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Teachers Attitudes and Confidence in Technology Integration

Heather Brown
brown695@marshall.edu

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Research Paper

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By

Heather Brown

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Abstract

The purpose of this study was to determine if training affects a teacher's confidence in their ability to integrate technology in the classroom to enhance student learning. Technology training has been identified as a key component in a teacher's attitude and confidence when it comes to the integration of technology into the curriculum. Data was gathered from an anonymous pencil/paper survey handed out to teachers in a Title I public elementary school in rural southern West Virginia to determine if training had any effect on their confidence to integrate technology. The information gained from this survey is intended to provide ideas that will help guide future technology training.

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Chapter 1: Introduction

One of the challenges facing teachers today is engaging students with very diverse abilities and learning styles within the classroom (Pacer Center, 2005). The inclusion of the special education population into the general education has made this even truer. The Education of All Handicapped Children Act of 1975, now codified as IDEA (Individuals with Disabilities Education Act), required states to develop and implement policies that assured a free appropriate public education to all children with disabilities (United States Department of Education, n.d.). The No Child Left Behind (NCLB) Act of 2001, a reauthorization of The Elementary and Secondary Education of 1965, supports standards-based education reform based on the premise that setting high standards and establishing measurable goals can improve individual outcomes in education (United States Department of Education, n.d.). These policies require that teachers find instructional methods that will help to insure a quality education for all students. So the question becomes "Could the integration of technology during instruction help in the struggle to meet the educational needs of students with diverse abilities and learning styles?"

Technology has virtually been in the classroom since the 20th Century, but technology in the 21st Century is a long way from the overhead and film strip projectors of the 1950's and 60's. Technology in the 21st Century is digital technology. Despite the preponderance of digital technology in education for over two decades there is still reluctance by some teachers to use technology in their teaching. Papert (1980) wrote in his book *Mindstorms* how computers will affect the way people think and learn. His book had two major themes, one on how children can learn to use computers in masterful ways and the second one on how learning to use them can change the way they learn everything else (Papert, 1980). He also wrote that the presence of technology in the learning environment would change our classrooms (Papert, 1980). According

to O'Hara and Pritchard (2010) technology in the classroom provides multiple opportunities for students to gain knowledge. They also reported that research has found that positive effects of technology can be seen in the learning of the material and in the use of the technology itself (O'Hara and Pritchard, 2010). Given this evidence of technology's success, why would a teacher not use it?

Brand (1997) suggests in his research that one of the greatest barriers to integrating technology in a classroom is the lack of teacher training. Teacher training is generally categorized as either in-service training or pre-service training. In-Service training is defined as training provided by the employer or organization for its employees that is intended to increase their abilities and competency in a specific area (Mosby's Medical Dictionary, 2009.). This type of training occurs while the teacher is working or employed (Merriam-Webster.com, n.d.). Pre-service training is defined as training one receives before they are employed (TheFreeDictionary.com, n.d.). Today, teacher candidates receive significant pre-service training in technology through their teacher preparation programs in college.

Brown, Higgins, and Hartley (2001) suggest that another element educators must work at is adjusting their attitudes toward technology use and its integration into the classroom. Educators have to be proactive in learning and teaching with technology to help lessen the technology gap that exists in and out of school for our students (Brown et al., 2001). It is the educator who is the determining factor in whether technology is successfully integrated into the classrooms and schools (Brown et al., 2001).

Statement of the Problem

Numerous studies and articles have been published on how technology has shaped our classrooms and educators. The integration of technology into the classroom has a major role in creating rich learning and teaching environments. With the emphasis that has been placed on technology integration in the classroom, it is important to look at how teachers can meet this demand. It can be overwhelming for an educator to integrate the new technologies available if they do not receive the proper training or time to become familiar and comfortable using it themselves (Brand, 1997).

Lengel (2013) wrote an article on why teachers need to know how to use technology for teaching and learning. He explained that technology is important is because; it is in the classrooms, the students own it, it works, and it is required. He also describes that educators need training to be competent and comfortable in their use of technology, so that they may be able to implement it effectively (Lengel, 2013).

Purpose of the Study

This study will seek to determine if a teacher's training affects their confidence in their ability to integrate technology in the classroom to enhance student learning. The study will focus on teachers in a Title 1 public elementary school in rural southern West Virginia. Teachers will be asked to complete a survey instrument that utilizes Wang's (2004) Computer Technology Integration Survey plus a set of study specific demographic questions that will help establish the type of training the teacher has received. The data will be analyzed to determine the effects in the teacher's confidence to integrate technology in the classroom based on the type of training they have received.

Rationale of the Study

The knowledge and use of technology is extremely important in today's classroom to help insure student success. One of the most critical factors in meeting successful technology integration in the classroom is the teacher. Gorder (2008) reported that effective integration is the result of many factors, but none more important than the teachers' own competency and abilities. This study is significant in that it will help to identify the effects if any that teacher training has on the confidence of the teacher to integrate technology in the classroom. If the amount and/or type of teacher training is shown to have a positive effect then schools and school districts can use this data to support additional training for teachers. If no effect or a negative effect is found then schools and school districts may need to re-evaluate their training and allocation of resources for training in technology use and integration.

Research Question

Does teacher training in technology affect their perceived level of confidence to integrate technology in the classroom?

