving mother and father, Gloria and Jesse Martinez. Although my father is no longer with us, I think of him often and hear him telling me “keep going and don’t quit.” I truly give thanks for both of my parents who were and are always there for me. I love you Mom and Dad.

To my wife, Mellisa, without whom I would have never completed this journey. Her constant support and love kept me motivated to complete this monumental task. Our long discussions about the responsibility, determination and why I needed to finish, inspired me daily, and I just would like to say . . . Thank you Mellisa, from my heart. To my children Zane, Tristan, Alexis, Gavin, and Ian for putting up with me when I was not at my best, I love you.

I would love to thank the rest of my family and friends who gave me words of encouragement to keep working toward the finish line. I love you all, and I dedicate my doctoral dissertation to all my amazing family!

Table of Contents

| | |
|--|------|
| Abstract..... | ii |
| Acknowledgment..... | iii |
| Dedication..... | iv |
| List of Tables..... | viii |
| Chapter 1: Introduction | 1 |
| Brief History | 5 |
| Dweck’s Mindset Theory..... | 9 |
| Statement of the Problem | 10 |
| Purpose of the Study | 12 |
| Research Questions..... | 13 |
| Theoretical Framework | 14 |
| Significance of the Study | 15 |
| Definition of Terms and Abbreviations..... | 16 |
| Assumptions..... | 18 |
| Limitations | 19 |
| Delimitations | 19 |
| Summary | 19 |
| Chapter 2: Literature Review | 21 |
| Search Terms..... | 21 |
| General History of Educational Technology..... | 21 |

| | |
|--|----|
| Mindset Theory in General..... | 26 |
| Teacher’s Mindset and Student Achievement..... | 27 |
| Mindset and Gender..... | 29 |
| Mindset and Age..... | 31 |
| Teachers’ Attitude toward Technology..... | 31 |
| Comfort with Technology and Age..... | 38 |
| Mobile Phone Ownership..... | 39 |
| Teachers’ Support for the use of Mobile phones in the Classroom..... | 39 |
| Comfort with Technology and Age..... | 39 |
| Comfort with Technology and Gender..... | 40 |
| Chapter 3: Method | 43 |
| Participant Selection..... | 43 |
| Data Collection..... | 44 |
| Instrumentation..... | 44 |
| Scoring..... | 45 |
| Second Survey..... | 47 |
| Data Analysis..... | 48 |
| Chapter 4: Findings | 50 |
| Response Rate..... | 50 |
| Demographic Data..... | 51 |
| Data Cleaning Steps..... | 51 |
| Reliability..... | 52 |

| | |
|---|-----|
| Teachers' Attitudes toward Mobile Technology..... | 52 |
| Teachers' Mindset..... | 57 |
| Mindset and Attitudes toward Mobile Instructional Technology..... | 61 |
| Chapter 5: Discussion and Conclusions | 63 |
| Summary of Study..... | 64 |
| Summary of Key Findings..... | 65 |
| Research Question 1..... | 65 |
| Research Question 2..... | 68 |
| Research Question 3..... | 69 |
| Limitations..... | 70 |
| Implications..... | 71 |
| Recommendation for Future Research..... | 73 |
| Conclusion..... | 74 |
| References..... | 75 |
| Appendix A Dweck's Mindset Instrument..... | 92 |
| Appendix B Measuring the Use of Mobile Technology Survey..... | 96 |
| Appendix C 2x2 Chi Square Figures..... | 99 |
| Appendix D Letter of Recruitment..... | 101 |
| Appendix E Permission to Use Dweck's Survey Instrument..... | 105 |

List of Tables

Table 4.1 Reliability of Constructs..... 52

Table 4.2 Teachers’ Attitudes toward Mobile Instructional Technology
by Gender, Age, and Experience 53

Table 4.3 Chi Square Attitude toward Technology by Gender..... 54

Table 4.4 Chi Square Attitude toward Technology by Age 55

Table 4.5 Chi Square Attitude toward Technology by Years of Experience ...56

Table 4.6 Cramer’s V Post Hoc57

Table 4.7 Teachers’ Mindset by Gender, Age, and Experience 58

Table 4.8 Chi Square Mindset by Gender 59

Table 4.9 Chi Square Mindset by Age 60

Table 4.10 Chi Square Mindset by Experience 61

Table 4.11 Model Summary of Mindset as Predictor of Teachers’ Attitudes
toward Mobile Instructional Technology 62

CHAPTER 1

INTRODUCTION

Education in the United States and around the world is reshaped daily with new technologies (Jowallah, Bennett, & Bastedo, 2018). Since the 1970s, computers have been a part of the classroom component to enhance instruction (Poole & Evans, 2009). Researchers have indicated that a rich technological classroom leads to positive effects in achievement (Kingsley, 2007). The methods developed to prepare students to compete in a global economy are driven by new, innovative technologies integrated into their learning environments both at school and home (Augustine, 2007). According to Jowallah, Bennett and Bastedo (2018), these new ideas, platforms, and technologies are infiltrating the educational environment around the world and changing the way we teach and learn. As early as 2010, many school districts in the United States began to integrate iPads, Androids, and other instructional mobile technology in classrooms (Apple, 2012). Now that these districts have mobile instructional technology, teachers should accept them as legitimate learning tools; but many still do not.

According to Harris and Hofer (2011), teachers often utilize technology simply as an extension activity, instead of developing students' understanding of the content. The demands for professional development within education in technology continue to grow (McGee, 2015). Northrop and Killeen (2013) stated that districts are not providing the appropriate professional development for teachers to implement mobile instructional technology effectively. Therefore, the design and content of

professional development offered by districts could potentially assist teachers in accepting and implementing new mobile instructional technology, and ultimately improving educational outcomes.

While many teachers claim to use technology during the instructional day, according to Elstad and Christophersen (2017), 56% of students in a secondary class setting reported that their teachers did not know how to use the technology. Although many teachers do use some technology during the instructional day, many of the iPads, Androids, and other various technology purchased by these districts remains underutilized (Gasparini & Culén, 2013). Although school districts have shifted significant resources to integrate instructional technology into their programs, empirical evidence on the overall effect on student outcomes is mixed (Levenson & Boser, 2014).

Schools and school systems throughout the United States are aggressively experimenting with a variety of instructional technologies to advance productivity and lower costs. According to Rice (2012), the number of computers in public schools has grown from 5.6 million in 1995 to over 12.6 million in 2005; and the percentage of classrooms with internet access has increased from 8% to 94% during the same period (Rice, 2012). By 2015, every student in the United States will have access to a device that can be used for personal use at school (Norris & Soloway, 2011). Puentes (2012) argued that allowing students to bring their personal devices into their classrooms can promote a cost-effective strategy that can help larger districts keep technology budgets in check. Proponents who support the use of

personal devices support the idea for many reasons: budgets keep dwindling, students already bring devices to school, and technology costs are growing (Ullman, 2012). Therefore, the cost of purchasing one-to-one laptops and similar expenditures, many districts have begun to consider allowing students to bring their own mobile devices to use in the classrooms during the instructional day (West, 2013). This approach to address cost for districts is known as *Bring Your Own Device* (BYOD) (Nelson, 2012).

For many districts, this has been the answer to keeping cost at a minimum. However, “growing concern around technology spending with a chorus of experts arguing that school technology is not helping students achieve learning goals in the most effective ways” (Center for American Progress, 2013, para. 11). Furthermore, considerable concerns, such as keeping students from inappropriate websites, push informational technology departments to develop plans for ensuring secure networks (Butterman, 2012). It also became apparent that not every student utilizes the same operating system, nor would their device be equal or compatible with that of their peers (Horizon Project, 2013). Other issues also became evident; teachers were not trained nor had knowledge on how to operate many of these devices (Center for American Progress, 2013). According to Silagadze (2012), supplying iPads into the classroom without a clear strategy can leave teachers feeling frustrated about this technology. According to Elstad and Christophersen (2017), students who have questions about accessing information or establishing an online protocol hesitate to ask the teacher due to inexperience, and in-turn, teachers

are made to feel inadequate and become negative toward this new teaching paradigm. This frustration results in many teachers avoiding instructional technology to support classroom instruction.

As educators enter this new era of technology, many are trying to come up with better methods to utilize new instructional technology. In the past, schools were required to set up networks for wireless use to enhance communication and information gathering with the rationale that instructional technology would improve student learning and give them an advantage at the workplace (Roach, 2010). Therefore, with these *smart devices*, such as smart phones, iPads, Kindles, Chromebooks, and other devices that teachers are already using, it is important to understand the crucial role teachers play in the success of this implementation. Furthermore, teachers' adaptability and willingness to explore and test emergent instructional technology may have a direct connection to overall success of these programs. A teacher's predisposition or *mindset* to be effective in implementing new initiatives, particularly instructional mobile technology, may affect technology implementation as significantly as the quality of the technology itself.

In terms of Dweck's (2006) mindset theory, a teacher's mindset may affect their perceptions in learning new concepts in general, such as instructional mobile technology. If a teacher's mindset is not considered during the implementation of new technology (i.e., iPads and Androids), the teacher may have already decided to take on the challenge or ignore the opportunity for possibilities. Teachers ultimately will determine the future use of technology and its effectiveness to advance student

achievement. Therefore, teachers must continue to develop their digital literacy. According to Littlejohn, Beetham, and McGill (2012), digital literacy is defined as “the capabilities required to thrive in and beyond education, in an age where digital forms of information and communication predominate” (p. 547). Without digital literacy, teachers will continue to struggle with technology in the classroom. Seiter (2008) noted that acquiring technological skills requires freedom to develop a deep understanding of the software that will be used to enhance classroom instruction. Moreover, if other unforeseeable technical difficulties arise, teachers may feel that they have wasted time delivering the lesson (Zein, 2014). Were this to happen several times during a semester, frustrated teachers may begin to plan instructional delivery in a more conventional method, leading to potential underutilization of instructional technology and a significant waste of funds (Zein, 2014).

Brief History

When mobile devices were introduced into classrooms, many educators were enthusiastic, and many were skeptical. For example, since Apple launched the iPad in 2010, millions have made their way into classrooms (Mango, 2015). According to Greenfield (2015), many educators are still skeptical of the idea that iPad technology should be in the classroom. In addition, Greenfield (2015) stated the growing backlash against iPads is due to a lack of evidence that it supports or promotes learning in students. According to Greenfield (2015), although many researchers have revealed that students are enthusiastic about iPads, there was no link between iPad use for either a positive or negative effect on academic performance. In contrast,

according to Bennett (2011-2012), the iPad holds incredible potential for both teacher and student to use for learning experiences. In the article “Less Than a Class Set” (2011-2012), Bennett wrote that with just a few iPads in a classroom, a teacher can support and enhance learning that can facilitate individualized instruction for students. Nevertheless, according to Thornthwaite (2014), many in education still fail to understand what a mobile device, like an iPad or Android, can do in terms of its effectiveness. According to the Center for Digital Education (2011), “teachers covering a defined number of pages in a textbook and assigning work at the end of a chapter are quickly disappearing” (p. 3).

In September of 2008, the Android operating system was introduced by Google through the Open Handset Alliance, which encompasses over 30 companies in information and communication technology (Shanmugapriya, & Tamilarasi, 2011). The Android OS is an open source project, permitting amendments by any manufacturer of mobile devices (Reto, 2009). Android is the most popular operating system for mobile devices like smart phones and tablets (Reddy & Rekha, 2012). In November of 2013, Google launched Google Play for Education that is supported by Android mobile devices (Chhavi, 2013), noting, “tech giant Google recently announced its latest offering called 'Google Play' for Education. The service will help educators to discover apps designed specifically for K-12 students” (p. 5).

The numerous applications that currently run programs on mobile technology can be fashioned into a cloud which teaches students in an *e-learning* setting. According to Kim, Song, & Yoon (2011), “by using the Google Apps infrastructure

for the development of a network, cooperative personal learning environments are created” (p. 7837). These *e*-learning environments can be utilized on a plethora of operational skills, including messaging, sharing text documents, and using calendars through a platform like Google Docs. A variety of devices can use these software tools. In fact, teachers have been experiencing the influx of technology into the classroom for many years. However, according to Redmann and Kotrlik (2009), anxiety toward technology is formed when teachers are given the devices and applications but are not given the proper training to implement it successfully.

Given the history of companies like Apple and Google to put mobile technology into the classrooms, there are still many skeptics. In a *New York Times* article by Winnie Hu (2011) regarding iPads in schools, Larry Cuban, a professor emeritus of education at Stanford University stated, “there is very little evidence that kids learn more, faster or better by using these machines . . . the money would be better spent to recruit, train and retain teachers” (para 9). More research is needed to determine the long-term outcomes of technology utilization in classrooms.

Why does this matter to us as educators? Technology is the future, and teachers who feel anxiety with computers and technology may hesitate to integrate these tools into daily instruction (Celik & Yesilyurt, 2013). Moreover, a teacher’s professional knowledge of technology, combined with how they may value technology integration, will have a direct influence on how likely they are to use digital tools in their daily instruction (Hughes, 2005). Other reasons for teacher anxiety include a lack of time and lack of interest or motivation to learn new technical

skills (Keengwe & Onchwari, 2009). Successful implementation of educational technology depends on teacher attitude (Uslu & Bumen, 2012).

In the past 40 years, technology has profoundly influenced how people learn, obtain information, and share information. As districts invest in new technologies such as iPads or Androids, it would benefit these districts to know and understand the mindset of those who will implement this evolving technology. In a report prepared for the Nellie Mae Education Foundation, Moeller and Reitzes (2011) stated that educators are being asked to change their perceptions of what a classroom should look like; and for many, this transition to implement instructional mobile technology for classroom instruction has been difficult.

Educators are normally mindful of the progressively growing number of students who come to their classrooms equipped with an arsenal of technology skills, specifically in mobile technology (Schrum, 1999). Teachers are also making gains in educating themselves about technology and the implementation of technology tools; and while many educators show a high interest in utilizing these technologies, others still do not feel well equipped to integrate educational technology into classroom instruction (Laffey, 2004). Moreover, not all teachers have had the opportunity or the experiences to understand how to integrate instructional technology practices; nevertheless, many try to do so without having a clear understanding of the implications for student learning (Peluso, 2012).

We need to introduce technology carefully in thoughtful ways or else we will be left with another generation of teachers who see technology as nothing but

overpriced distractions rather than useful teaching tools (Silagadze, 2012). Every day, teachers are asked to do more with technology; therefore, understanding their mindset within this context can help to recognize why some are successful and others are not. The rapid speed in which new technologies have developed in the past 20 years has influenced the way teachers and students now interact during the instructional day (Li, 2016). In fact, teachers' attitudes and perceptions of these new technologies play an important role in the use of such technologies within the teaching and learning process (Groff & Mouza, 2008).

Dweck's Mindset Theory

Mindset, as defined by Carol Dweck (2006), is the view you adopt for yourself that will profoundly affect the way you lead your life. According to Dweck (2006), one's mindset can affect one's success, or the lack of success, depending on the type of mindset one possesses. Could a teacher's mindset impact the implementation of mobile technology in the classroom? Dweck (2006) wrote that there are two types of mindset that an individual can possess which will impact his or her decision-making. Per Dweck (2006), an individual, through environment and experience, is taught how to approach problem solving. The individual will operate in either a fixed or growth mindset. Dweck (2006) defined someone who possesses a fixed mindset as someone who believes intelligence is rigid and static, has the need to appear intelligent, and therefore shows an inclination to avoid challenges. Individuals with a fixed mindset tend to be defensive, give up easily, and see hard work as fruitless. An individual with a fixed mindset will discount useful negative feedback,

will feel threaten by the success of others; as a result, this person may plateau early, and achieve less than their full potential (Dweck, 2006). In contrast, someone who possesses a growth mindset believes that intelligence can be developed. An individual with a growth mindset has the desire to learn; therefore, he or she will take on and embrace challenges, persisting on the task regardless of setbacks. This person sees his or her efforts as a path to mastery, and learns from criticism, and will find inspiration in the success of others; thus, they reach higher levels of achievement (Dweck, 2006). Consequently, mindset may affect a teacher's decision to implement or impede new instructional approaches in general, and the use of mobile technology for instruction specifically.