Chapter 2: Review of the Literature

The fact that there has been a surge in the presence of technology in the classrooms is common knowledge. However, the effectiveness of technology used in the classroom is a subject of debate. The level of effectiveness largely depends on the way in which technology is integrated into the classroom. Integrating technology builds 21st century skills and enhances all students' achievement. The West Virginia State Educational Plan states that teachers must be prepared to integrate technology to promote student learning. Teachers are the ones responsible for this integration of technology, but some teachers are still reluctant to use it. Research has documented how training and confidence can help teachers successfully integrate technology into their classrooms.

The following describes literature relevant to the research topic of teacher technology training and their perceived level of confidence to integrate technology in the classroom. It will discuss important technology fundamentals, pre-service and in-service training, and the attitudes or perspectives of teachers. All of which help define the factors that can influence the successful integration of technology into the classroom.

Technology Fundamentals

Technology integration is the use of technology to support students as they engage in learning activities that support 21st Century knowledge and skill acquisition. Successful technology integration is achieved when the use of technology is: routine and transparent, accessible and readily available for the task at hand, supports the curricular goals, and helps the students to effectively reach their goals (International Society for Technology in

Education). Because technology is so integral in education today we must look at how to successfully integrate it in the classroom curriculum.

Klopfer, Osterweil, Groff, and Haas (2009) explain how technology for students currently in K-12, has had an impact in the way they have developed. They explain that these students have grown up with the digital world integrated into all facets of their everyday lives. Because technology has become so fundamental in all aspects of their lives, it only makes sense to look at its impact in the classroom (Klopfer et al., 2009).

Mark Prensky is an internationally acclaimed thought leader, speaker, writer, consultant, and game designer in the educational and learning field. He is dedicated to eliminating the digital divide in learning. In his article he wrote how the K-12 students of today have changed due to this rapid dissemination of digital technology by growing up thinking and processing information fundamentally different than previous students. He termed these students of today "Digital Natives" or native speakers of the digital language (Prensky, 2001).

Prensky (2001) then addresses that the rest of the population would be referred to as "Digital Immigrants". Being a Digital Immigrant does not mean that one cannot learn technology or readily use it, it just means you were not born in the digital age and do not fluently speak digital language. Prensky (2001) explains that this distinction is important because, even though Digital Immigrants can learn and become proficient with technology, their past seems to come through; like turning to the internet second for information instead of first or reading a manual first then setting up a program.

With an understanding that Digital Native represents the K-12 students and Digital Immigrant represents some of the teacher population, one can see that differences in digital

language and use exist between the groups. In education this is important because we still have a lot of Digital Immigrants as educators who do not use digital technology or speak the language. This creates barriers when trying to teach the diverse Digital Native students of today (Prensky, 2001). Prensky (2001) notes the importance of training or learning for the Digital Immigrant (educator), so that they may gain knowledge and be successful in their own use of technology as well as in their classroom teaching. He also wrote that just because technology is present, does not guarantee its use (Prensky, 2001).

All technology uses are not equal, therefore looking at the numerous classifications of technology used in education becomes important. Understanding of the different categories and their uses will help the Digital Immigrant gain knowledge. Educational technology can be classified as information technology (IT), Information and Communication Technologies (ICT), technology enhanced learning (TEL), or Assistive Technology (AT).

IT is defined as anything related to computer technology, including, networking, software, hardware, the internet, and the people who work with them (TechTerms, 2013). This is the main category and all other categories fall under it. School Districts have IT departments that are responsible for the professional development and support of teachers. IT departments help ensure that technology is working correctly and provide new technology when needed.

ICT refers to technologies that provide access to information through communication technologies like the internet, cell phones, instant messaging, social networking, video-conferencing, and wireless networks. ICT has allowed the world to become a "global village" and communicate with others around the world just like they were living next door to each other

(Tech Terms, 2013). For educators this allows them to have real-time interactions with other students or industry in different areas of the world without ever leaving the classroom.

TEL is technology that has been incorporated into the classroom to enhance the learning process (Dror, 2008). TEL seeks to improve the student learning experience by aiding student engagement and retention, helping produce graduates with the skills required to compete in the global environment, encouraging innovative teaching, and personalizing learning that promotes reflection (What is Assistive, 2012). TEL is an integrated interactive learning environment.

Assistive Technology (AT) is any device or gadget that will help increase, maintain, or improve functional capabilities of individuals with disabilities (What is Assistive, 2012). AT includes mobility devices, hardware, software, and peripherals that help assist in accessing computers or other information technologies (What is Assistive, 2012). AT is important in education because it helps bridge skills with goals. AT is the technology that enables our students with disabilities to be successful.

AT is commonly provided by related service professionals involved with the school systems. Teachers need to have a relation with the related service personnel so that there can be an on-going cycle of evaluating and recommending, maintenance, reviews of emerging needs, and upgrading of the equipment when necessary. AT ultimately enables students to communicate, receive instruction, learn, play, move about, achieve, and be independent (Blackstone, 1990).

Technology in today's classrooms is apparent in various forms from mobile labs, to interactive videos, computers, smartphones, iPads, iPods, tablets, shared stories, AT, and electronic blackboards. Having all this technology does come at a cost. It is hard to know about

all of the different types and their functional uses, therefore decreasing a teacher's confidence level and use. That is why having an IT team and professional training is so important. The IT team's knowledge and skills on use of the technology can provide the training and the ongoing support needed.

As reported by the PACER center (2005) using the different technology will allow teachers to reach more students. It will provide opportunities for all students including those with disabilities. Not every device or piece of technology will meet the needs for every student, so teachers need to be willing to try more than one (Pacer, 2005). A study by Huntington and Worrell (2013) found evidence that teachers who know about technology devices or programs that can help a student are more willing to learn and use it to enhance student learning when they have adequate training and support.

Training

Teacher training is defined as professional preparation of teachers, usually through formal course work and practice teaching, also known as student teaching (TheFreeDictionary.com). It can be categorized as either pre-service training or in-service training. Pre-service training is defined as training one receives before they are employed (TheFreeDictionary.com). Today, teacher candidates receive significant pre-service training in technology through their teacher preparation programs in college. In-Service training is defined as training provided by the employer or organization for its employees that is intended to increase their abilities and competency in a specific area (Mosby's Medical Dictionary, 2009.). This type of training occurs while the teacher is working or employed (Merriam-Webster.com).

Brand (1997) found that one of the greatest barriers to effective integration of technology is teacher training. He notes that just like the students, teachers learn at different rates and in a variety of styles, so there is no "One size fits all" training. In his research he concluded that teachers need a substantial amount of time to learn to effectively use technology both personally and as an instructional tool (Brand, 1997). Training should be interest specific and flexible so that it can be utilized away from the instructional setting (Brand, 1997). Finally he noted that there is the need for schools to promote technology use and provide the training and support necessary.

Brand's (1997) research points out that if teachers are going to effectively incorporate technology then they must possess confidence, understanding, and skills which come from adequate training and development. He did not define his training as pre-service or in-service training, he defined it as quality training with support that follows (Brand, 1997). A point of concern he noted in his research was that most schools don't spend a substantial portion of their technology budget on training and development or support, which is limiting the technology integration and use (Brand, 1997).

Wright and Wilson (2011) studied ten teachers five years after graduating from a teacher education program that encouraged technology use in teaching and learning to see what they practiced. They interviewed and observed these teachers who were all teaching in a middle or high school setting. Wright and Wilson (2011) found that the teachers continued to be familiar with ways to use technology and utilized the basic skills, but some never went past this.

For those teachers who moved on past the basic skills and used technology in more advanced ways, several key factors were identified. One was continuing to seek professional

development, the second was the support they received from the school and community, and finally they felt compelled to use technology to engage the students (Wright & Wilson, 2011). When they interviewed the teachers they found the most important factor was continuing to seek professional development through classes, mentors, and training. Wright and Wilson also (2011) also pointed out that technology is changing daily and educators must continue to adapt and evolve with it through training and classes if they hope to successfully continue to implement technology in the classroom.

Moore-Hayes (2011) did a study looking at the technology integration preparedness and its influence on self-efficacy of pre-service and in-service teachers. While her study focused on the self-efficacy it is important to note the two groups she had divided her study into, pre-service and in-service teachers. She also noted that one of the most prominent issues in integrating technology successfully in the classroom for either group was the training that they received. While her study noted that training is important, she discovered that teachers who were already in-service face more pressure to demonstrate competency in educational technology literacies when compared to pre-service teachers (Moore-Hayes, 2011). Another interesting discovery she found was that for both in-service and pre-service teachers they are getting sufficient training and access to resources, they just do not seem to use it as much as expected. In conclusions, her study noted that there were no statistically significant differences between the groups overall teacher-efficacy for technology integration preparedness (Moore-Hayes, 2011).

Hastings (2009) did a study looking at factors that could help predict quality classroom technology use. Hastings looked at both technology related and non-technology related factors. Factors that fell under technology related included training or professional development and support for technology use, while non-related included years teaching, teaching philosophy, and

self-efficacy (Hastings, 2009). While her study found that the technology related factors provide the best predictors for quality classroom use, she was further able to determine that the most important factor was technology-related professional development. While not specific to in-service or pre-service teachers, it was important to have technology development and training followed up with support (Hastings, 2009).

Prensky (2001) noted in his article about Digital Natives and Digital Immigrants that it was extremely important for the Digital Immigrant teachers to get the training or education necessary to use technology effectively with the Digital Native student. He explains that Digital Immigrant teachers should not expect the Digital Native students to learn the old ways, they are slow and irrelevant. Instead use the Digital Native to teach the Digital Immigrant. Prensky (2001) states "If Digital Immigrant educators *really* want to reach Digital Natives- they will have to change."

Groff and Haas (2008) wrote an article looking at today's technology and its use in the classroom. They noted in an article on WEB 2.0 how educators, researchers, and designers have just begun to explore the educational benefits of social networking technologies (Groff & Haas, 2008). While the article points out benefits to using such technologies, they also mention a barrier to using it. This barrier has to deal with successful implementation into the classroom (Groff & Haas, 2008). They explain that without training and knowledge on the use of it that teachers cannot successfully and meaningfully integrate it into the classroom. The suggestion they make to fix this barrier is training or mentoring on the technology (Groff & Haas, 2008).

Laarhoven, Munk, Chandler, Zurita, and Lynch (2012) did research on integrating AT into teacher education programs. This research is significant in that it shows the importance of

exposure to technology needed by teachers in the classroom. Because it is necessary for teachers to consider AT devices for all students receiving special education services, training, knowledge, and selection of devices is important. Training teachers to meet this need successfully includes familiarity, confidence, and skill in integrating AT. While insufficient training was shown to be a major cause in the lack of use of AT devices, training and preparedness were significant predictor's in its use (Laarhoven et al., 2012). The exposure and training to AT in teacher education programs is providing more confident and knowledgeable teacher candidates who able to use AT in the classroom.