Statement of the Problem

Spending on high tech devices in schools reached \$13 billion worldwide in 2013, according to one report, with the U.S. spending more than \$4 billion that year on mobile devices alone (Nagel, 2014). Overall, education technology spending globally will reach \$19 billion by 2019. Districts like San Diego in California and McAllen in Texas have spent millions of dollars purchasing iPads to introduce e-Books to their students (Tomassini, 2012). In 2011, the San Diego district spent \$15 million to supply its students of 135,000 with 25,700 iPads, funded as part of a \$2 billion voter-approved bond package. In McAllen, Texas, the district purchased about 27,000 iPads, for each student and teacher, costing the district \$20 million when rolled out over five years (Tomassini, 2012).

We know that if used inappropriately, the use of iPads, Androids, or any other type of mobile device can be a severe interruption in classrooms (Silagadze, 2012). According to Silagadze (2012), when teachers run into major problems introducing iPads or other mobile devices to students, they find other imaginative ways to sidetrack themselves during instructional time, and eventually choose not to engage in the planned lesson. We also know that during the initial days of computers in education, there were significant numbers of positive comments about bringing them into the classroom (Armstrong, 2014). Nevertheless, over time the outcomes failed to improved student achievement, and teachers were left frustrated about the great possibilities of computer-supported teaching. Moreover, costs have been rising with IT department funding becoming flat or dwindling.

Researchers have been focused within the context of the implementation of instructional technology and student achievement; but more research needs to be conducted in teacher capacity as it relates to the application of mobile technology in the classroom for instruction (Armstrong, 2014). Subsequently, empirical evidence is lacking to show teachers' predisposition toward technology, and their willingness to try new things to help drive instruction. Particularly relevant would be application of Dweck's (2006) mindset theory in this context. Specifically, can the mindset of a teacher be an indicator of the willingness to accept and adapt the new instructional technology for classroom instruction? Evaluating a teacher's mindset and how the relationship between their predispositions toward technology may predict their willingness to implement mobile technology for instruction. Furthermore, an

understanding of teachers' mindset, as it relates to teacher's implementation of mobile technology for instruction, may assist districts in the development of educational policies and professional development. This research is not attempting to develop a method to change mindset, but rather, to give insight into why teachers may struggle to engage and implement new instructional technology that is now prolific in day-to-day instruction. Therefore, perhaps teachers who possess a fixed mindset can be given strategies through newly-designed professional development to employ mobile technology in an effective manner (Dweck, 2006).

Purpose of the Study

The purpose of this study was to provide empirical evidence to identify and examine a teacher's mindset as it relates to the implementation of mobile technology in the classroom for instruction. The researcher examined this relationship based on teachers' receptiveness to implementing mobile instructional technology and their growth or fixed mindset identified using Dweck's (2006) mindset construct. The Dweck Mindset Instrument (DMI) was used to identify a teacher's overall mindset toward intelligence and talent. The item statements on the DMI (see Appendix A) allowed teachers to reveal whether they believe talent and intelligence are characteristics that are malleable or unchangeable. Teachers were also asked to complete a second survey, the Measuring the Use of Mobile Technology (MUMT). The MUMT was developed using a panel of elementary school teachers who use technology daily for instruction. Regression analysis was used to determine if a teacher's mindset predicts their receptiveness to implement mobile instructional

technology. Additionally, a second level of analysis allowed for consideration of this relationship in terms of a teacher's gender, age, years of teaching experience. The study should yield useful data to help districts inform their decisions to design and develop professional development that will target teachers who need guidance to utilize mobile technology to its fullest capacity.

Research Questions

The research questions for this study will be used to examine the relationship between a teacher's mindset and the use of instructional mobile technology. The researcher will address the following research questions that guided this study:

- RQ 1 Is there a relationship between an educator's mindset and educator's demographic variables that include gender, age, and years teaching experience?
- RQ 2 Is there a relationship between an educator's receptiveness to mobile instructional technology and demographic variables that include gender, age, and years of teaching experience?
- RQ 3 Does growth mindset as measured by Dweck's DMI scale predict receptiveness to mobile instructional technology as measured by the MUMT survey?

Theoretical Framework

Dweck's mindset theory was used to guide my study (Dweck, 2006). According to Dweck (2006), an individual's mindset can either cripple or fuel a desire to conquer any new task put before them. Applying mindset theory to my research design will guide my analysis of teacher's mindset as it relates to the implementation of instructional mobile technology. As stated by Dweck (2008), an individual can learn to promote a growth mindset, and therefore, be more receptive to new ideas and future systems that are created from these new ideas. Dweck (2008) went on to state, "When you learn new things, these tiny connections in the brain actually multiply and get stronger. The more that you challenge your mind to learn, the more your brain cells grow....The result is a stronger, smarter brain" (p. 219). People who have a growth mindset have an understanding that intellectual skills can be cultivated through effort. And through this effort, the learning makes them smarter. In fact, they never discourage by failure, and they never feel as they were failing but rather learning (Dweck, 2008).

The following will give a small sample of how mindset theory is being used in other areas of study. Blackwell, Trzesniewski, and Dweck (2007) determined that students with a growth mindset were more enthused to learn and applied more effort. Students with a growth mindset also outperformed those with a fixed mindset in math—a gap that continued to escalate over the two-year period. Though the two groups had similar past accomplishments in math, the group with a growth mindset

pulled ahead with higher grades in math during this challenging time (Blackwell, Trzesniewski, & Dweck, 2007).

If educators are our frontline for change in education, then understanding their mindsets toward new technology, like iPads, Android, and other instructional mobile devices may help teachers promote progressive change. With new technology, many teachers will struggle; as Durkheim (1938) stated “for people to feel at any particular moment in time the need to change its educational system, it is necessary that new ideas and needs have emerged in which the former system is no longer adequate” (p. 167). Currently, teachers are exposed to new technologies and realizing that systems that may have worked in passed are no longer adequate. Therefore, understanding mindset can help guide the development of professional development for teachers.

Significance of the Study

This study provided school districts insight into teachers’ mindsets as it related to the implementation of new technology (Dweck, 2006). Since the influx of mobile technology, districts have spent millions of dollars purchasing high tech that is supposed to support teachers in their pursuit in making learning applicable to students who are native to mobile technology. Only the technology purchased is not being used as intended, but rather used to entertain, distract, or simply as a device to reinforce rote learning. If a teacher has a class set of new iPads, or Androids and possesses a negative predisposition toward the use of this technology, the teacher may or may not even attempt to integrate the new technology into the classroom. The need to build teacher capacity as it relates to mobile instructional technology requires

that districts understand why teachers fall short in the implementation of mobile instructional devices. Thus, districts that apply the recommendations that derive from this study will be able to provide targeted professional development for their teachers to build capacity to implement mobile instructional technology effectively. Researchers have been focused on outcomes between instructional technology and student achievement, but none in the teacher's capacity to implement technology. Therefore, this researcher examined how a teacher's readiness may affect the implementation of mobile instructional technology for instruction and learning. Moreover, the study provided empirical evidence that could potentially help districts save or redistribute funds where better needed. Instead of spending district money to purchase hardware and software that may not be used, districts may spend the money to train teachers to be better prepared, thus making them more receptive to implementing mobile instructional technology in their classrooms.

Definition of Terms and Abbreviations

These are provided definitions and abbreviations to accommodate understanding for the reader:

BYOD: An acronym for Bring Your Own Device (Dewey, 2013).

Convenience Sample: A group of cases or participants that are selected simply because they are available and easy to access (Gall, Gall, & Borg, 2007).

Digital Literacy: Framing the Information and Communication Technology (ICT) Literacy Panel definition of digital literacy, Borawski (2009) defined the term as — “using digital technology, communications tools, and/or networks to access,

manage, integrate, evaluate, and create information in order to function in a knowledge society” (p. 53).

Fixed mindset: Someone who believes intelligence is rigid and static, has the need to look smart, and therefore an inclination to avoid challenges, get defensive, gives up easily, and sees hard work as fruitless. An individual with a fixed mindset will discount useful negative feedback, will feel threatened by the success of others, as a result this person may plateau early, and achieve less than their full potential (Dweck, 2006).

Google Apps for Education (GAFE): A merger of productivity applications such as email, calendar, virtual storage space (Google Drive), and other apps fashioned by Google offering them for free to schools and educational institutions (Google Apps for Education, 2015).

Growth mindset: Someone who believes that intelligence can be developed. An individual with a growth mindset has the desire to learn, therefore will take on, and embrace challenges, persist on the task regardless of setbacks. This person sees his or her efforts as a path to mastery, and learns from criticism, and will find inspiration in the success of others. Thus, they reach higher levels of achievement (Dweck, 2006).

iPad: a tablet computer providing multi-touch interaction, and multimedia processing.

Mobile Applications (Apps): A mobile application, most commonly referred to as an app, is a type of application software designed to run on a mobile device, such

as a smartphone or a tablet computer. Mobile applications frequently serve to provide users with similar services to those accessed on PCs. Apps are generally small, individual software units with limited function. This use of software has been popularized by Apple Inc. and its App Store, which sells thousands of applications for the iPhone, iPad and iPod Touch. A mobile application also may be known as an app, Web app, online app, iPhone app or smartphone app. (Janssen, 2013)

Mobile Device: A mobile device is a handheld tablet or other device that is made for portability and is therefore both compact and lightweight. New data storage, processing and display technologies have allowed these small devices to do nearly anything that had previously been previously done with larger personal computers. (Janssen, 2012)

Mobile Learning or M-learning: Utilizing any mobile communication or cell phone device for educational purposes (Keskin & Metcalf, 2011).

Mobile Technology: For the purpose of this study any application of cellular phone, or smart devices.

1:1 Computing: A — “technology-rich educational reform where access to technology is not shared—but where all teachers, and students have ubiquitous access to laptop computers” (Bebell & O’Dwyer, 2010 p. 5).

Assumptions

Assumptions related specifically to teachers’ willingness to respond honestly to the two surveys. The researcher assumed that participants would answer consistently, allowing for analysis of their responses on both mindset and attitudes

toward technology. It was also assumed that there would be no systematic bias concerning which teachers chose to complete the surveys.

Limitations

The first limitation was that the sample was restricted to teachers at the elementary level. The second limitation was the possible selection bias, since teachers volunteered to participate in the study, representing participants from multiple campuses with different contexts. The third limitation was selection bias, since there were no guarantees that teachers who did participate had the same characteristics as the ones that did not participate.

Delimitations

This quantitative study was limited to elementary schools located within districts in the North Texas area, population, sample size, data collection method, and data analysis were specific in nature to guide my study. Participants consisted of elementary teachers who taught first through fifth grades, who delivered lessons using instructional mobile devices and were willing participants. Additional grade levels, particularly at the middle and high school levels, would have increased the generalizability of the findings.

Summary

Many factors may contribute to why a teacher may or may not choose to implement mobile instructional technology. The factors that were examined within this study are teacher's mindset toward learning new skills and the level of use of mobile technology. In addition, gender, age and years teaching experience are three

variables that may influence the learning of new skills and the use of mobile technology. Furthermore, this study included an examination of the use of technology by teachers who may have held an unknown bias toward the implementation of technology as an instructional tool during classroom instruction. Thus, the review of this literature includes examination of factors that influence the implementation of technology by teachers.

CHAPTER 2

LITERATURE REVIEW

This review of literature includes relevant studies that examine the relationship between teachers' mindset and their attitudes toward instructional technology. The literature supports the research questions with the following major sections: 1) search terms, 2) history of instructional technology, 3) mindset theory, and 4) teachers' attitudes toward instructional technology. The major sections will also be divided into sub-sections, examining literature on gender, age, and years of teaching experiences with respect to both the dependent (attitudes toward instructional technology) and independent (teachers' mindset) measures.

Search Terms

The following search engines were used to investigate research on teachers' attitudes toward instructional technology and mindset: Google, Google Scholar, ProQuest, Eric (EBSCO), Eric (ProQuest), EBSCO Open Dissertation, and several others. My search terms included: mindset, mindset and technology, teachers and their mindset, teachers' mindset with technology, mindset and gender, mindset and age, yielding limited results. More studies were available on mindset specifically and teachers' attitudes toward technology, with little connecting the two.

General History of Educational Technology

In reviewing literature explaining the history and evolution of technology entering educational settings, it went back more than a century and discovered that this has been a topic of discussion for a very long time. According to Hirumi (2012),

educators and educational researchers have contemplated the effects of mediated instruction for more than a hundred years. In 1910, George Kliene published the first catalog of instructional films for public schools. In 1913, Thomas Edison forecasted that books would soon become archaic and obsolete because, “It is possible to teach every branch of human knowledge with the motion picture.” In the 1920s, the National Academy of Visual Instruction was created and published one of the first textbooks on visual instruction, advocating the use of “seeing experiences” such as images, pictures, models, displaying exhibits, illustrations, graphs and maps to enrich education (Hirumi, 2012).

In the past 40 years, technology has been making tremendous progress in how people learn, acquire information, and share that information among learning communities (Kop, 2011). In the late 1970s, computers began to appear in K-12 classrooms (Poole & Evans, 2009). Poole and Evans also reminded us that “huge sums of money have been spent to provide schools with computers and computer-related equipment” (p. 8).

As our world enters a new era of technology, teachers, administrators, and lawmakers are trying to come up with better ways to utilize this new technology. According to Roach (2010), schools throughout the country are setting up with networks for wireless use to enhance communication and information gathering. This instructional technology will improve student learning and gives them an advantage at the workplace (Johnson et al., 2016; Roach, 2010).

Since the 1970s, computers have been a part of the classroom component to enhance instruction (Ames, 2017; Poole & Evans, 2009). Studies have indicated that a rich technological classroom leads to positive effects in achievement (Ames, 2017; Kingsley, 2007). Although many school districts have spent millions of dollars to provide computers for students, there are still many districts that do not have sufficient budgets, so are not able to provide this technology in the classrooms (Leachman, Masterson, & Wallace, 2016). Therefore, many students are not provided access to the technology, resulting in a minuscule impact for these students (Hu, 2011; Poirot & Soloway, 2003; Spencer, 2017). Even though billions of dollars have been spent to purchase these computers, according to Norris, Sullivan, Poirot, and Soloway (2003), no significant impact on student achievement has been realized. Hence, an interesting contrast between groups that claim positive effects in achievement (Kingsley, 2007; Zheng, Warschauer, & Farkas, 2013) and those who say that no significant impact on student achievement has been realized (Norris et al., 2003; Norris & Soloway, 2015). Educators and educational researchers should be bound to direct their efforts on determining how to better integrate the use of a given technology to facilitate scholarship, rather than asking if it works or if one is more effective than another (Hirumi, 2012). In 2009, the International Reading Association stated, “literacy educators have a responsibility to integrate information and communication technologies (ICTs) into the curriculum, to prepare students for the futures they deserve” (para. 2). Yet, according to Montrieux, Vanderlinde, Schellens, & De Marez (2015), 67% of teachers are “instrumental teachers” who are described

as teachers who did not choose to change their teaching style, nor their beliefs about their role after the implementation of the tablets.

School systems around the globe have made the integration of educational technology a major initiative into the educational settings, expecting teachers to know how to use and or adapt into their daily classroom instruction (Department of Education (ED), Office of Educational Technology 2017). Consequently, in this expansion and influx of these new technologies, educators will experience a profound impact on their approach to teaching, teaching environments, content, the evaluating, and management of the curriculum (Department of Education (ED), Office of Educational Technology 2017). Therefore, as technology use continues to expand an exponentially, these effective usage and implementation of instructional technology must be closely evaluated.