Teacher Attitudes and Perspectives

Research on how positive attitudes and perspectives can influence technology use in the classroom is growing rapidly. Researchers have discovered that a teacher's attitudes and perspectives play a major role. Attitude being defined as a position assumed for a specific purpose (Merriam-Webster.com) and perspectives being defined as the state of one's ideas, the facts known to one, (TheFreeDictionary.com). In research, the data on these items is obtained through self-report, which can often present a less than accurate picture. But when combined with observation of practices in the classroom a clearer picture can be established.

Research done by Holdren and Rada (2011) discovered that how confident a teacher is using technology plays a role in how effectively it is used in the classroom. They noted that a teacher's self-efficacy was the most important factor in their level of confidence. They used Banduras definition of self-efficacy, one's belief in his or her ability to perform a specific task, for their research. It was found that the higher a teacher's self-efficacy the more positive their attitude, which led to a higher level of confidence and technology use (Holdren & Rada, 2011).

Research has noted that technology related training plays a role in developing a teacher's competency with computer applications as well as influencing their attitudes. The more competency a teacher has the more positive the attitude towards computer use in the classroom. Starr (2003) also noted that while looking at attitudes and perspectives it is important to mention knowledge and comfort levels of educators as these can often help shape the attitude or perspective of a teacher. She found that teachers view computers as valuable teaching tools when they themselves were comfortable using them (Starr, 2003).

Roach (2010) did research on technology in the classroom from a teacher's perspective. What he found was that a positive attitude, training, and support lead to technology use. Teachers feel that using technology is important and holds value (Roach, 2010). King-Sears and Evmenova (2007) point out that teachers want to use technology in the classrooms, but there is more to it than just having technology available. Teachers must be comfortable and knowledgeable using it and this comfort and knowledge lead to positive attitudes and perspectives (King-Sears & Evmenova, 2007).

Kopcha (2011) noted in his research that a teacher's belief about the usefulness of and difficulty associated with integrating technology influences whether or not they will use it. He found that with mentoring and relevant training that this belief only grew stronger as did their positive attitude and perspectives on using technology (Kopcha, 2011). The more positively they saw technology use, the more likely they were to integrate it and promote it (Kopcha, 2011).

Statement of Hypothesis

Teachers who receive training on integrating technology into their curriculum are more confident in utilizing technology in the classroom as opposed to teachers who do not.

Summary of the Literature

Based on the research it is only natural to not only incorporate technology into the classroom, but to look at the training and confidence of the teachers incorporating it. The apparent gap between the amount of technology available and the teachers' use of that technology must be closed. The research shows that there are many aspects teachers face when incorporating technology into the classroom but none as important as training and support. While no significant differences were found between in-service or pre-service training in the review of the literature, it was noted that there needs to be time to learn and quality training. A statement made by Groff and Haas (2008) stated it quite well for the Digital Immigrant when they said "with anything new, there can be a learning curve," but with time, practice, and training teachers will learn to successfully integrate technology.

Chapter 3: Methods

As outlined in the previous chapter, there are several factors that increase a teacher's confidence level in technology integration in the classroom, but this study focused on training. It was designed as an anonymous survey to take a closer look at the impact of pre-service and in-service training on a teacher's perceived level of confidence to integrate technology in the classroom. The surveys were given to 20 teachers in a rural Title I public elementary school in southern West Virginia. A primary goal for this school is that all teachers are able to integrate technology into the curriculum to meet the demands of the 21st Century. In order to prepare teachers to meet this demand, training is an essential component to help build their confidence in technology use.

This study surveyed teachers whom were in the general and special education classroom. Given that technology is a key component in meeting the 21st Century demands, this research attempted to answer the question: Does technology training have any effect on a teacher's perceived level of confidence to integrate technology into the classroom?

Therefore, my research hypothesis becomes: Teachers who receive training on integrating technology into their curriculum exhibit more confidence in utilizing technology in the classroom as opposed to teachers who do not.

Participants and Setting

The participants in this study were 20 elementary school teachers, of whom 17 were in general education and three were in special education. Their teaching experience ranged from a first year teacher to more than sixteen years. The co-investigator contacted the school's principal and obtained permission to pass out the technology research survey. The surveys were analyzed

to determine if pre-service or in-service technology training effected their perceived confidence levels to integrate technology into the classroom.

Materials

The materials for this study consisted of an anonymous pencil/paper survey created by the co-investigator. There were three sections to complete. The first section was demographics. The second section was a self-rated confidence level on personal and classroom use of technology. The third section consisted of twenty-four self-rated questions about their confidence in technology integration. A complete survey is included (see Appendix A).

The third section of the survey includes a partial reproduction of Ling Wangs 2004 Technology Integration Survey. Consent to reproduce the survey was obtained through electronic mail correspondence (see Appendix B). The survey was designed to measure teacher efficacy in technology integration and since its validation was already proven, it lent itself to this study. Validation of this instruments measure of efficacy in technology integration comes from the alignment with the International Standards for Technology in Education and National Educational Technology Standards for Teachers.

Procedures

The pencil/paper survey was placed into a manila envelope and then put in each teacher's school mailbox. The anonymous consent form was attached as the first page to the survey and included instructions on how to complete it. Directions were also included on what to do with the completed survey. Each completed survey was to be placed in the manila envelope and sealed to ensure security and privacy of marked answers. Two days before pick-up the co-investigator contacted the principal who made an announcement reminder over the loud speaker about

returning the surveys. This was done to increase the return percentage. All manila envelopes that were returned to the office prior to pick up were placed in a locked file cabinet drawer.

The data collected from the survey will be evaluated, analyzed, and the results recorded. Section one of the survey, collected demographic information while section two and three collected confidence information on technology use and integration. A 4-point Likert Scale was used to rank their confidence level in sections two and three. The Likert number response will be assigned a numerical point value that can be translated into a positive or negative confidence level.

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Chapter 4: Results

This study was designed as a quantitative research to investigate the impact of technology training on a teachers perceived confidence level to integrate technology into the classroom. Surveys were distributed to 20 teachers and 12 were returned. The following section gives a detailed overview of the results obtained from the technology integration survey completed by the teachers.

The pencil/paper survey had three sections. The first section was demographics, the second section was a comparison of confidence in personal use versus classroom use of technology, and the third section was all about the perceived confidence level a teacher had of themselves on integrating technology into the classroom.

Demographics

Demographics revealed that the teaching experience of the respondents ranged from 0 - 16+ years. The respondents were then asked if they had internet access and computers at home for personal use and 11 replied yes. When asked to elaborate on the technology items they used personally the list included computers, laptops, iPads, tablets, smart phones, MacBook, Kindle, and iPhone.

Educational background revealed six teachers had master's degrees and six others had bachelor degrees, of which two were not originally in education but had obtained teaching certificates. An associate degree in assistive technology was noted on one response. In addition to their level of education, they were asked if they had received any computer or technology training in college to prepare them for technology use in the classroom. The responses for six

were yes, while four were no. One response said yes, but nothing that I could actually use in the classroom, and one other response was nothing more than a basic computer class.

The next question asked teachers to list factors that attributed towards their confidence or lack of confidence when using technology in the classroom. It found that half of them (6 out of 12) said their confidence comes from the training and time using it. Those same six people said that training was essential in their understanding and use. One teacher answered that they grew up as a "Digital Native" so it was easy to use technology because that is what they were used to and a second teacher said that they also grew up in this new technology era and found that it was easy to use technology because the kids loved it. Responses written from two other teachers said that the training was nice and helpful, but never really geared towards classroom use or what you already knew. Another teacher said she had no confidence and still needed to work on incorporating technology, while another answered that the kids know more than they do. It was noted that these last two responses came from teachers with 16+ years teaching experience.

Teachers were then asked to tell about the most beneficial trainings that they had attended whether they were in-service or pre-service. No one listed any pre-service training. Out of the 12 responses two did not list any training as being beneficial and one said they could not think of any training that they thought helped them because they learned nothing new. The rest all had the answer of MacBook training since their county had given them a MacBook to use this year, four specifically listed training for the MacBook from the ACT center that lasted six weeks. Three teachers responded that the QR Encoder training was the best training and that they now incorporated it in their classroom.

When asked how they feel about technology training the answers ranged from great, to it is a waste of my time. One teacher responded that it was very nice to see all of these things in

use, but the trainings were too short and did not really show them how they applied to the classroom. Four teachers noted that trainings were nice and very helpful, but that no one ever showed them how to incorporate them into the curriculum. One of the responses from a teacher with 16+ years' experience noted that it wasted of time and it did not help with what they taught. Another teacher with 16+ years' experience noted that the trainings were too fast and above the ability level they could be comfortable at. Finally one teacher noted that training was much needed and greatly appreciated.

The second part to this question asked if teachers felt they had received enough technology training. Eight teachers answered "no" they had not been offered enough technology training while four teachers answered "yes" they had. One teacher who answered no wrote, "that because technology is rapidly changing, training needs to keep up and be more often."

Teachers were also asked to answer the question of what would help them the most with technology integration in the classroom. Seven teachers answered continued training or more training. One teacher asked for classroom training for the teacher and the kids. Three teachers mentioned that training that actually showed them how to incorporate technology into the curriculum would be great. One teacher mentioned technology that worked, while another said enough laptops or iPads for all my students so we can work together. Two teachers mentioned that having a technology person that was in the school to be there daily to assist them would be the most beneficial. One teacher wrote how important it was to have time for all of this and time to just practice it before using it in the classroom. They said they go to these trainings and there is never any follow up.

Due to technology's importance in the classroom the question of what technology is available in your classroom was asked. Responses included iPads, laptops, computers, ELMO,

projectors, Apple Tv, MacBook, Wii gaming system, Mimeo, document camera, digital camera, SMART board, CD player, and iPods. It was noted that not every teacher had the same technology listed as being available in their classroom. When asked specifically what technology students has access to use at school answers included iPads, computers, or laptops. Several listed names of software used in specific grade levels.

Personal versus Classroom Use

In section two the teachers were asked to look at a list of 12 technology items that could be used in personal and/or classroom use and rank their confidence levels. A 4-point Likert scale was used to rate their confidence levels as very confident, confident, unconfident or very unconfident. The tables below are the breakdown of each section (see tables 1 and 2).