As stated in the Introduction of the present study, it was predicted by many that students in America would all have a personal device that could be used at school (Norris & Soloway, 2011, 2015). Puente (2012) suggested that experts believe that students be allowed to bring their personal mobile devices into the classroom environment, arguing that allowing this would be a cost-effective strategy. Supporters who advocate the use of personal devices in schools do so for many reasons, and they all point to saving district money (Ullman, 2012). Districts are coming to the realization that one to one laptop initiatives cannot be sustained and are exploring other alternatives such as “Bring Your Own Device” or BYOD (McLean, 2016). Moreover, according to McLean (2016), the value and long-term

sustainability of BYOD in elementary schools cannot be determined without first considering families, their school communities, and methods being promoted to implement BYOD initiatives. Therefore, with smart phones, iPad, Kindles, and other mobile devices that students are already using, it is important to understand why administrators, counselors, and teachers are reluctant to allow students to use their own devices in the classroom during the instructional day (Alina, 2016).

Now, many of the “applications” that run programs on a smartphone or other smart devices can be created into a cloud that teaches students in an *e-learning* environment by “using the Google Apps infrastructure for the development of a network of cooperative personal learning environments” (Kim, Song, & Yoon, 2011, p. 7837). These *e-learning* environments can be used to develop executive functioning skills, including messaging, using calendars and sharing text documents through open platforms like Google Docs. Such software tools are accessible by a variety of devices.

In summary, when computers, and then later mobile devices, were first introduced into classrooms to help support student learning, many were skeptical and doubted their effectiveness. Although the literature points to a more positive attitude toward instructional technology in the classroom, it still has not performed as many expected it to (Semerci, & Aydin, 2018). Through the literature researcher explain that mobile instructional technology and initiatives like BYOD may be the answer to achieving the promise of these devices to transform our students to becoming self-starters to their own learning, and as a result increase student achievement.

Mindset Theory in General

As mentioned in Chapter 1, mindset theory is used in this research study which derives from Carol Dweck's work with student achievement. According to Dweck (2015), many things have been learned since her book was first published, titled *Mindset: The New Psychology of Success*. Dweck (2015) stated:

This is wonderful, and the good word continues to spread. But as we've watched the growth mindset become more popular, we've become much wiser about how to implement it. This learning—the common pitfalls, the misunderstandings, and what to do about them—is what I'd like to share with you, so that we can maximize the benefits for our students. (p. 1)

Students' mindsets, and how they perceive their own abilities, play an important part in their motivation and achievement. Consequently, students who thought their intelligence could be developed and expanded (growth mindset) outperformed those who thought their intelligence was fixed with no possibility to learn more (fixed mindset) (Dweck, 2015).

Dweck (2015) also noted that “a growth mindset isn't just about effort” (p. 1). For example, many teachers offer praise to students who are trying, but not learning in words such as: “Great effort! You tried your best!” The growth-mindset method encourages children to feel good in the short and long terms by supporting their progress in dealing with challenges and setbacks on their journey to learning (Yeager & Dweck, 2012). Dweck (2015) explained that teachers can appreciate a student's work, but should say instead: “Let's talk about what you've tried, and what you can

try next.” The purpose of growth mindset is to help both the teacher and student, working together, to close the achievement gaps that have been identified. It is about being honest with the student and their current achievement, then together, doing something about it, helping the student become smarter (Dweck, 2015).

Teacher’s Mindset and Student Achievement

According to Dweck (2015), teachers may not have a good understanding of growth mindset, and as a result will fail to challenge the student to work harder and develop. Teachers will choose to praise effort, to tell them, “Everyone is smart!” or will at times rationalize why certain students are not learning, stating something like: “Oh, he has a fixed mindset,” which is essentially an excuse (Dweck, 2015).

Dweck (2015) stated that many now claim that having a growth mindset has become the thing to say, the right thing to possess, and the way to think how to approach instruction for student achievement. Consequently, educators have been confronted with a choice: Will you be an open-minded person, with a growth mindset, who nurtures and works vigilantly to ensure a students’ well-being? Or, will you be a close-minded person, with a fixed mindset, who weakens them? So, of course, teachers choose and express that they were of the growth-mindset identity (Dweck, 2015). Dweck stated that the pathway to a growth mindset is like a journey, so stating that you have a growth-mindset does not make it so.

How can educators assume a more mindful and deeper, true growth mindset, one that will show in their classroom practices like the use of mobile instructional technology? Dweck’s (2015) answer is to legitimize the fixed mindset, to recognize

that everyone approaches life's challenges with a mixture of both fixed and growth mindsets, and that everyone will undoubtedly always be a mixture of the two. In addition, if everyone is to move nearer to a growth mindset in thought and practice, we all will need to be aware and understand our fixed-mindset through our feelings and actions (Dweck, 2015). In addition, according to Dweck (2015), if we attempt to "ban" the fixed mindset, we will assuredly produce false growth-mindsets. However, if we carefully monitor those things that provoke our fixed-mindset, we can begin to understand the true path to a growth mindset (Dweck, 2015).

Empirical research on mindset has indicated that mindset can predict numerous individual achievements, including academic, cognitive, motivational, affective and even socioeconomic, through mediation of social-cognitive approaches (Dweck, 2015). The purpose of this review of literature is to compile and synthesize articles published from 1998 to 2017 on the relationship between mindset and academic achievement and explore the role of mindset in academic achievement. The studies indicate that students' mindsets play several roles of cause and serve as mediators in academic achievement. Mindset can also be an outcome of students' academic achievement. Furthermore, in some studies, the relationship between mindset and achievement is non-correlational. Meanwhile, according to Blackwell, Trzesniewski, and Dweck (2007) teachers' mindsets play the role of cause or mediator in students' academic achievement, but no role of outcome (See Figure 2.1).

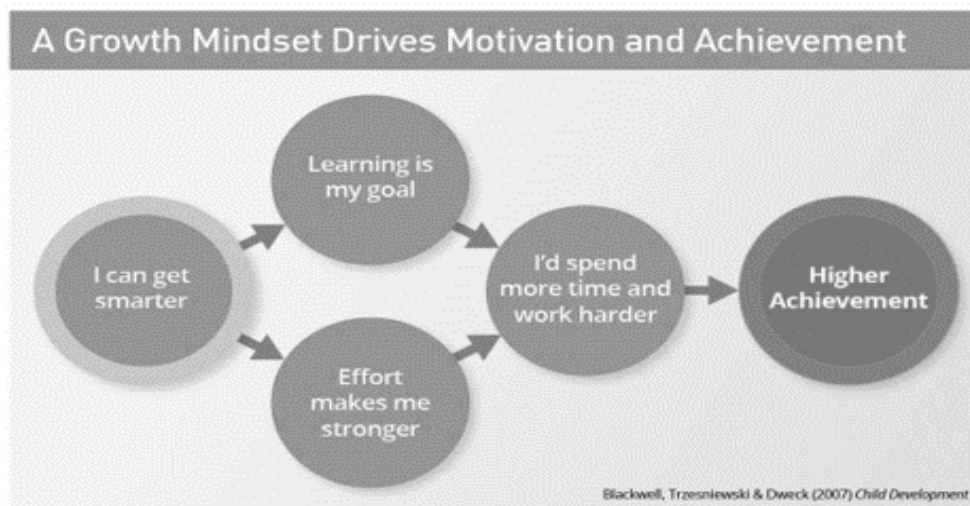


Figure 2.1. A growth mindset drives motivation and achievement (Blackwell, Trzesniewski, & Dweck, 2007.)

Mindset and gender. Zenger and Folkman (2016) discovered that women are more likely to have a “proving” mindset than men, particularly early on in their professions. They give a few possible reasons for this. For example, women are socialized to be less self-confident, while men are socialized to be overly self-confident (Zenger & Folkman, 2016). Numerous women are also exposed to what Joan C. Williams has termed as “Prove-It-Again” bias, in which their competence to successfully perform job functions is continuously questioned. In addition, Zenger and Folkman discovered that women shift to a more “improving” mindset as they mature in age. Similarly, older men are more inclined to have an “improving” mindset than younger males, even though the difference is not as significant. By the time women reach their early 60s, they are more likely to have an “improving” mindset than their male counterparts (Zenger & Folkman, 2016).

Research has shown that younger female scholars who possess entity theories of their intelligence are more prone to be susceptible by these stereotypical beliefs and this eventually leads to a reduction in female performance in Technology, Science, Mathematics and Engineering (STEM) related subjects and skills (Good, Aronson, & Harder, 2008; Tirri & Nokelainen, 2010). Likewise, it has been observed that scholars with a growth mindset possess higher achievement while being challenged during difficult school transitions, and their persistence to complete rigorous school courses are higher (Blackwell, Trzesniewski, & Dweck, 2007; Yeager & Dweck, 2012). Furthermore, the growth mindset, whether intrinsic or taught, seems to lower a young males' hostility and tension levels and improves their school performance (Yeager, Trzesniewski, Tirri, Nokelainen, & Dweck, 2011; Yeager, Trzesniewski, & Dweck, 2012).

Promoting an incremental mindset to advance adaptive learning behavior and motivation is therefore of considerable importance in advancing learning for anyone regardless of educational level or age. Therefore, it will require more insight into how the neural and cognitive effects of mindsets are linked to learning-based behaviors (Dweck, 2013).

Zhou and Xu (2007) surveyed 341 instructors and full-time faculty at a Canadian university and concluded that males had relatively more confidence and more experience in utilizing technology as a part of their teaching strategies than females. Yuen and Ma (2002) surveyed 186 pre-service instructors on ease-of-use,

perceived usefulness, and their intent to utilize technology in the classroom, showing significantly lower self-report numbers for females than for male teachers.

Mindset and age. Age was acknowledged as affecting their level of self-confidence with different aspects of digital literacies both in their teaching and everyday life: older more mature teachers were likely to feel uneasy with new technologies and usually implemented a simple and functional approach to ICT, whereas young teachers displayed a more open-minded approach and engaged in more playful practices (Robinson & Mackey, 2006; Tan & McWilliam, 2009). Nevertheless, some studies warn against assuming that young teachers actively participate in new literacies in technology as they may have changing degrees of access, attention, and assurance with some technologies (Robinson & Mackey, 2006).

Teachers' Attitudes toward Technology

Teachers' attitudes towards technology are included in my literature review to draw distinct lines between attitude and mindset. Attitudes toward technology vary, from those who have a positive attitude to those who have a negative attitude. According to Sánchez, Marcos, González, & Guan Lin (2012), teachers' attitudes towards ICT are positive, but the use of them in class is limited and requires innovative processes for implementation. Secondly, there were no significant differences after teaching took place. The foremost conclusion informed researchers that new approaches to teacher training need to be addressed and developed for better outcomes (Sanchez et. al., 2012). Attitudes are temporary and can be changed very quickly. In fact, leaders have demanded from their subordinates to change attitudes

to a positive attitude to accomplish a task or support an idea (Stangor, 2014). Just as attitudes of teachers who are asked many times to implement new curriculum along with new instructional technology, many teachers may have attitudes that move from negative to positive because of peer and organizational pressure (Landells & Albrecht, 2017). Therefore, many teachers may still hold negative attitudes about the many different ideas and new modalities that districts are mandating them to deliver using new technology (Howard & Mozejko, 2015).

Teachers see this adversity as obstacles and reasons to have a negative attitude toward using technology in the classroom. Constant issues arise even when the most experienced classroom teachers use technology for classroom instruction. It can be as simple as turning on a classroom computer and watching the operating system that never seems to load (Lee, Messom, & Yau, 2013). Moreover, the implementation of instructional technology continues to experience connection errors and has been cited as a major barrier in some instances where the internet and mobile technology were utilized in classrooms (Lee et al., 2013). Lee, Messom, and Yau (2013) found that during the utilization of electronic textbook technology in classroom instruction, it was observed that software did not always operate correctly across devices, electronic media on screens because distorted and unreadable, and the utilization of high bandwidth networks when uploading or downloading an *e*-book, a website and or other content from the internet could pose complications in the class. These same challenges and issues were also present within another study conducted by Liu, Navarrete, and Wivagg (2014) where teachers were attempting to use mobile

technology in the class. These adversities take on many different forms (Nagel, 2013). For example, during a whole group lesson, the power might go out, causing the pacing for that lesson to be interrupted, and a drop-in student engagement. Adversity can include changes to district and online software that is no longer familiar and must be relearned and subsequently retaught (Nagel, 2013). Furthermore, teachers who have not dealt with the implementation of technology, specifically our newer teachers, may develop negative attitudes toward utilizing this technology for instruction.

According to Kaufman (2015), the advancing and developing of a strong technical aptitude with instructional technology can be a challenge for educators who are always confronting this fast and indelible change to these technological tools they are expected to utilize for classroom instruction. These are challenges continue to affect teachers' attitudes against the use of any type of technology in the classroom. In addition, districts offer professional development, but teachers are already pressed for time across many job functions. Other studies have stressed that even if teachers who teach educators used more technology, the amount of technology use would not be sufficient to prepare student teachers to educate and learn with technology (Kaufman, 2015; Lei & Zhao, 2007). These are challenges that may turn attitudes negative and represent considerable obstacles that may will lead to an indifference for teachers about their classroom technology. Researchers also have informed us that the lack of self-efficacy and utilization of technology among pre-service teachers

connects back to teacher education programs (Kaufman, 2015; Buabeng-Andoh, 2012; Ertmer, & Ottenbreit-Leftwich, 2010).

Teachers' attitudes are also affected by the newness of this relatively new paradigm in delivery instruction. Especially for teachers who have been doing this profession for an extended period of time, these may have a positive attitude, but many are opposed to change and could turn negative very quickly. According to Montrieux, Vanderlinde, Schellens, and De Marez (2015), many teachers feel threatened by having to continually learn new ways to deliver a lesson, to be innovative and find ways to use the technology. Not only do these tasks require time and effort, but these changes threaten their control (Montrieux, et al., 2015).

Teachers have always enjoyed their autonomy, and it seems since technology has entered their classrooms, this autonomy has been slowly deteriorating. In fact, teachers who are not technology savvy may develop a negative attitude from the very start. Remember, you can have a negative attitude and still be on board to do what district policy is mandating through peer and organizational pressure (Landells & Albrecht, 2017). As stated before, attitudes can be temporary, and can quickly change if given the right incentive or circumstance. Furthermore, being a part of any organization, like a school district or a Fortune 500 company, can dictate those individuals' attitudes by applying political pressure to hold similar attitudes within the organization. Teachers' attitudes are no different than those of other groups who work closely to accomplish goals or produce products.

While teachers' attitudes have been connected to success transition to the use of digital tools, this evolution has been painful at times. To the basic infrastructure needed to implement all this pervasive technology, to the networks that had to be designed and redesigned to protect our students, and to the professional development needed for our teachers who often feel behind because every year new technology is introduced and expected to be used. These are just a few of the many challenges that face districts and teachers from day to day in implementing technology to support students. With districts having to make difficult choices about one-to-one technology or bring your own device teachers feel anxious and pressure to utilize technology that they have no knowledge about. Bring your own device presents other challenges for teachers. Not all tablets or smartphones are alike, so teachers learn how to teach their students how to become part of the district's network. This will undoubtedly present unforeseeable issues for teachers, and district administrators.

In contrast, teachers' attitudes toward technology are very different from than teachers' mindsets toward technology. A mindset, according to Dweck (2006), is a self-perception or "self-theory" that a person holds about themselves. Thinking and accepting that you are either "intelligent" or "unintelligent" is a very simplistic way to think about mindset (Dweck, 2006). In other words, mindset explains the underlying beliefs of people, or in this study, teachers about "learning and intelligence. In addition, the possibility that teachers may also possess other mindsets that are associated to their own professional or personal lives. For example, "I'm a terrible teacher" or "I'm am a fantastic parent." In fact, according to Dweck (2013)

“teachers may or may not be aware of their own mindsets, and this can have profound effect on learning achievement, skill acquisition, personal relationships, professional success, and many other dimensions of life.” Comparatively speaking, mindset may be affecting someone’s behavior unknowingly, as opposed to one’s attitude that is almost always known by the person. Moreover, mindset is how one approaches potential failure, and what happens when failure occurs.