Table 1

Personal Technology Confidence Table

	Respondents* (N)	1-Very Confident		2- Confident		3- Unconfident		4-Very Unconfident	
		N	%	N	%	N	%	N	%
Computer	11	10	91%	1	9%	0	0%	0	0%
Email	11	11	100%	0	0%	0	0%	0	0%
Internet Explorer (Web Browser)	11	11	100%	0	0%	0	0%	0	0%
Microsoft Word	11	10	91%	1	9%	0	0%	0	0%
Spreadsheets	11	1	9%	6	55%	1	9%	3	27%
PowerPoint	11	4	36%	4	36%	1	9%	2	18%

Social Networking Sites (Twitter, FaceBook)	11	8	82%	1	9%	1	9%	0	0%
Digital Cameras	11	8	82%	2	18%	0	0%	0	0%
Interactive Whiteboard	11	3	27%	0	0%	3	27%	5	46%
ELMO	11	5	46%	4	36%	1	9%	1	9%
Student Response Systems	11	1	9%	3	27%	4	36%	3	27%
Text Messaging (Cell Phones)	11	11	100%	0	0%	0	0%	0	0%

Note.* only 11 respondents due to one responder not having internet at home, N is number of respondents, % is the percentage of respondents.

Table 2

Classroom Technology Confidence Table

	Respondents (N)	1-Very Confident		2- Confident		3- Unconfident		4-Very Unconfident	
		N	%	N	%	N	%	N	%
Computer	12	7	58%	4	33%	1	8%	0	0%
Email	12	9	75%	2	17%	1	8%	0	0%
Internet Explorer (Web Browser)	12	9	75%	3	25%	0	0%	0	0%
Microsoft Word	12	7	58%	5	42%	0	0%	0	0%
Spreadsheets	12	0	0%	7	58%	3	25%	2	17%
PowerPoint	12	4	33%	4	33%	3	25%	1	8%
Social Networking	12	6	50%*	3	25%	2	17%	1	8%

Sites (Twitter, FaceBook)								
Digital Cameras	12	7	58%	3	25%	1	8%	1	8%
Interactive Whiteboard	12	2	17%	1	8%	5	42%	4	33%
ELMO	12	7	58%	3	25%	1	8%	1	8%
Student Response Systems	12	0	0%	5	42%	5	42%	2	17%
Text Messaging (Cell Phones)	12	9	75%**	0	0%	2	17%	1	8%

Note. N is number of respondents, % is the percentage of respondents,* one response noted would not use in classroom, ** one response noted would not use in classroom

After looking at each category, it was important to see how they compared to each other and note the differences in personal versus classroom confidence. Table1 and Table 2 show that teachers use technology more confidently for personal use. The average percentage for teachers who were very confident in personal use was 64% whereas only 46% are very confident in the classroom. This is an important difference, knowing that in order to meet the 21st Century standards, we must incorporate technology into our curriculum.

A breakdown between each of the different technologies shows where there are confidence gaps between personal and classroom use. For example, the computer is used 33% more confidently in personal use versus classroom use. Email, Internet Explorer, Microsoft Word, social networking sites, digital cameras, and text messaging all get used more confidently in personal use than in the classroom. While ELMO and Student Response Systems are used more confidently in the classroom. This could be due to the fact that ELMO and Student Response Systems are not technology geared towards personal use. To meet the demands of the 21st century standards, we must get teachers to be as confident in the classroom with their technology use as they are in their personal use.

Self-Rated Classroom Technology Integration

Section three had twenty-four confidence statements on technology integration in the classroom. A 4-point Likert scale was used to strongly agree, agree, disagree, or strongly disagree with each statement. This section was a partial reproduced from Ling Wang's 2004 Technology Integration Survey with her permission (see Appendix B). This section was broken down into groups to make analysis easier. Some statements are repeats in that they check the same concept, but are worded differently to be able to access a true self-rated level of confidence.

Table 3

Statements to Facilitate or Inspire

Statements	Respondents (N)	1- Strongly Agree N	%	2- Agree N	%	3- Disagree N	%	4- Strongly Disagree N	%
S1. I feel confident that I understand computer capabilities well enough to maximize them in my classroom.	12	3	25%	7	58%	2	17%	0	0%
S4. I feel confident in my ability to evaluate software for teaching and learning.	12	0	0%	6	50%	4	33%	2	17%
S5. I feel confident that I can use correct computer terminology when directing student's computer use.	12	2	17%	5	42%	5	42%	0	0%
S8. I feel confident I can mentor students in appropriate uses of technology.	12	3	25%	9	75%	0	0%	0	0%

Note. N is number of respondents, % is the percentage of respondents

Table 3 statements are all about the confidence of the teacher to facilitate and inspire student learning using technology. Here teachers are stating that they are confident in their knowledge of the subject matter and can teach with technology so that the students learn. This study shows that an average of 17% would strongly agree while 56% would agree that they are confident in their ability with a computer in the classroom.

Table 4

Statements of Design and Development

Statements	Respondents (N)	1- Strongly Agree N	%	2- Agree N	%	3- Disagree N	%	4- Strongly Disagree N	%
S2. I feel confident that I have the skills necessary to use the computer for instruction.	12	5	42%	5	42%	2	17%	0	0%
S3. I feel confident that I can successfully teach relevant subject content with appropriate use of technology.	12	3	25%	8	67%	1	8%	0	0%
S6. I feel confident I can help students when they have difficulty with the computer	12	3	25%	4	33%	5	42%	0	0%
S7. I feel confident I can effectively monitor students' computer use for project development in my classroom.	12	3	17%	9	75%	1	8%	0	0%
S12. I feel confident I can regularly incorporate technology into my lessons, when appropriate to student learning.	12	4	33%	7	58%	0	0%	1	8%

S13. I feel confident about selecting appropriate technology for instruction based on curriculum standards.	12	4	33%	6	50%	1	8%	1	8%
S14. I feel confident about keeping curricular goals and technology uses in mind when selecting an ideal way to assess student learning.	12	2	17%	6	50%	3	25%	1	8%
S15. I feel confident about using technology resources (such as spreadsheets, electronic portfolios, etc.) to collect and analyze data from student tests and products to improve instructional practices.	12	0	0%	6	50%	5	42%	1	8%
S17. I feel confident I can be responsive to students' needs during computer use.	12	4	33%	6	50%	2	17%	0	0%

Note. N is number of respondents, % is the percentage of respondents

Table 4 includes statements that discuss design and development of digital age learning. They imply teachers are able to design, develop, and evaluate learning experiences and tools that are incorporated with technology use. This is one area where most teachers feel they lack the most experience. They feel that they should just use what the school says or provides training for and do not want to put in the extra time or effort into finding their own technology. Only 25% of the teachers questioned strongly agreed that they were confident in their ability. While 59% agree that they are confident. These two percentages are a positive indication that teachers are confident enough to work with and evaluate technology use in the classroom.

Table 5

Statements about Modeling Digital Professionalism

Statements	Respondents (N)	1- Strongly Agree N %	2- Agree N %	3- Disagree N %	4- Strongly Disagree N %
S9. I feel confident about assigning and grading technology-based projects.	12	4 33%	5 42%	3 25%	0 0%
S10. I feel confident that I can consistently use educational technology in effective ways.	12	3 25%	8 67%	1 8%	0 0%
S16. I feel confident I am comfortable using technology in my teaching.	12	3 25%	8 67%	1 8%	0 0%

Note. N is number of respondents, % is the percentage of respondents

Table 5 statements are all about being able to model digital age learning and work. They suggest that teachers exhibit work, knowledge, and skills necessary to be a representative of a digital professional. The table shows that 28% of teachers would strongly agree while 59% said they agree. When added up, these two percentages show us that over three fourths of the teacher population surveyed is stating that they are confident in their ability to model digital professionalism. This is important because the students need to see the teacher using the same technology they are expected to use proficiently and with confidence. This in turn increases the students want to learn with it. The more confident a teacher is with technology the more positive the attitude they project the more likely they are to use technology.

Table 6

Statements of Digital Citizenship and Responsibility

Statements	Respondent (N)	1- Strongly Agree N	%	2- Agree N	%	3- Disagree N	%	4- Strongly Disagree N	%
S11. I feel confident that I can provide individual feedback to students during technology use.	12	3	25%	9	75%	0	0%	0	0%
S18. I feel confident that, as time goes by, my ability to address my students' technology needs will continue to improve.	12	6	50%	6	50%	0	0%	0	0%

Note. N is number of respondents, % is the percentage of respondents

The statements of Table 6 talk about modeling digital citizenship and responsibility. They are supporting that teachers understand the responsibilities of a digital culture and are able to convey these behaviors to the students. The ethical behaviors are not only taught and learned by the students but exhibited by the teachers. The research here shows that all teachers would agree or strongly agree they have the confidence to do this.

Table 7

Statements of Professional Growth

Statements	Respondent (N)	1- Strongly Agree N	%	2- Agree N	%	3- Disagree N	%	4- Strongly Disagree N	%
S19. I feel confident that I can develop creative ways to cope with system constraints and continue to teach	11	3	27%	6	56%	1	9%	1	9%

effectively with technology.									
S20. I feel confident in my ability to integrate multiple technologies into my instruction.	12	1	8%	8	67%	3	25%	0	0%
S21. Integrating technology is not pertinent to my curriculum because of the time it takes to create technology-based lessons.	12	0	0%	6	50%	5	42%	1	8%

Note. N is number of respondents, % is the percentage of respondents

Table 7 is all about professional growth. As with any job, there is always the responsibility to continue to learn and improve. This study showed that 50% of teachers agree that integrating technology in not pertinent because of the time it takes to create technology lessons. This is alarming considering technology is a requirement for most schools now. This definitely becomes an area that should be looked into. The positive to this is that 67% agree that they can integrate multiple technologies into instruction and 56% agree that they can do this even with the constraints in our school systems today.

Table 8

Statements on School Technology Department

Statements	Respondent (N)	1- Strongly Agree N	%	2- Agree N	%	3- Disagree N	%	4- Strongly Disagree N	%
S22. I am aware of all the resources available to me to help me successfully integrate technology into the classroom.	12	0	0%	6	50%	6	50%	0	0%

S23. The ease of use and access to technology plays a role in the use of it in my classroom.	12	2	17%	8	67%	2	17%	0	0%
S24. I use technology for personal use more than classroom use.	12	2	17%	3	25%	6	50%	1	8%

Note. N is number of respondents, % is the percentage of respondents

The statements in Table 8 are all about technology use on the personal or school level. They put in to perspective that some of the confidence that teachers must have comes from the support of the school systems technology department. In this survey 84% of teachers strongly agree or agree that ease of use and access to technology plays a role in their use of technology in the classroom. Access and training comes from the school's technology department, so if a technology department is not supportive or available then the use of technology could go down. This study also showed that 17% strongly agree, and 25% agree that they still use technology more for personal use than in the classroom. Even though these numbers are not large numbers, it does show that something needs to happen to increase confidence in classroom use.