A teacher’s mindset toward technology may rest on how the teacher’s mindset has been developed through experiences in his or her past (Dweck, 2010). According to Dweck (2006), a person’s mindset can be described as either *fixed* or *growth*.

Dweck (2006) goes on to say, if a person possesses a fixed mindset, he or she will avoid real challenge, and if confronted with failure, will feel defeated and will give up more easily before reaching their goal. An individual who has a fixed mindset will not learn from the failure, but rather decide to ignore the event ever happened and move away from the opportunity to learn from the experience. On the other end of the spectrum, if a person possesses a growth mindset, they approach learning with an open mind and with enthusiasm are energized to take on a new challenge. If they should fail, they do not see it as a wasted exercise, but rather the opportunity to learn from the experience and move forward to the next challenge. In addition to someone approaching a difficult challenge, Dweck (2006) stated that:

In a fixed mindset, people believe their basic qualities, like their intelligence or talent, are simply fixed traits. They spend their time documenting their

intelligence or talent instead of developing them. They also believe that talent alone creates success—without effort.

Research suggests that students who have adopted a fixed mindset believe that they are either “smart” or “dumb,” and there is no way to change this. In addition, if they possess a fixed mindset, they shy away from challenges. As a matter of fact, poor performance might support their thinking that they cannot learn, then it is fine that they believe they are “dumb,” or a poor performance to them indicates that they are less intelligent than they think, if they believe they are “smart,” either outcome the result is to quit. Dweck’s (2006) findings also suggest that when students with fixed mindsets fail at something, as they inevitably will, they tend to tell themselves they cannot or will not be able to do it (“I just can’t learn Algebra”), or they make excuses to rationalize the failure (“I would have passed the test if I had had more time to study”).

Attitudes are made up of our beliefs and emotions we have about a phenomenon, as well as our makeup to react in a specific way regarding this phenomenon (Eagly & Chaiken, 1993, 2007; Rokeach, 1972; Triandis, 1971; Zanna & Rempel, 1988). Then we have perception, and perception is a distinctive way of rational thought about something. Garg (2011) described perceptions as a “way of seeing or understanding a thing, phenomenon or process etc. Perception denotes an insight of an individual that can be expressed overtly in the form of opinion” (p. 110). According to Bandura (1997), a person’s perception of his or her capabilities to accomplish a given task is known as self-efficacy. Finally, we define what mindset

means within my study. Mindset, according to Dweck (2006), is how an individual approaches adversity, and how previous experiences in all manner of educational settings will influence and mold individuals into those who have a growth mindset or a fixed mindset. Therefore, individuals will adopt one of the two views, and according to Dweck (2006), will profoundly affect the way an individual will lead his or her life. For instance, those who feel that their success is based on natural born ability are said to have a “fixed” theory of intelligence or a fixed mindset. However, others who credit their success on effort, on education, training, and relentless determination are said to have an “incremental” theory of intelligence, or a growth mindset. Individuals may not necessarily know about or be aware of their own mindset, but their mindset can still be identified based on their approaches to adversity. It is particularly apparent in their reaction to failure. According to Dweck (2006), a fixed-mindset individual will demonstrate anxiety and at the same time fear failure, because it is a negative declaration on their basic abilities. Conversely, an individual who operates under a growth mindset does not mind or fear failure as much because they understand that their execution of a task can be developed and improved. Furthermore, these individuals also understand that learning comes from failure and will ultimately embrace the opportunity to learn and get back on the proverbial horse.

Comfort with technology and age. O’Bannon and Thomas (2014) found that there was a significant relationship between type of phone and age. They focused on three age groups, and of the 1,095 teachers, approximately one fourth

(26.1%) were 32 or younger; most of teachers (44%) were 33-49; and (29.9%) were 50 and over.

Mobile phone ownership. In the same study, O'Bannon and Thomas (2014) examined the type of mobile phone that teachers owned to determine if a relationship with age was present. The results showed that 76.8% of the participants owned a smartphone, and that 23.2% owned a basic phone. A chi-square test was conducted and revealed a significant relationship between the type of phone and age, $X^2(2, N = 1095) = 41.60, p < .001$. Many of the teachers who were 32 years old or younger (85%) and similar who were 33–49 (80.3%) owned smartphones. The number of teachers who were 50 and older who owned smartphones (64.5%) was much lower. Therefore, teachers who were age 50 and older were significantly less likely to own a smartphone.

Teachers' Support for the use of Mobile Phones in the Classroom

Comfort with technology and age. O'Bannon and Thomas (2014) also examined teachers' support for the use of mobile phones in the classroom to determine if there was a relationship with age. Using a five-point scale (1 = Strongly Disagree; 5 = Strongly Agree), participants were asked to respond on the scale how strongly they agreed or disagreed with four statements: "I support the use of mobile phones in the classroom," "I would/do use a cell phone for school-related work," "I would/do allow my students to use cell phones for school-related work," and "I think that mobile phones could/do support student learning." A one-way MANOVA was performed to determine significance in support based on age. This revealed a

significant difference (Wilks's Lambda = .942, $F(8,2178) = 8.226$, $p < .001$, partial eta squared = .029). Given the significance of the overall test, individual ANOVAs were also conducted to determine which support items differed. The results revealed that all items were significant $p < .001$. Tukey's post hoc comparisons revealed that two of the groups--those who were 32 years old and younger and those 33–49 did not vary; whereas, both significantly differed from the teachers who were 50 and older. Those who were 50 and older were significantly less supportive on all four items associated with support for using mobile phones in the classroom.

Comfort with technology and gender. In a quantitative study, Hoogerheide, Loyens, and Van Gog (2016) reported that video modeling of examples is an effective instructional method that is increasingly used, in which a human model demonstrates and explains how to perform a learning task. Moreover, they hypothesized that gender may affect both the model, who demonstrates on the video, and the observer who is learning from the video. As a result, the study suggested that gender can play an important role in terms of affective variables experienced throughout the learning, and that instructional architects of these lessons may want to consider this when creating (online) learning environments (Hoogerheide et al., 2016). This is an intricate part of the flipped classroom, and instructional mobile technology that must be considered for both teacher and student (Bergman & Sams, 2012).

As per Spire, Hervey, Morris, and Stelpflug (2012), students of all ages, and educational levels, including teachers, stream these instructional videos from websites, such as YouTube and Google, to view them for informal learning purposes.

Moreover, such videos are also increasingly used in formal learning (Lenhart, 2012). In fact, some educators argue in favor of a “flipped classroom,” which means that learners study videos at home to free up time in schools for more practice using skill and teacher guided support (Bergman & Sams, 2012).

Within their study on gender and instructional modeling, Hoogerheide, Loyens, and Van Gog (2016) found that participants did significantly better on posttest ($M = 5.56, SD = 2.55$) than on the pretest ($M = 0.30, SD = 0.64$). No main effect of Gender Model was significant, $F(1, 158) = 1.71, p = .192$, nor of Gender Observer, $p < 1$. As to self-efficacy and perceived competence, no main effect of Gender Model reported, $p < 1$, but there was a main effect of Gender Observer, $F(1, 159) = 10.16, p = .002, \eta^2p = .060$, suggesting that male students ($M = 5.14, SD = 0.15$) were significantly more confident in their own abilities than female students ($M = 4.47, SD = 0.14$).

Although male students did show higher self-efficacy than female students, this was not associated with higher learning outcomes. This finding may have been a consequence of the stereotypical thinking that males are more skilled in math than female students (Steffens, Jelenec, & Noack, 2010), primarily among older students (Ceci, Ginther, Kahn, & Williams, 2014), although few, if any, differences are seldom found between the genders (Hyde, Fennema, & Lamon, 1990; Hyde, Lindberg, Linn, Ellis, & Williams, 2008). Findings by Hoogerheide, Loyens, and Van Gog (2016) on perceived confidence along with performance suggested that male students could have overestimated their own abilities to perform; moreover, the

judgment of learning accuracy results demonstrate that gender did not affect how accurate students were at judging their own abilities. As Hoogerheide, Loyens and Van Gog (2016) stated, the stereotype thinking that males have more experience and better than females at math, could explain why viewing a male model heightened perceived competence from pretest to posttest than viewing a female model. As a result, all students viewed the male model as more of an expert than the female model (regardless of the fact the viewed lesson was identical) (Arroyo, Woolf, Royer, & Tai, 2009; Moreno et al., 2002).

CHAPTER 3

METHODOLOGY

In this study, the researcher sought to evaluate whether a teacher's receptiveness to implement mobile instructional technology was influenced by his or her growth or fixed mindset as measured with Dweck's Mindset Instrument or DMI (Dweck, 2006) (see Appendix A). Using a second survey, the Measuring the Use of Mobile Technology or MUMT (see Appendix B), so the MUMT measured a teachers' level of use of mobile technology using five-point Likert scale.

Demographic items included teachers' gender, age, and years of teaching experience. Each participant/teacher took the DMI survey to reveal their mindset toward the learning of new ideas. Upon the completion of the DMI survey, participants from both the growth and fixed mindset were asked to complete the MUMT survey to measure the level of use of mobile instructional technology as a classroom teacher.

Participant Selection

Selecting participants for this quantitative study, a convenience sample to seek out volunteers to participate was utilized. This was initiated by requesting a list of teachers that work within a local independent school district in the North Texas area. In addition, a few other requests were sent to other elementary schools in the North Texas area. An email was sent to teachers who were selected from a list provided by the primary school district selected. Those who elected to participate were sent a survey link to complete the DMI survey that identified their mindset, along with the MUMT survey that asked about their use of iPads, Androids, or other instructional

mobile device used for classroom instruction and homework. The researcher specified a time window to complete both surveys within Qualtrics.

Data Collection

This research study focused on teachers' experience when implementing an instructional mobile device in the classroom for instruction. Dweck Mindset Instrument (DMI), and the Measuring Use of Mobile Technology (MUMT) provided data that were used to examine each teacher's approach to either promote or impede instructional mobile technology as a tool for instruction in the classroom. The data from the DMI survey identified teachers who approach challenges from a growth mindset or a fixed mindset. The researcher identified whether each teacher's promotion or impediment to the implementation of mobile technology was based on a predisposition or mindset.

Instrumentation

The Dweck Mindset Instrument (DMI) was used to assess how teachers view their own intelligence (Dweck, 2006). The DMI comprises of 16 separate item statements, which teachers ranked on a Likert scale from 1-6. The scale consists of the following scores: 1 (strongly agree), 2 (agree), 3 (mostly agree), 4 (mostly disagree), 5 (disagree), and 6 (strongly disagree). Teachers were instructed to read each of the individual 16-item statements and then rank their level of agreement or disagreement with the item based on the numeric scale explained above (P'Pool, 2012).

The item statements on the DMI (see Appendix A) were written in a way that teachers revealed their thoughts and feelings about whether they believe talent and intelligence are characteristics that are malleable or unable to change. These identified results are based upon their level of agreement or disagreement with each of the item statements. The item statements required teachers to determine their individual beliefs about their own intelligence and talent based upon their own overall academic success and achievement. By answering the item statements on the DMI, teachers essentially answered questions that are focusing on a specific viewpoint related to intelligence and talent more than once. The item statements were written in a manner in which the wording is altered slightly, so as to more accurately identify the viewpoints of teachers regarding their beliefs on their own individual intelligence as well as their personal overall academic achievement (P'Pool, 2012).

The second survey was the Measuring the Use of Mobile Technology or MUMT. This survey was created using a five-person panel. All persons on the panel were elementary school teachers and were teaching at the same North Texas elementary school. Each individual on the panel was asked to use a Validation Form to evaluate each question for “clarity” and “consistency” for the concept of mobile technology usage along with three demographic items on gender, age, and years teaching experience.

Scoring

According to P'Pool (2012), the DMI is composed of 16 separate item statements, which participants ranked on an agreement scale of 1-6. The scale

consisted of the following scores: 1 (strongly agree), 2 (agree), 3 (mostly agree), 4 (mostly disagree), 5 (disagree), and 6 (strongly disagree). Participants were instructed to read each of the individual 16-item statements, and then rank their level of agreement, or disagreement with the aforementioned items based on the numeric scale.

The DMI contained both fixed item statements as well as incremental item statements. The scores from the incremental items were “reversed” so that strongly disagreeing with an entity item is similar to strongly agreeing with an incremental item. The fixed item statements on the questionnaire consisted of statement numbers 1, 2, 4, 6, 9, 10, 12, and 14. These statements focus on both intelligence, and talent being factors that are fixed and unchanging. The incremental item statements on the questionnaire consisted of item numbers 3, 5, 7, 8, 11, 13, 15, and 16. There were four fixed item statements, and four incremental item statements focusing on intelligence, and there are four fixed item statements, and four incremental item statements focusing on talent development. The scores selected by participants for the incremental item statements that portrayed intelligence, and talent as something that can be changed, are reversed (1 became 6, 2 became 5, 3 became 4, 4 became 3, 5 became 2, and 6 became 1). These scores are averaged with the item statements that portrayed intelligence, and talent as being factors that are fixed and unable to change.

It is important to note that the scores for intelligence and talent were kept separate and calculated separately since they are two very distinct characteristics.

The scores for the item statements regarding intelligence (items 1-8) were averaged together, and the scores for the item statements regarding talent (items 9-16) were also averaged together. Participants who received an average score between 1 and 3 were counted as holding an entity theory and view intelligence and talent development as characteristics that are fixed, and unable to change. Participants who received an average score between 4 and 6 were counted as holding an incremental theory, and view intelligence, and talent development as characteristics that are malleable, and able to change. Participants who received an average score between 3 and 4 were counted as being undecided, and did not have a clear theory about intelligence, and talent development regarding them as being characteristics that are able to change, or unable to change.

Second Survey

The second survey was administered to collect data measuring the level of use of mobile instructional technology which is the MUMT survey. This survey named Measuring the Use of Mobile Technology or MUMT was developed with the help of a panel of teachers at a local school district. The panel consisted of five elementary school teachers both female and male teachers. Teachers screened survey questions for clarity and consistency as it related to the utilization of mobile technology for classroom instruction. This MUMT survey included 12 questions in all, 9 of the 12 questions measure teachers' level of use of instructional mobile technology for educational instruction. The remaining three items related to gender, age and years teaching experience.

Data Analysis

Participants completed two surveys the DMI and MUMT. For the DMI survey, the researcher calculated the number of participants who were classified with a growth mindset and the number of them who were classified with a fixed mindset, representing a categorical variable. This classification represented the dependent variable and compared against whether there was a relationship between the independent variables of gender, age, and years teaching experience. Using Statistical Packages for the Social Sciences, or SPSS version 24, the independent variables of gender, age, and years teaching experience were categorized to test statistical relationship using Chi-Square analysis. The independent variable gender was categorized as, female = 0, and male = 1, then following with an examination of participants' mindset to test against that relationship between age, and years teaching experience. The researcher used chi square to test the null hypothesis, using the following equation $\chi^2 = \sum \left(\frac{Obs-Exp}{Exp} \right)^2$. Subsequently a chi square was calculated to produce the *p*-value for statistical analysis. Thereafter, the degrees of freedom table was used to identify if *p*-value was < .05, indicating that the null hypothesis should be rejected. However, if *p*-value was > .05, then failed to reject the null.

Finally, SPSS was used to calculate linear regression to analyze if growth mindset as measured by Dweck's DMI scale predicted receptiveness to mobile instructional technology as measured by the MUMT survey. Then utilized a simple linear regression ($y = a + bx$) where "y" is the dependent variable, "a" is the y intercept, "b" is the slope of the regression line, and "x" is the independent variable.

This research study tested for receptiveness to mobile instructional technology.

Therefore, y = growth mindset as measured by DMI scale, and x = receptiveness to mobile instructional technology measured by the MUMT survey.

CHAPTER 4

FINDINGS

The purpose of this study was to provide empirical evidence to identify and examine a teacher's mindset as it relates to the implementation of mobile instructional technology in the classroom for instruction. I examined this relationship based on teachers' receptiveness to implementing mobile instructional technology using the MUMT and DMI surveys. The DMI survey identified teachers either as operating under a growth mindset or a fixed mindset as it relates to the approach of how he or she undertakes life's challenges. The MUMT survey measured teachers' usage of mobile instructional technology in the classroom. The MUMT survey also identified demographic information that identified participants' gender, age, and years teaching experience.

The DMI is a 16-question survey on a six-point Likert scale ranging from *strongly agrees* to *strongly disagree*. The MUMT survey had nine questions that measure mobile technology usage and three additional questions that ask about gender, age, and years teaching experience. All items were also on a five-point Likert scale ranging from *never* to *very often*. This chapter includes presentation of results of this quantitative study. In addition to overall scores, levels of gender, age, and years of teaching experience add to the analysis.

Response Rate

Participants in this research study were all elementary level school teachers, grades first through fifth, who taught within school districts in North Texas and

completed two surveys. Of the 147 anonymous respondents, two failed to complete surveys, resulting in a total sample size of 145.

Demographic Data

In this research study, more females (91.72%) than males (8.28%) completed the surveys. The participants' ages ranged from 20 through 60 plus with 20-29 representing 21.4%, 30-39 representing 27.6%, 40-49 representing 27.6%, 50-59 representing 17.9%, and finally 60+ participants representing 5.6%. Finally, years of teaching can be summarized as follows: 0-5 years representing 23.5%, 6-10 representing 26.2%, 11-15 representing 19.3%, 16-20 representing 13.78%, and 21+ years teaching experience 17.3%.

Data Cleaning Steps

In this research study, two surveys were used to collect data from participants. Next, the surveys that were sent to six schools from various North Texas School Districts and were merged into a single data set. Items requiring reverse scoring were re-coded in SPSS Version 24, and missing data cells were left blank. Using the "create new variable" function, the following variables were assigned: Mobile Tech, Fixed, Growth, Growth Intelligence, Growth Talent, Fixed Intelligence, Fixed Talent, and Omnibus Growth. The researcher created a single mean score for each of the constructs.

Reliability

Internal consistency of the respective scales was calculated in SPSS using Cronbach's alpha. Table 4.1 displays reliability of constructs with alphas between .85 and .99, representing the good to excellent range.

Table 4.1

Reliability of Constructs

| Scale | Cronbach's Alpha | N of Items |
|-----------------------------|------------------|------------|
| Mobile Technology | 0.861 | 8 |
| Omnibus Growth Mindset | 0.925 | 16 |
| Fixed Mindset | 0.883 | 8 |
| Growth Mindset | 0.892 | 8 |
| Growth Mindset Intelligence | 0.812 | 4 |
| Growth Mindset Talent | 0.919 | 4 |
| Fixed Mindset Talent | 0.877 | 4 |
| Fixed Mindset Talent | 0.902 | 4 |

Teachers' Attitudes toward Mobile Technology

Teachers' attitudes toward mobile instructional technology were assessed through the MUMT survey. Scaled responses ranged from 1 (strongly disagree) to 5 (strongly agree), with a score near 5 representing a relatively high level of comfort with mobile instructional technology and a score near 1 representing low comfort. Descriptive statistics were calculated on teachers' MUMT scores according to demographic variables, including gender, age, and years of teaching experience (see Table 4.2).

Table 4.2

Teachers' Attitudes toward Mobile Instructional Technology by Gender, Age, and Experience (1 = low comfort, 5 = high comfort)

| Variable | Mean | <i>N</i> | <i>SD</i> |
|-------------------|------|----------|-----------|
| Gender | | | |
| Female | 3.78 | 133 | 0.71 |
| Male | 3.68 | 12 | 0.81 |
| Age | | | |
| 20 | 3.70 | 31 | 0.73 |
| 30 | 3.79 | 40 | 0.71 |
| 40 | 3.74 | 41 | 0.76 |
| 50 | 3.85 | 33 | 0.68 |
| Years of Teaching | | | |
| 5 | 3.96 | 34 | 0.65 |
| 10 | 3.92 | 38 | 0.69 |
| 15 | 3.64 | 28 | 0.79 |
| 20 | 3.64 | 20 | 0.75 |
| 21 | 3.56 | 25 | 0.65 |

A series of One-way ANOVAs was performed to compare the effect of gender, age, and years of teaching experience on teachers' attitudes toward mobile instructional technology. There was not a significant effect for gender [$F(3,143) = 0.213, p = .645$], age [$F(3,141) = 0.279, p = .840$], or years of experience [$F(3,140) = 1.986, p = .100$]. With the threshold of $p < .05$, only the variable of years of experience approached significance.

Mobile technology by gender. Scores on attitudes toward mobile technology were divided into two group, including high tech (1) and low tech (0), by a split at the median score. Scores exactly at the median were placed in the high-tech category,

resulting in unequal representation in each group. Gender was coded by female (0) and male (1). When looking at attitude toward mobile technology, 75 of 133 females were in the *high-tech* group (56.4%), while 7 of the 12 males (58.3%) were in the *high-tech* group. A chi-square test of independence was calculated comparing the differences in responses relating to teachers' attitude toward mobile technology by gender. Results indicated no dependent relationship ($\chi^2 = 0.017$, $df = 1$, $N = 145$, $p = .90$). See Table 4.3 for counts, expected counts, chi-square statistic, and p -value.

Table 4.3

Chi Square Attitude toward Technology by Gender

| | | Female | Male | Total | χ^2 | p |
|-----------|----------------|--------|------|-------|----------|------|
| Variable | | | | | 0.017 | .897 |
| High Tech | Count | 75 | 7 | 82 | | |
| | Expected Count | 75.2 | 6.8 | 82 | | |
| Low Tech | Count | 58 | 5 | 63 | | |
| | Expected Count | 57.8 | 5.2 | 63 | | |
| Total | Count | 133 | 12 | 145 | | |
| | Expected Count | 133 | 12 | 145 | | |

Zero cells (0%) have expected count less than 5.

The minimum expected count is 5.21.

Mobile technology by age. Scores on attitudes toward mobile technology were divided into two group, including high tech (1) and low tech (0), by a split at the median score. Scores exactly at the median were placed in the high-tech category, resulting in unequal representation in each group. Age was coded by “old” (1) and “young” (0), using a similar split at the median point. When looking at attitude toward mobile technology, 38 of the 71 teachers from the “younger” group (53.5%)

were in the *high-tech* group, while 44 of 74 teachers from the “older” group 59.5%) were in the *high-tech* group. A chi-square test of independence was calculated comparing the differences in responses relating to teachers’ attitude toward mobile technology by age. Results indicated no dependent relationship ($\chi^2 = 0.520$, $df= 1$, $N = 145$, $p = .47$). See Table 4.4 for counts, expected counts, chi-square statistic, and p -value.

Table 4.4

Chi Square Attitude toward Technology by Age

| | Young | Old | Total | χ^2 | p |
|-----------------|-------|------|-------|----------|------|
| | | | | 0.520 | .471 |
| High Tech Count | 38 | 44 | 82 | | |
| Expected Count | 40.2 | 41.8 | 82 | | |
| Low Tech Count | 33 | 30 | 63 | | |
| Expected Count | 30.8 | 32.2 | 63 | | |
| Count | 71 | 74 | 145 | | |
| Expected Count | 71 | 74 | 145 | | |

Zero cells (0%) have expected count less than 5.
The minimum expected count is 30.85.

Mobile technology by years of experience. Scores on attitudes toward mobile technology were divided into two group, including high tech (1) and low tech (0), by a split at the median score. Scores exactly at the median were placed in the high-tech category, resulting in unequal representation in each group. Years of experience was coded by “experienced” (1) and “inexperienced” (0), using a similar split at the median point. When looking at attitude toward mobile technology, 33 of the 72 teachers from the “inexperienced” group (45.8%) were in the *high-tech* group,

49 of 73 teachers from the “experienced” group (67.1%) were in the *high-tech* group.

A chi-square test of independence was calculated comparing the differences in responses relating to teachers’ attitude toward mobile technology by age. Results indicated a dependent relationship ($\chi^2 = 6.69$, $df= 1$, $N = 145$, $p = .01$), showing that teachers’ attitudes toward mobile technology was positively associated with years’ teaching experience. See Table 4.5 for counts, expected counts, chi-squared statistic, and p -value.

Table 4.5

Chi Square Attitude toward Technology by Years of Experience

| | | Inexperienced | Experienced | Total | χ^2 | p |
|-----------|----------------|---------------|-------------|-------|----------|-----|
| Variable | | | | | 6.69 | .01 |
| High Tech | Count | 33 | 49 | 82 | | |
| | Expected Count | 40.7 | 41.3 | 82 | | |
| Low Tech | Count | 39 | 24 | 63 | | |
| | Expected Count | 31.3 | 31.7 | 63 | | |
| Total | Count | 72 | 73 | 145 | | |
| | Expected Count | 72 | 73 | 145 | | |

Zero cells (0%) have expected count less than 5.
The minimum expected count is 31.28.

Cramer's V post-hoc test was performed to show the strength of the relationship ($p = 2.15$), with results summarized in Table 4.6

Table 4.6

Cramer's V Post Hoc

| Symmetric Measures | | Value | Approximate Significance |
|--------------------|------------|--------|--------------------------|
| Nominal by Nominal | Phi | -0.215 | 0.01 |
| | Cramer's V | 0.215 | 0.01 |
| N of Valid Cases | | 145 | |

Teachers' Mindset

Teachers' mindset was assessed through the DMI instrument. Items were assessed on a 6-point Likert scale with 1 on the fixed mindset side and 6 on the growth mindset side. Descriptive statistics were calculated on teachers' DMI scores according to demographic variables, including gender, age, and years of teaching experience (see Table 4.7).

Table 4.7

Teachers' Mindset by Gender, Age, and Experience (1-6 scale with 1= fixed and 6 = growth)

| Variable | Mean | <i>N</i> | <i>SD</i> |
|-----------------|------|----------|-----------|
| Gender | | | |
| Female | 4.59 | 133 | 0.80 |
| Male | 4.57 | 12 | 0.79 |
| Age | | | |
| 20 | 4.39 | 31 | 0.73 |
| 30 | 4.54 | 40 | 0.88 |
| 40 | 4.84 | 41 | 0.80 |
| 50 | 4.53 | 33 | 0.72 |
| Years' Teaching | | | |
| 5 | 4.78 | 34 | 0.84 |
| 10 | 4.76 | 38 | 0.73 |
| 15 | 4.44 | 28 | 0.80 |
| 20 | 4.89 | 20 | 0.61 |
| 21 | 4.00 | 25 | 0.68 |

A series of One-way ANOVAs was performed to compare the effect of gender, age, and years of teaching experience on teachers' mindset. There was not a significant effect for gender [$F(3,143) = 0.11, p = .917$] or age [$F(3,141) = 2.133, p = .099$].

However, data indicated that years of experience showed a significant relationship with growth mindset [$F(3,140) = 6.032, p = .001$].

Mindset by gender. Scores on mindset were divided into two group, including growth mindset (1) and fixed mindset (0), by a split at the median score. Scores exactly at the median were placed in the growth mindset category, resulting in unequal representation in each group. Gender was coded by female (0) and male (1).

When looking at mindset, 101 of 133 females were in the *growth mindset* group (75.9%), while 8 of the 12 males (66.7%) were in the *growth mindset* group. A chi-square test of independence was calculated comparing the differences in responses relating to teachers' mindset by gender. Results indicated no dependent relationship ($\chi^2 = .507$, $df = 1$, $N = 145$, $p = .48$). See Table 4.8 for counts, expected counts, chi-squared statistic, and p -value.

Table 4.8

Chi Square Mindset by Gender

| | | Female | Male | Total | χ^2 | p |
|----------|----------------|--------|------|-------|----------|------|
| Variable | | | | | 0.507 | .476 |
| Fixed | Count | 32 | 4 | 36 | | |
| | Expected Count | 33 | 3 | 36 | | |
| Growth | Count | 101 | 8 | 109 | | |
| | Expected Count | 100 | 9 | 109 | | |
| Total | Count | 133 | 12 | 145 | | |
| | Expected Count | 133 | 12 | 145 | | |

Zero cells (0%) have expected count less than 5.
The minimum expected count is 2.98.

Mindset by age. Scores on mindset were divided into two group, including growth mindset (1) and fixed mindset (0), by a split at the median score. Scores exactly at the median were placed in the growth mindset category, resulting in unequal representation in each group. Age was coded by younger (0) and older (1). When looking at mindset, 51 of 71 younger teachers were in the *growth mindset* group (71.8%), while 58 of the 74 older teachers (78.4%) were in the *growth mindset* group. A chi-square test of independence was calculated comparing the differences

in responses relating to teachers' mindset by age. Results indicated no dependent relationship ($\chi^2 = .832$, $df = 1$, $N = 145$, $p = .36$). See Table 4.9 for counts, expected counts, chi-squared statistic, and p -value.

Table 4.9

Chi Square Mindset by Age

| | | Young | Old | Total | χ^2 | p |
|----------|----------------|-------|------|-------|----------|------|
| Variable | | | | | 0.832 | .362 |
| Fixed | Count | 20 | 16 | 36 | | |
| | Expected Count | 17.6 | 18.4 | 36 | | |
| Growth | Count | 51 | 58 | 109 | | |
| | Expected Count | 53.4 | 55.6 | 109 | | |
| Total | Count | 71 | 74 | 145 | | |
| | Expected Count | 71 | 74 | 145 | | |

Zero cells (0%) have expected count less than 5.
The minimum expected count is 17.63.

Mindset by years of experience. Scores on mindset were divided into two group, including growth mindset (1) and fixed mindset (0), by a split at the median score. Scores exactly at the median were placed in the growth mindset category, resulting in unequal representation in each group. Experience was coded by inexperienced (0) and experience (1). When looking at mindset, 58 of 72 inexperienced teachers were in the *growth mindset* group (80.6%), while 51 of the 73 experienced teachers (69.9%) were in the *growth mindset* group. A chi-square test of independence was calculated comparing the differences in responses relating to teachers' mindset by experience. Results indicated no dependent relationship ($\chi^2 =$

2.221, $df= 1$, $N = 145$, $p = .14$). See Table 4.10 for counts, expected counts, chi-squared statistic, and p -value.

Table 4.10

Chi Square Mindset by Experience

| | | Inexperienced | Experience | Total | χ^2 | p |
|----------|----------------|---------------|------------|-------|----------|------|
| Variable | | | | | 2.221 | .136 |
| Fixed | Count | 14 | 22 | 36 | | |
| | Expected Count | 17.9 | 18.1 | 36 | | |
| Growth | Count | 58 | 51 | 109 | | |
| | Expected Count | 54.1 | 54.9 | 109 | | |
| Total | Count | 72 | 73 | 145 | | |
| | Expected Count | 72 | 73 | 145 | | |

Zero cells (0%) have expected count less than 5.
The minimum expected count is 17.88.

Mindset and Attitudes toward Mobile Instructional Technology.

Correlational analysis is used to examine the relationships between scaled variables. Teachers’ attitudes toward mobile technology showed a correlation of .180 with growth mindset, representing a significant relationship at the .05 level. Linear regression was analysis was used to test if teacher’s growth mindset significantly predicted their attitudes toward mobile technology. The results of the regression indicated that that growth mindset was a significant predictor of teachers’ attitudes toward mobile technology $R^2 = .032$, $F(1,143)=4.801$, $p<.05$. While a significant predictor, based on the regression analysis, teachers’ mindset accounted for only 3.2% of the variance in scores on their attitudes toward mobile instructional technology. Model summary of the regression is presented in Table 4.11.

Table 4.11

Model Summary of Mindset as Predictor of Teachers' Attitudes toward Mobile Instructional Technology

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .180 ^a | .032 | .026 | .70551 |

a. Predictors: (Constant), Growth Mindset

CHAPTER 5

DISCUSSION AND CONCLUSIONS

“Let’s go invent tomorrow instead of worrying about what happened yesterday”

Steve Jobs

This researcher explored a teacher’s mindset as it related to the implementation of mobile instructional technology for instruction. As observed and through other research studies, it revealed that teachers struggle with using mobile instructional technology for many reasons. These reasons range from districts not supporting or offering professional development to encourage those who have a pre-bias disposition against the use of mobile instructional technology, to districts, especially the smaller ones, struggling to keep their networks updated to handle the many different operating systems that are being used by different devices that come into their schools under a BYOD program. Moreover, many teachers still have not totally accepted this model to deliver their instruction and district curriculum, because they still cannot see the potential in its use. Many still view it as a distraction and not a tool to improve skills.

Several studies have examined teachers’ attitudes and perception toward mobile technology to understand why many continue to use a more traditional approach to delivering instruction. However, a gap in the literature exists when it comes to researching teachers’ mindset and how their motivation to learn and to fully implement mobile technology to deliver their curriculum. In addition, many

administrators still see smart devices on shelves and not meeting their expectations to engage students to their full measure. Districts have been spending millions of dollars to place these devices in the hands of teachers and students throughout the U.S. and the world, only to discovering that this prolific wave of technology, mobile technology, has not yet met expectations to improve student achievement (Montreux et al., 2015).

The rest of chapter 5 will include the following sections: 1) summary of study, 2) summary of key findings, 3) discussion of findings, 4) limitations, 5) significance, 6) recommendations for future research, and 7) conclusion. The summary of study section includes a synopsis about this research study. The summary of key findings includes a report of the data based on the three research questions. Next is a discussion on the findings followed by the limitations and significance based on data collected. Finally, the recommendations for future research describe what other studies might possibly research in relation to the implementation of mobile instructional technology as examined using teachers' mindsets. In addition, what and how understanding a teacher's mindset may help to develop professional development to promote a growth mindset as it relates to the implementation of mobile technology to support instruction for their students.

Summary of the Study

In the current study, the researcher examined if a teacher's mindset could predict use of mobile instructional technology to support and drive daily instruction. Research studies have centered on attitudes and perceptions in teachers' decisions to

implement mobile technology; however, research comparing teachers' demographics against their mindsets has been limited. The online surveys were designed in Qualtrics to elicit responses about their attitudes on the use of mobile technology to help drive instruction (MUMT), and to identify if their predisposition when approaching challenges is apt to be done under a fixed or growth mindset (DMI). The data collected from the two surveys used a Likert scale. The MUMT has a scale from 1 to 5, 1 = *Never* and 5 = *Very Often*, the DMI survey has a scale from 1 to 6, 1 = *Strongly Agree* and 6 = *Strongly Disagree*, respectively. The MUMT survey also collected data on gender, age, and years teaching experience.

Summary of Key Findings

This section provides a summary of key findings for each of the three research questions based on the collected and analyzed data in Chapter 4. The summary of findings is presented by each individual research question.

RQ 1: Is there a relationship between an educator's mindset an educator's demographic variables that include gender, age, and years teaching experience?

Statistical test. The null hypothesis stated there was no relationship in teachers' mindset and the demographic variable of gender. Based on chi square 2x2 test table using mindset and gender, there was no significant difference. Therefore, the researcher failed to reject the null hypothesis based on gender. The null hypothesis stated there is no significant difference in teachers' mindsets and demographic variables of age. Based on chi square 2x2 test table using mindset and

age, there was no significant difference. Again, the researcher failed to reject the null hypothesis based on age.

Key finding #1. The null hypothesis stated there is no significant difference in teachers' mindsets and the demographic variable of years of teaching experience. Initially, the results of a chi square test based on gender, and the different age groups of the teachers seem to share similar mindsets and therefore was not a good predictor of whether the teacher will implement or impede mobile instructional technology for instruction.

However, based on a chi square 2x2 test table using mindset and years teaching experience, there is a significant difference. Therefore, based on the chi square test the null hypothesis was rejected. Based on the rejection of the null hypothesis, years of teaching experience can be used to identify a teacher's mindset to predict whether he or she will implement mobile technology to support classroom instruction.

Discussion. According to Montreux, Vanderlinde, Schellens, and De Marez (2015), teachers still struggle with implementing tablet or mobile technology and technology overall. Their research informs us that teachers fall into two categories, which are "instrumental teachers" and "innovative teachers." A "instrumental teacher" as defined by these researches and labeled by the others within their study, are participants who did not change their views about their interaction with students after the implementation of these mobile devices in their classroom and therefore, did not change their teaching style radically. Moreover, they thought of the devices

purely as another way to present text or a book. Only viewed as an instrumental value since there is no essential need to sign for the computer lab or making copies of worksheets that could enhance the learning. These teachers held the belief and stated that to accomplish their role in the same way as before, is to remind those around them that the only difference being the replacement of the textbook by these mobile devices (Montreux et al., 2015). In short, these teachers use mobile devices or tablets for teaching and learning as the participants have branded: “a book behind glass.”

According to Montreux, Vanderlinde, Schellens, and De Marez (2015), the other group, the “innovative teachers,” those who have assumed the role of coach, discovered that both teachers and students using mobile devices had altered their teaching style and had a broader range of learning activities that could be organized. These teachers choose to utilize a more teaching/didactical applications as compared to text-processing ones and highlighting the need to refer between the purpose of the lesson and the specific application. Teaching and learning should be assumed as development of active learning through applications that mobilize students’ learning apps to practice content or search the Web for information would be a part of this process. In addition, they stated that they understand that learning through the didactical use of mobile devices has led to a shift from traditional, teacher-centered education to the individual use of these devices by the student (Montreux et al., 2015). Unfortunately, their research concluded that “instrumental teachers” were 67% of their tested population, while only 33% were “innovative teachers.”

Supporting the evidence that teachers struggle to implement mobile technology to help drive instruction in new and meaningful modalities.

RQ 2: Is there a relationship between an educator's receptiveness to mobile instructional technology and demographic variables that include gender, age, and years of teaching experience?

Statistical test. The null hypothesis stated there was no significant difference in teachers' receptiveness to mobile instructional technology and demographic variables that include gender, age, and years teaching experience. Based on a chi square 2x2 test table using technology and gender there was no significant difference nor when using chi square test for technology and age. Therefore, the researcher fails to reject the null hypothesis.

Key finding #2. To restate, the null hypothesis states there is no relationship in teachers' receptiveness to mobile instructional technology and demographic variables that include gender, age, and years teaching experience. Using a chi square test for technology and years teaching experience, the researcher failed to reject the null hypothesis. However, the data at 0.09 can be said to be approaching significance as a result, be recognized as a notable finding. Although, the researcher failed to reject the null hypothesis in three variables as they related to receptiveness of mobile technology, years of teaching experience should be notable since the data at 0.09 is approaching significance, therefore noteworthy.

Discussion. Research is scarce on gender and teachers' perception and implementation of technology within different learning environments (Li, 2016). The

data results in my study showed that both educator's mindset and receptiveness were not significant in the implementation of mobile technology based on gender and age. Although, according to Zenger and Folkman (2016), women were more likely to possess a "proving" mindset more so than men, especially early on in their careers. Under environments that socialize women to feel less self-confident, as opposed to men who are taught to be more self-confident. In fact, many women are exposed to what Joan Williams calls "Prove-It-Again" bias, where their ability to do the job is forever questioned without good reason. This is not what the research in this study showed, and although a small sample of male teachers participated in this study, it did not reveal gender was a variable that made a difference in whether he or she would be receptive to using mobile technology. Good, Aronson, and Harder (2003), along with Tirri and Nokelainen (2010), stated that younger female scholars who possess an entity theory about their intelligence were likely to accept the stereotypical beliefs about women, which would eventually lead to the reduction of female performance in technology, science, mathematics, and engineering related subjects and skills. Again, this research study did not show this as it related to the use of mobile technology for instruction but be reminded that only 8.28% of 145 participants were men. This may not represent an accurate report of gender bias as it relates to implementation of mobile technology.

RQ 3: Does growth mindset as measured by Dweck's DMI scale predict receptiveness to mobile instructional technology as measured by the MUMT survey?

Statistical test. The null hypothesis stated that measuring growth mindset using Dweck's DMI scale did not predict technology use. Regression analysis was conducted using growth mindset as the independent variable and teachers' attitude toward technology as the dependent variable. Results indicated a significant relationship, showing that mindset predicted 3.2% of the variance in teachers' attitudes toward mobile instructional technology. As stated before, although this is a significant predictor, based on the regression analysis, teachers' mindset accounted for only 3.2% of the variance in scores on their attitudes toward mobile instructional technology.

Key finding #3. Growth mindset was significantly associated with receptiveness to mobile technology.

Discussion. The positive association based upon teachers' responses to the DMI and MUMT scales indicated that teachers' attitudes are shaped by pre-existing approaches to learning new things, such as instructional technology. This key provides empirical evidence that successful implementation of instructional technology may be connected to teachers' mindsets, offering potential areas for continuing professional learning.

Limitations

Although the research has yielded some interesting data, there were some unavoidable limitations. First, although several schools from different districts within the North Texas area were asked to participate, the number of teachers that did participate represent a small sample size compared to the number of teachers within

the state. Therefore, to generalize for teachers across the state, the study should involve more participants and eventually in all grade levels. Second, the literature in mindset and technology use was very limited, as a result, the articles used were written about mindset as it related to student achievement. Finally, the study did have a sufficient sample size of 145 participants, but only 8% were male teachers. This may limit generalizability in terms of findings relating to gender when looking at mobile technology usage.

Implications

In the past 10 years, teachers have had to deal with more than just teaching subjects from a curriculum designed by their districts to promote student achievement. Gone are the days where a teacher can come in, have a lesson ready to teach and assess students based on what was taught during the lesson. In the 21st Century classroom environment, teachers have had to adapt to a whole new pedagogy in their delivery of instruction for student learning. Within this new setting, teachers are now required to implement mobile instructional technology to levels outside most teachers' knowledge who have never used this form of media to teach. Many teachers have struggled in this new world, but why?

In this study, I examined mindset theory (Deck, 2006) and its implications as it related to the implementation of mobile technology to support teachers and their instruction. Through this examination it is evident that a teacher's mindset can affect their personal bias toward either implementing or impeding this relatively new form of media for moving students forward.

As members of our learning communities there exist a need to be aware why mobile technology still has not been fully implemented. Eight years since the first iPads entered the classrooms and many of them still go underutilized. Now, these devices maybe used during the instructional day, but only about one-third of teachers are getting the best use out of the tablets. This is according to research that stated 67% of teacher use them for a text and have branded: “a book behind glass.”

If the promise of these new instructional tools is to fully be realized and the idea that this media is going to facilitate our student’s achievement to higher levels, then it is imperative to address why only 33% of our teachers are seeking new ways to connect with students who are already using this technology. In this study and in the research articles about attitudes toward technology, perceptions about the use of technology were similar. However, there was very little on mindset and technology together, supporting the idea that attitudes and perceptions are not mindsets. Thus, it was difficult to find research is directly relevant to this research study. Again, as stated before, mindset (Dweck, 2006) is a set of schemas that one develops over time, from birth until you reach maturity. This schema or mindset will be how you approach challenges as you confront them.

Recommendations for Future Research

- 1) Identify teachers' mindsets against student achievement.
- 2) Identify specific reasons for a fixed mindset toward technology and fund research to develop professional development to address these needs.
- 3) Gender was not equally represented, and although most districts do have more female teachers, if we want data to report out on gender, seek out more male teachers to participants.

Recently, teachers have begun to introduce a model referred to as a “flipped classroom.” This has been a very promising model that has captured some teachers and who now are considering implementing more of mobile technology to help drive instruction. However, it has not been widely accepted, because of the tremendous amount of training and time it takes to use this technology in this way. However, it can work to assist a teacher in the long term once fully implemented, this model takes years to set up and refine and will require a growth mindset. Consequently, many teachers do not put in the extra time and effort. Further research should be done in this area, the flipped classroom.

Henceforth, this study did not examine attitudes or the perceptions of teachers toward mobile instructional technology, but rather examined their mindset per Carol Dweck's mindset theory. Dweck's theory at the core looks at one's mindset, in which most people operate in both but may exhibit more of a growth or a fixed mindset affecting their approach in learning new ideas and skills.

Conclusion

This research has provided empirical evidence that can reveal a teacher's predisposition toward mobile instructional technology and their willingness to try new things that could help drive their instruction. This study used Carol Dweck's mindset theory against teacher's willingness to implement mobile instructional technology. Using two surveys, the Dweck Mindset Instrument (DMI) and Measuring the Use of Mobile Technology (MUMT), I sent out these surveys together using Qualtrics. The surveys were sent out to several North Texas School Districts and a total of 145 participants completed the two surveys for the study. The data were collected and examined to reveal each teacher's mindset, along with a measure of their individual use of mobile technology. Next, chi square was used to see if the relationship exists between the variables presented in the study. Kramer's V then examined how strong the relationship between the used variables of gender, age, and years teaching experience. Is it possible to predict if a teacher willingness to implement new technology being introduced or will it sit on a shelf collecting dust? Can knowing a teacher's mindset help to predict if teachers will implement or impede the use of technology? This study set out to test three variables against two different surveys to examine if any relationship existed between them. These variables again that were tested within this study were gender, age, and years teaching experience. As many of us suspect, new mobile technology is not being utilized to its fullest capacity. Many teachers still feel unwilling or not adequately prepared to implement for classroom use.

References

- Alina, T. (2016, August 16). Why are some educators still reluctant to using technology in the classroom? [Blog Post]. Retrieved from <https://blog.neolms.com/educators-still-reluctant-using-technology-classroom/>
- Ames, C. W. (2017). Teacher Perceptions of Factors Influencing Technology Integration in K-12 Schools. Retrieved from <https://digitalcommons.usu.edu/etd/5277/>
- Apple: A history of one of the world's most valuable companies. (2012, February). *Washington Post*. Retrieved from http://www.washingtonpost.com/business/economy/apple-a-history-of-one-of-the-worlds-most-valuable-companies/2012/02/29/gIQA1VFVmR_gallery.html
- Armstrong, A. (2014). Technology in the classroom: It's not a matter of 'if,' but 'when' and 'how'. *Education Digest*, 79(5), 39.
- Arroyo, I., Woolf, B. P., Royer, J. M., & Tai, M. (2009). Affective gendered learning companion. In international conference on artificial intelligence and education. Brighton: IOS Press.
- Augustine, N. R. (2007). *Is America falling off flat earth?* Washington, DC: National Academy Press. Retrieved from <https://www.nap.edu/catalog/12021/is-america-falling-off-the-flat-earth>
- Bandura, A. (1997). *Self efficacy: The exercise of control*. New York: W.H. Freeman.

- Bebell, D., & O'Dwyer, L. (2010). Educational outcomes and research from 1: 1 computing settings. *The journal of technology, learning and assessment*, 9(1), 5-13.
- Bennett, K. R. (2011-12, December/January). Less than a class set. *Learning & Leading with Technology*, 39(4), 22-25. Retrieved from <http://www.learningandleading-digital.com/learningandleading>
- Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. Eugene, OR: International Society for Technology in Education.
- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, 78(1), 246-263. doi:10.1111/j.1467-8624.2007.00995.x
- Borawski, C. (2009). Beyond The Book. *Children And Technology*, 53-54.
- Buabeng-Andoh, C. (2012). Factors Influencing Teachers' Adoption and Integration of Information and Communication Technology into Teaching: A Review of the Literature. *International Journal of Education and Development using Information and Communication Technology*, 8(1), 136-155.
- Butterman, E. (2012). Planning for BYOD. *Scholastic Administrator*, 12(1), 55-57.
- Ceci, S. J., Ginther, D. K., Kahn, S., & Williams, W. M. (2014). Women in academic science: A changing landscape. *Psychological Science in the Public Interest*, 15, 75–141. doi:10.1177/1529100614541236.

- Celik, V., & Yesilyurt, E. (2013). Attitudes to technology, perceived computer self-efficacy and computer anxiety as predictors of computer supported education. *Computers & Education*, 60(1), 148-158.
- Center for American Progress. (2013). Retrieved from <http://www.americanprogress.org/issues/education/report/2013/06/14/66485/a-re-schools-getting-a-big-enough-bang-for-their-education-technology-buck/>
- Center for Digital Education. (2011). Digital teaching and professional development [Special Report]. *Center for Digital Education's Converge*, 2(1). Retrieved from http://media.convergemag.com/documents/CDE11+REPORT+FINAL_V.pdf
- Chhavi. (2013). 'Google play' for education unveiled. *Digital Learning*, Retrieved from <https://digitalllearning.eletsonline.com/2013/05/google-play-for-education-unveiled/>
- Department of Education (ED), Office of, Educational Technology. (2017). Reimagining the role of technology in education: 2017 national education technology plan update. Office of Educational Technology, US Department of Education. Retrieved from <http://search.ebscohost.com.ezproxy.uta.edu/login.aspx?direct=true&db=eric&AN=ED577592&site=ehost-live>
- Dewey, J. (2013). Bring your own device.
- Durkheim, E. (1938). *The evolution of educational thought Lectures on the formation and development of secondary education in France*; translated by Collins, P. London: Routledge and Kegan Paul, 1977.

- Dweck, C. S. (2006). *Mindset: The new psychology of success*. New York, NY: Random House.
- Dweck, C. S. (2008). *Mindset: The new psychology of success*. Random House Digital, Inc...
- Dweck, C. S. (2010). Mind-sets and equitable education. *Principal Leadership*, 10(5), 26-29. Retrieved from <https://login.ezproxy.uta.edu/login?url=http://search.proquest.com.ezproxy.uta.edu/docview/216292274?accountid=7117>
- Dweck, C. S. (2013). *Self-theories: Their role in motivation, personality, and development*. Psychology press.
- Dweck, C. S. (2015). Carol Dweck Revisits the ‘Growth Mindset’, Education Week. Retrieved (25.04.2018) from: <https://www.edweek.org/ew/articles/2015/09/23/carol-dweck-revisits-the-growth-mindset.html>
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Fort Worth, TX: Harcourt Brace Jovanovich College Publishers.
- Eagly, A. H., & Chaiken, S. (2007). The advantages of an inclusive definition of attitude. *Social Cognition*, 25(5), 582-602.
- Elstad, E., & Christophersen, K. (2017). Perceptions of digital competency among student teachers: Contributing to the development of student teachers' instructional self-efficacy in technology-rich classrooms. *Education Sciences*, 7.

- Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of research on Technology in Education*, 42(3), 255-284.
- Gall M. D., Gall J. P., Borg W. R. (2007). *Educational research: An introduction* (8th ed.). Boston, MA: Pearson.
- Garg, M. (2011). Peeping into the learning world of secondary teacher trainees: Can their academic success be predicted? *Australian Journal of Teacher Education*, 36(12), 8.
- Gasparini, A., & Culén, A. (2013). The iPad in a Classroom: A Cool Personal Item or Simply an Educational Tool? *The Sixth International Conference on Advances in Computer-Human Interactions*, (pp. 204-209). Oslo.
- Good, C., Aronson, J., & Harder, J. A. (2008). Problems in the pipeline: Stereotype threat and women's achievement in high-level math courses. *Journal of applied developmental psychology*, 29(1), 17-28.
- Google Apps for Education. (2015). *Google apps for education: Common questions*. Retrieved from <https://support.google.com/a/answer/139019?hl=en>
- Greenfield, S. (2015). Five reasons iPads should not be used in classrooms. *Psychology Today*, Retrieved from <https://www.psychologytoday.com/blog/mind-change/201510/five-reasons-ipads-should-not-be-in-classrooms>
- Groff, J., & Mouza, C. (2008). A framework for addressing challenges to classroom technology use. *AAcE Journal*, 16(1), 21-46.

- Harris, J., & Hofer, M. (2011). Technological Pedagogical Content Knowledge (TPACK) in action: A descriptive study of secondary teachers' curriculum-based, technology-related instructional planning. *Journal of Research on Technology in Education, 43*(3), 211-229.
doi:10.1080/15391523.2011.10782570
- Hirumi, A. (2012) *Does the use of technology improve learning? The answer lies in design*. University of Central Florida STEM White Paper.
<https://www.mheonline.com/glencoemath/pdf/technology.pdf>
- Hoogerheide, V., Loyens, S. M., M., & Van Gog, T. (2016). Learning from video modeling examples: Does gender matter? *Instructional Science, 44*(1), 69-86.
doi:<http://dx.doi.org.ezproxy.uta.edu/10.1007/s11251-015-9360-y>
- Horizon Project. (2013). NMC Horizon Project Short List 2013 K-12 Edition. Austin Texas: New Media Consortium.
- Howard, S. K. & Mozejko, A. (2015). Teachers: technology, change and resistance. In M. Henderson & G. Romeo (Eds.), *Teaching and digital technologies: Big issues and critical questions* (pp. 307-317). Port Melbourne, Australia: Cambridge University Press
- Hu, W. (2011). More schools embrace the iPad as a learning tool. *The New York Times*.

- Hughes, J. (2005). The role of teacher knowledge and learning experiences in forming technology-integrated pedagogy. *Journal of technology and teacher education, 13*(2), 277-302.
- Hyde, J. S., Fennema, E., & Lamon, S. (1990). Gender differences in mathematics performance: A meta-analysis. *Psychological Bulletin, 107*, 139–155.
doi:10.1037//0033-2909.107.2.139.
- Hyde, J. S., Lindberg, S. M., Linn, M. C., Ellis, A., & Williams, C. (2008). Gender similarities characterize math performance. *Science, 321*, 494–495.
doi:10.1126/science.1160364.
- International Reading Association. (2009). New literacies and 21st century technologies: A position statement of the International Reading Association, Newark, DE.
- Janssen, C. (2012). *Gadgets*. Retrieved 2017, from techopedia:
<http://www.techopedia.com/definition/23586/mobile-device>
- Janssen, C. (2013). *Software*. Retrieved Jan 2013, from techopedia:
<http://www.techopedia.com/definition/2953/mobile-application-mobile-app>
- Johnson, L., Adams Becker, S., Cummins, M., Estrada, V., Freeman, A. & Hall, C. (2016). *NMC Horizon Report: 2016 Higher Education Edition*. Austin, Texas: The New Media Consortium. Retrieved August 6, 2018
from <https://www.learntechlib.org/p/171478/>.
- Jowallah, R., Bennett, L., & Bastedo, K. (2018). Leveraging the affordances of virtual reality systems within K–12 education: Responding to future

innovations.*Distance Learning*, 15(2), 15-26. Retrieved from
<https://login.ezproxy.uta.edu/login?url=https://search-proquest-com.ezproxy.uta.edu/docview/2126533391?accountid=7117>

Kaufman, K. (2015). Information communication technology: challenges & some prospects from preservice education to the classroom. *Mid-Atlantic Education Review*.

Keengwe, J., & Onchwari, G. (2009). Technology and early childhood education: A technology integration professional development model for practicing teachers. *Early Childhood Education Journal*, 37(3), 209.

Keskin, O. N., & Metcalf, D. (2011). The current perspectives, theories and practices of mobile learning. *The Turkish Online Journal of Educational Technology (TOJET)*, 10(2), 202-208.

Kim, S., Song, S., & Yoon, Y. (2011). Smart learning services based on smart cloud computing. *Sensors (14248220)*, 11(8), 7835-7850. doi:10.3390/s110807835

Kingsley, K. V. (2007). Empower diverse learners with educational technology and digital media. *Intervention in School and Clinic*, 43(1), 52-56. Retrieved from http://www.academia.edu/8495540/Empower_Diverse_Learners_with_Technology

Kop, R. (2011). The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course. *The International Review of Research In Open And Distributed Learning*, 12(3), 19-38. doi: <http://dx.doi.org/10.19173/irrodl.v12i3.882>

- Laffey, J. (2004). Appropriation, mastery and resistance to technology in early childhood preservice teacher education. *Journal of research on technology in education, 36*(4), 361-382.
- Landells, E. M., & Albrecht, S. L. (2017). The positives and negatives of organizational politics: A qualitative study. *Journal of Business and Psychology, 32*(1), 41-58. doi:10.1007/s10869-015-9434-5
- Leachman, M., Masterson, K., & Wallace, M. (2016). *After nearly a decade, school investments still way down in some states*. Center on Budget and Policy Priorities, 5. Retrieved from: <http://www.fsba.org/wp-content/uploads/2015/08/CBPP-Ed-Funding-10-20-16.pdf>
- Lee, H. J., Messom, C., & Yau, K. A. (2013). Can an electronic textbooks be part of k-12 education?: Challenges, technological solutions and open issues. *Turkish Online Journal of Educational Technology, 12*(1), 32-44.
- Lei, J., & Zhao, Y. (2007). Technology uses and student achievement: A longitudinal study. *Computers & Education, 49*(2), 284-296.
- Lenhart, A. (2012). *Teens and video: Shooting, sharing, streaming and chatting*. Retrieved September 16, 2018, from <http://www.pewinternet.org/Reports/2012/Teens-and-online-video/Findings.aspx>.
- Levenson, N., & Boser, U. (2014). The Promise of Education Information Systems: How Technology Can Improve School Management and Success. *Center for American Progress*. Retrieved from <http://search.ebscohost.com.ezproxy.uta.edu/login.aspx?direct=true&db=eric&AN=ED561090&site=ehost-live>

- Li, Y. (2016). Is teacher professional development an effective way to mitigate teachers' gender differences in technology? *Journal of Education and Training Studies*.
- Littlejohn, A., Beetham, H., & McGill, L. (2012). Learning at the digital frontier: a review of digital literacies in theory and practice. *Journal of computer assisted learning*, 28(6), 547-556.
- Liu, M., Navarrete, C. C., & Wivagg, J. (2014). Potentials of mobile technology for K-12 Education: An investigation of iPod touch use for English language learners in the United States. *Journal of Educational Technology & Society*, 17(2).
- Mango, O. (2015). iPad use and student engagement in the classroom. *The Turkish Online Journal of Educational Technology*, 14(1), 53-57. Retrieved from <http://www.tojet.net/articles/v14i1/1417.pdf>
- McGee, R. (2015). *Technology professional development phenomena in today's schools* (Order No. 3703567). Available from ProQuest Dissertations & Theses Global. (1689441386). Retrieved from <https://login.ezproxy.uta.edu/login?url=http://search.proquest.com.ezproxy.uta.edu/docview/1689441386?accountid=7117>
- McLean, K. J. (2016). The implementation of bring your own device (BYOD) in primary elementary] schools. *Frontiers in Psychology*, 7, 1739. Retrieved

from <https://login.ezproxy.uta.edu/login?url=https://search-proquest-com.ezproxy.uta.edu/docview/1844606340?accountid=7117>

- Moeller, B., & Reitzes, T. (2011). Integrating Technology with Student-Centered Learning. A Report to the Nellie Mae Education Foundation. *Education Development Center, Inc.*
- Montrieux, H., Vanderlinde, R., Schellens, T., & De Marez, L. (2015). Teaching and learning with mobile technology: A qualitative explorative study about the introduction of tablet devices in secondary education. *PLoS one*, *10*(12), e0144008.
- Moreno K. N., Person N. K., Adcock A. B., Eck, R. N. V., Jackson, G. T., & Marineau, J. C. (2002). Etiquette and efficacy in animated pedagogical agents: The role of stereotypes. Paper presented at the AAAI Symposium on Personalized Agents, Cape Cod, MA.
- Nagel, D. (2013). 6 Technology challenges facing education. *The Journal, Transforming Education through Technology*, *1*, 1.
- Nagel, D. (2014). Spending on instructional tech to reach \$19 billion within 5 years. *The Journal*.
- Nelson, D. (2012). BYOD: an opportunity schools cannot afford to miss. *Internet@schools*, *19*(5), 12-15.
- Norris, C., & Soloway, E. (2011). Tips for BYOD k12 programs. *District Administration*, *47*(7), 77.

- Norris, C. A., & Soloway, E. (2015). Mobile technology in 2020: Predictions and implications for k-12 education. *Educational Technology*, 55(1), 12-19.
- Norris, C., Sullivan, T., Poirot, J., & Soloway, E. (2003). No access, no use, no impact: snapshot surveys of educational technology in K-12. *Journal of research on technology in education*, 36(1), 15-27.
- Northrop, L., & Killeen, E. (2013). A framework for using iPads to build early literacy skills. *The Reading Teacher*, 66(7), 531-537. doi:10.1002/TRTR.1155
- O'Bannon, B. W., & Thomas, K. (2014). Teacher perceptions of using mobile phones in the classroom: Age matters. *Computers & Education*, 74, 15-25. doi:10.1016/j.compedu.2014.01.006
- Peluso, D. C. (2012). The fast-paced iPad revolution: Can educators stay up to date and relevant about these ubiquitous devices?. *British Journal of Educational Technology*, 43(4), E125-E127.
- Poirot, J., & Soloway, E. (2003). No access, no use, no impact: Snapshot surveys of educational technology in K-12. *Journal of Research on Technology in Education*, 36(1), 15-27.
- Poole, J. B., & Evans, J. (2009). Chapter 2: Computer hardware for K-12 education. *Education for an information age teaching in the computerized classroom* (7th ed., pp. 33-55). Madison, WI: Brown and Benchmark.
- P'Pool, K. (2012). Using Dweck's Theory of Motivation to Determine How a Student's View of Intelligence Affects Their Overall Academic Achievement.

- Puente, K. (2012). High school pupils bring their own devices. *District Administration*, 48(2), 64.
- Reddy, M. H., & Rekha, B. S. (2012). Effective development of Android applications using Android services. *International Journal of Computer Applications in Engineering Sciences*, 2(2), 48-52. Retrieved from <https://login.ezproxy.uta.edu/login?url=http://search.proquest.com.ezproxy.uta.edu/docview/1314918408?accountid=7117>
- Redmann, D. H., & Kotrlik, J. W. (2009). Family and consumer sciences teachers' adoption of technology for use in secondary classrooms. *Journal of Family and Consumer Sciences Education*, 27(1), 29-45.
- Reto, M. (2009). Professional android application development. *Word Programmer to Programmer*, 6(7), 1794-1797.
- Rice, J. K. (2012). Review of "the costs of online learning." *Boulder, CO: National Education Policy Center*. Retrieved June, 1, 2013.
- Roach, B. (2010). *Educational technology in the classroom from the teacher's perspective*. (Doctoral dissertation, Fielding Graduate University). Retrieved from <http://search.proquest.com/docview/220003368?accountid=7117>
- Robinson, M., & Mackey, M. (2006). Assets in the classroom: Comfort and competence with media among teachers present and future. *Popular Literacies, Childhood and Schooling*. London, New York: Routledge, 200-220.
- Rokeach, M. (1972). Beliefs, attitudes, and values: A theory of organization and change. London, UK: Jossey-Bass.

- Sánchez, A., Marcos, J. M., González, M., & Guan Lin, H. (2012). *In service teachers' attitudes towards the use of ICT in the classroom* doi:<https://doi.org/10.1016/j.sbspro.2012.05.302>
- Schrump, L. (1999). Technology professional development for teachers. *Educational technology research and development*, 47(4), 83-90.
- Seiter, E. (2008) Practicing at home: Computers, pianos, and cultural capital, in: T. McPherson (ed.) *Digital youth, innovations, and the unexpected* (Cambridge, The MIT Press), 27–52.
- Semerci, A., & Aydin, M. K. (2018). Examining high school teachers' attitudes towards ICT use in education. *International Journal of Progressive Education*, 14(2), 93-105. Retrieved from <https://login.ezproxy.uta.edu/login?url=https://search-proquest-com.ezproxy.uta.edu/docview/2101370288?accountid=7117>
- Shanmugapriya, M., & Tamilarasi, A. (2011). Designing an m-learning application for a ubiquitous learning environment in the android based mobile devices using web services. *Indian journal of computer Sciences and Engineering*, 22-30.
- Silagadze, M. (2012). 5 problems with iPads in education. *Betanews*. Retrieved from <http://betanews.com/2012/10/24/5-problems-with-ipads-in-education/>
- Spencer, K. (2017). *Not all towns are created equal, digitally*. New York: The Hechinger Report.

- Spires, H. A., Hervey, L. G., Morris, G., & Stelpflug, C. (2012). Energizing project-based inquiry: middle grade students read, write, and create videos. *Journal of Adolescent & Adult Literacy*, 55, 483–493. doi:10.1002/JAAL.00058.
- Stangor, C. (2014). *Principles of Social Psychology - 1st International Edition*. Open Book Publishing.
- Steffens, M. C., Jelenec, P., & Noack, P. (2010). On the leaky math pipeline: Comparing implicit mathgender stereotypes and math withdrawal in female and male children and adolescents. *Journal of Educational Psychology*, 102, 947–963. doi:10.1037/a0019920.
- Tan, J. P. L., & McWilliam, E. (2009). From literacy to multiliteracies: Diverse learners and pedagogical practice. *Pedagogies: An International Journal*, 4(3), 213-225.
- Thornthwaite, C. (2014). *Not a toy, but a tool: An educator's guide for understanding and using iPads*. Retrieved from <http://www.ebilib.com>
- Tirri, K., & Nokelainen, P. (2010). The Influence of Self-Perception of Abilities and Attribution Styles on Academic Choices: Implications for Gifted Education. *Roeper Review*, 33, 26-32. <http://dx.doi.org/10.1080/02783193.2011.530204>
- Tomassini, J. (2012). Educators weigh e-textbook cost comparisons. *Education Week*, 31(30), 1-19.
- Triandis, H. C. (1971). *Attitude and attitude change*. New York, NY: John Wiley & Sons.

- Ullman, E., (2012, February 2) B.Y.O.D. Strategies. School CIO. Retrieved from <http://www.schoolcio.com/article/byod-strategies/52201>
- Uslu, O., & Bumen, N. T. (2012). Effects of the Professional Development Program on Turkish Teachers: Technology Integration along with Attitude towards ICT in Education. *Turkish Online Journal of Educational Technology-TOJET*, 11(3), 115-127.
- West, D. M. (2013). Mobile learning: Transforming education, engaging students, and improving outcomes. *Brookings Policy Report*, 1-7.
- Yeager, D. S., & Dweck, C. S. (2012). Mindsets that promote resilience: When students believe that personal characteristics can be developed. *Educational psychologist*, 47(4), 302-314.
- Yeager, D., Trzesniewski, K. H., & Dweck, C. S. (2012). An Implicit Theory of Personality Intervention Reduces Adolescent Aggression in Response to Victimization and Exclusion. *Child Development*, 84, 970-988.
<http://dx.doi.org/10.1111/cdev.12003>
- Yeager, D., Trzesniewski, K. H., Tirri, K., Nokelainen, P., & Dweck, C. S. (2011). Adolescents' Implicit Theories Predict Desire for Vengeance after Remembered and Hypothetical Peer Conflicts. *Developmental Psychology*, 47, 1090-1107. <http://dx.doi.org/10.1037/a0023769>
- Yuen, H.K. & Ma, W.K. (2002). Gender differences in teacher computer acceptance. *Journal of Technology and Teacher Education*, 10(3), 365-382.

- Zanna, M. P. & Rempel, J. K. (1988). Attitudes: A new look at an old concept. In D. BarTal & A. W. Kruglanski (Eds.), *The social psychology of knowledge* (pp. 315- 334). Cambridge, UK: Cambridge University Press.
- Zein, R. (2014). Literature review on the construction of effective ICT uses in school. In M. Searson & M. Ochoa (Eds.), *Proceedings of SITE 2014--Society for Information Technology & Teacher Education International Conference* (pp. 3011-3015). Jacksonville, Florida, United States: Association for the Advancement of Computing in Education (AACE).
- Zenger, J., & Folkman, J. (2016). How age and gender affect self-improvement. *Harv Bus Rev [Internet]*.
- Zheng, B., Warschauer, M., & Farkas, G. (2013). Digital writing and diversity: The effects of school laptop programs on literacy processes and outcomes. *Journal of Educational Computing Research*, 48(3), 267-299.
- Zhou, G., & Xu, J. (2007). Adoption of Educational Technology: How Does Gender Matter?. *International Journal of Teaching and Learning in Higher Education*, 19(2), 140-153.

APPENDIX A

DWECK MINDSET INSTRUMENT (DMI)

For each of the statements below, circle the response that best characterizes how you feel about each one, where: 1 = Strongly Agree, 2 = Agree, 3 = Mostly Agree, 4 = Mostly Disagree, 5 = Disagree, 6 = Strongly Disagree.

| | Strongly Agree | Agree | Mostly Agree | Mostly Disagree | Disagree | Strongly Disagree |
|---|----------------|-------|--------------|-----------------|----------|-------------------|
| 1. You have a certain amount of intelligence and you really can't do much to change it. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. Your intelligence is something about you that you can't change very much. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. No matter who you are, you can significantly change your intelligence level. | 1 | 2 | 3 | 4 | 5 | 6 |

-
4. To be honest, you can't really change how intelligent you are
- 1 2 3 4 5 6
5. You can always substantially change how intelligent you are.
- 1 2 3 4 5 6
6. You can learn new things, but you can't really change your basic intelligence.
- 1 2 3 4 5 6
7. No matter how much intelligence you have, you can always change it quite a bit.
- 1 2 3 4 5 6
8. You can change even your basic intelligence level considerably.
- 1 2 3 4 5 6
-

-
9. You have a certain amount of talent, and you can't really do much to change it.
- | | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
10. Your talent in an area is something about you that you can't change very much.
- | | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
11. No matter who you are, you can significantly change your level of talent.
- | | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
12. To be honest, you can't really change how much talent you have.
- | | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
13. You can always substantially change how much talent you have.
- | | | | | | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
-

-
14. You can learn new things, but you can't really change your basic level of talent. 1 2 3 4 5 6
15. No matter how much talent you have, you can always change it quite a bit. 1 2 3 4 5 6
16. You can change even your basic level of talent considerably. 1 2 3 4 5 6
-

APPENDIX B

MEASURING THE USE OF MOBILE TECHNOLOGY SURVEY

For each of the statements below, circle the response the best characterizes how you feel about each one, where: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Very Often

| | Never | Rarely | Sometimes | Often | Very Often |
|---|-------|--------|-----------|-------|------------|
| 1. I use mobile devices every day for classroom instruction. | 1 | 2 | 3 | 4 | 5 |
| 2. I continue learning about mobile technology to use in my classroom. | 1 | 2 | 3 | 4 | 5 |
| 3. I have had positive experiences implementing mobile technology in my classroom. | 1 | 2 | 3 | 4 | 5 |
| 4. The future will be better for teachers with mobile technology in the classrooms. | 1 | 2 | 3 | 4 | 5 |

| | | | | | |
|---|---|---|---|---|---|
| 5. My district supports its teachers and mobile technology implementation. | 1 | 2 | 3 | 4 | 5 |
| 6. Mobile technology enhances my instruction. | 1 | 2 | 3 | 4 | 5 |
| 7. Mobile technology is a distraction from my instruction. | 1 | 2 | 3 | 4 | 5 |
| 8. I use mobile technology in all subject areas. | 1 | 2 | 3 | 4 | 5 |
| 9. My district offers professional development to support teachers that implement mobile technology in the classroom. | 1 | 2 | 3 | 4 | 5 |

10. Your gender.
- a. Female
 - b. Male

11. Your age.
 - a. 20-29 years old
 - b. 30-39 years old
 - c. 40-49 years old
 - d. 50-59 years old
 - e. Older

12. Years' experience teaching.
 - a. 0-5 years
 - b. 6-10 years
 - c. 11-15 years
 - d. 16-20 years
 - e. 20 plus

APPENDIX C

2X2 CHI SQUARE FIGURES

| | | Gender | | |
|--|--------|--------|--------|-------|
| | | Male | Female | Total |
| Teachers implementing Mobile Technology | Growth | | | |
| | Fixed | | | |

| | | Age | | | | |
|--|--------|-----------|-----------|-----------|-----------|-------|
| | | 20- 29 | 30- 39 | 40- 49 | 50- 65 | Total |
| Teachers implementing Mobile Technology | Growth | | | | | |
| | Fixed | | | | | |

| | | Years' Experience | | | Total |
|--|--------|-------------------|-------|-------|-------|
| | | 0-10 | 11-20 | 21-30 | |
| Teachers implementing Mobile Technology | Growth | | | | |
| | Fixed | | | | |

APPENDIX D
LETTER OF RECRUITEMENT
MINDSET AS IT RELATES TO IMPLEMENTATION
OF MOBILE DEVICES FOR INSTRUCTION

Mark Anthony Martinez, Ph.D. Candidate
The University of Texas at Arlington

INTRODUCTION

Teachers within your district are being asked to participate in this research study to examine teacher's mindset as it relates to implementing mobile instructional technology for instruction. Your participation is voluntary, so refusal to participate or discontinue your participation at any time will involve no penalty. Please ask questions if there is anything you do not understand.

PURPOSE

The purpose of this study is as follows: to provide observable evidence to identify and examine a teacher's mindset as it relates to the implementation of mobile instructional technology in the classroom to help drive instruction. I will examine this relationship based on teachers' receptiveness to implementing mobile instructional technology and their growth or fixed mindset identified using Dweck's (2006) mindset theory.

DURATION

Participation in the survey will last approximately 10 minutes.

NUMBER OF PARTICIPANTS

The study will reach out to all elementary teachers with in a North Texas School District.

PROCEDURES

The procedures which will involve you as a research participant include: Completing two surveys: Dweck Measuring Instrument (DMI) and Level of Mobile Instructional Technology Use (LMITU). After completing both surveys, submit for data collection.

POSSIBLE RISKS/DISCOMFORTS

There are no perceived risks or discomforts for participating in this research study. Should you experience any discomfort please inform the researcher, you have the right to quit any study procedures at any time with no consequence.

COMPENSATION

Your participation in this research study is voluntary and has no compensation.

ALTERNATIVE PROCEDURES

There are no alternative procedures offered for this study. However, you can elect not to participate in the study or quit at any time with no consequence.

VOLUNTARY PARTICIPATION

Participation in this research study is voluntary. You have the right to decline participation in any or all study procedures or quit at any time with no consequence.

CONFIDENTIALITY

Every attempt will be made to see that your study results are kept confidential. The results of this study may be published and/or presented at meetings without naming you as a participant. Additional research studies could evolve from the information you have provided, but your information will not be linked to you in anyway; it will be anonymous. Although your rights and privacy will be maintained, the Secretary of the Department of Health and Human Services, the UTA Institutional Review Board (IRB), and personnel particular to this research have access to the study records. Your records will be kept completely confidential according to current legal requirements. They will not be revealed unless required by law, or as noted above. The IRB at UTA has reviewed and approved this study and the information within this consent form. If in the unlikely event it becomes necessary for the Institutional Review Board to review your research records, the University of Texas at Arlington will protect the confidentiality of those records to the extent permitted by law.

CONTACT FOR QUESTIONS

Questions about this research study may be directed to myself Mark Martinez, markamartinez@mavs.uta.edu or my advisor Dr. James C. Hardy, jimhardy@uta.edu with Educational Leadership and Policy Studies, University of Texas at Arlington. Questions you may have about your rights as a research participant or a research related injury may be directed to the Office of Research Administration; Regulatory Services at 817-272-2105 or regulatoryservices@uta.edu. As the representative of this study, I have explained the purpose, procedures, compensation, and the risks that are involved in this research study:

CONSENT

If you click accept, you confirm that you are 18 years of age or older and have read or had this document read to you. I have informed you about this study and you may print a copy of this form by using the “Print” function in your browser. Please note that you have the opportunity to ask questions before you make a decision regarding your participation, and at any time during and after surveys are completed.

By clicking “Accept” you are not waiving any of your legal rights. Completing the surveys and submitting your responses, indicates your willingness to participate in my research study. Your participation is voluntary, and you may cease your participation in the surveys at any time by closing the screen that displays the survey.

Accept; I voluntarily agree to participate in this study.

Decline; I do not wish to participate in this study. (Just simply close your browser.)

Note: For this study a mobile device is a handheld computer. These may include, but not limited to - iPhones, Androids, iPads, Kindles, and other devices that are able to connect to the internet to help drive instruction. This may occur in the classroom, home or anywhere the device or devices can connect to a network.

Invitation to Teachers to Participate in Research Study

Dear Teachers,

My name is Mark Martinez, and I am a doctoral student in the College of Education at The University of Texas at Arlington. In my study I will examine a teacher’s mindset as it relates to the implementation of mobile technology in the classroom for instruction. If you choose to participate, I will ask that you complete two online surveys. The two surveys combined should not take longer than 10 minutes to complete.

By clicking accept you will begin the process to participate, you will see a consent form for my study and the two surveys to complete. At the end of the consent form, you will either accept or decline participation. If you choose to accept, you will begin the online surveys. The data that is generated by your responses to the questions in the surveys is only available to my advisor Dr. Hardy, and myself.

By completing the surveys and submitting your responses, you are indicating your willingness to participate in my research study. Your participation is voluntary, and you may cease your participation in the surveys at any time by closing the screen that displays the survey. Please complete the survey by

_____.

To begin, please click here: [ACCEPT](#)

To decline participation please click here: [DECLINE](#)

Thank you for your participation and commitment to education.

Sincerely,

Mark Martinez markamartinez@mavs.uta.edu

APPENDIX E

EMAIL PERMISSION TO USE DWECK'S SURVEY INSTRUMENT

Martinez, Mark Anthony

Fw: Mindset Survey/Doctoral student

Sat 3/28/2015 6:00 AM

Reply Reply all Forward

Continue editing Discard

Mark as unread

MM

Martinez, Mark A <markamartinez@mavs.uta.edu>

Thu 3/5/2015 4:46 PM

Sent Items

To:

Carol S Dweck <dweck@stanford.edu>;

...

Sent Items

To help protect your privacy, some content in this message has been blocked. To re-enable the blocked features, [click here](#).

To always show content from this sender, [click here](#).

[Get more apps](#)

[Unsubscribe](#)

Thank you, :)

Like this message Unlike this message

Reply Reply all Forward

Continue editing Discard

Mark as unread

CS

Carol S Dweck <dweck@stanford.edu>

Thu 3/5/2015 2:07 PM

Inbox

Inbox

Yes!

Lewis & Virginia Eaton Professor

of Psychology

Department of Psychology

Stanford University

Jordan Hall, Bldg. 420

Stanford, CA 94305

----- Original Message -----

From: "Mark A Martinez" <markamartinez@mavs.uta.edu>

To: dweck@stanford.edu

Sent: Thursday, March 5, 2015 11:00:10 AM

Subject: Fwd: Mindset Survey/Doctoral student

Dr. Dweck, I realize sometimes emails get deleted, so I am following up and resending the email below that I sent you this past Monday.

I would like to use your Mindset Survey for my research study.

Do I have your permission to use your mindset survey instrument?

Sent from my iPad

Begin forwarded message:

From: <markamartinez@mavs.uta.edu<mailto:markamartinez@mavs.uta.edu>>

Date: March 2, 2015 at 1:15:57 PM CST

To: "dweck@stanford.edu<mailto:dweck@stanford.edu>"

<dweck@stanford.edu<mailto:dweck@stanford.edu>>

Subject: Doctoral student needs your help.

Dear Dr. Dweck, during my research I came across your book "mindset - The New Psychology of Success" and I must confess I have really enjoyed rediscovering myself through a different lens.

(I do think I fall in the growth mindset camp, but like you state in your book I have been guilty of displaying fix mindset tendencies.)

Anyhow, I am a doctoral student at The University of Texas at Arlington. I am proposing a comparative study based on teacher's mindset toward iPad use in the classroom for student achievement. I was wanting to utilize your survey instrument to collect their mindset toward the iPad.

If it would be ok to use your instrument, I would send you a copy of my final dissertation to share my findings.

Sincerely,

Mark Martinez

Doctoral student

UTA

Chair - Dr. James Hardy