Chapter 5: Discussion

Technology integration into the curriculum is a priority, if not already mandated, as in most schools. The challenge for teachers has been in finding ways to integrate and use technology in the classroom to support their instructional goals. Their lack of personal experience, confidence, and training are some of the factors as to why this has not happened.

The purpose of this study was to determine if training had any effect on a teachers perceived level of confidence with technology use in their classrooms.

Implications of the Study

The results of this study support that training does make a difference in a teacher's perceived confidence level when integrating technology in the classroom. As a whole, the respondents are comfortable and confident with the technologies they use. They do feel that training is a major component in their confidence level and would like to continue with more training.

While it was noted that there was one respondent who did not use technology at home the remaining 91% did. This tells us that technology is being used, just not always in the classroom. Technology use according to this study was used with the greatest confidence personally. Therefore we must look into ways of creating a greater confidence levels for classroom integration. The answer to this can be found in providing training to our teachers on how to use technology in the classroom.

This study also found that teachers felt like they had not received enough training. They responded that training was not offered often or that it really did not apply to what could be used in the classroom. This shows the importance of the technology department being involved with

the teachers. With more involvement from the technology department, not only could training be more often, it could be developed and personalized to meet the needs in a particular classroom. It would also serve as another link to building teachers confidence.

Technology has many forms in the educational world. Due to all of the technology devices available for use, it is very hard to have confidence in all of them. It could be that each school should look into the technology used there and then assign a person to know and educate the others. If schools had an assigned person for certain devices then confidence in their use would go up.

Limitations

Though the results of this study do indicate that teacher training does make a difference in a teachers perceived level of confidence when integrating technology in the classroom, there are limitations to the findings and generalization of the study. These details are discussed in the following paragraphs.

The biggest limitation to this study is the sample size and make-up. The sample size of 20 teachers from one elementary school is not ideal. If possible the sample size would be much larger, include several schools from all levels; elementary, middle, and high school, and different areas of the state. Due to such small fairly homogenous sample size the generalization of this study to other teachers, schools, and school districts would not be applicable.

There was a return rate of 60%. While this is an acceptable return, I feel that the amount of days missed due to weather was another limitation to this study. While the participants had a total of 14 days to complete the surveys, approximately 6 of those days were snow days or out of

school days. A higher return rate with such a small sample size would have made stronger support for the findings.

The study was conducted via pencil/paper. A higher return rate might have occurred if teachers could have completed it online. This was a survey on technology confidence, so actual completion on the computer would have lent itself in supporting and showing their confidence in technology use. In the same token that it was a limitation, it was also a benefit, because those teachers who do not use technology may have never replied.

Additionally, there are several things that could potentially influence self-efficacy and need to be looked at in depth. Questions on school contexts, educational trends and priorities, and actual time of technology usage should all be looked at closer to get a better understanding. Because this study did not look at levels of implementation or schools contexts it is possible the confidence perception levels were skewed.

Conclusion

Due to the technology push in today's classrooms it is important to understand what can influence a teachers perceived level of confidence and help them move from hesitation to full integration of technology in the classroom. The results of this study help support the fact that training has a positive effect on the perceived confidence level of a teacher when integrating technology in the classroom. Therefore for technology integration to become the normal in the classroom, teachers need to be offered training of different types, skill level, and applications on a regular basis. With increased training, teachers perceived levels of confidence will increase, therefore increasing technology use in the classroom.

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APPENDICIES

Appendix A: Complete Technology Survey

Computer Technology Confidence Survey

Some of this survey is reproduced with the permission of Ling Wang (2004)

This survey is being done for research purposes by Heather Brown, a graduate student of Marshall University. The purpose of this survey is to determine how confident you are integrating technology into classroom teaching. There are 3 sections to this survey. You do not have to answer any question you are not comfortable with. Thank you for taking your time to complete and return this survey.

For Section 1 please circle the best answer or fill in blank.

SECTION 1- Demographic Information

How many years have you been teaching? 0-5 6-10 11-15 16+

What degrees, undergraduate and/or graduate have you earned?

_____

_____

_____

Did you receive any computer or technology course training in college to prepare you for technology use in the classroom? YES or NO

What technology do you have in your classroom?_____

_____

_____

What technology do you use for personal use?_____

_____

_____

Do you have internet at home? YES or NO

Do you have a computer at home? YES or NO

What technology do the students have access to at school?

_____

_____

Please name some factors that attribute towards your confidence or lack of confidence with using technology in the classroom._____

_____

_____

_____

_____

List the most beneficial technology training you have attended, either pre-service or in-service, and what was taught_____

_____

_____

_____

_____

How do you feel about technology training?_____

_____

_____

_____

What do you think would help you the most with technology integration in the classroom?_____

_____

_____

_____

Do you feel you have been offered enough technology training either pre-service or in-service? YES or NO

Section 2

Please check the box of your confidence level in using the following for CLASSROOM USE:

	1- Very Confident	2- Confident	3- Unconfident	4- Very Unconfident
Computer				
Email				
Internet Explorer(Web Browsers)				
Microsoft Word				
Spreadsheets				
PowerPoint				
Social Networking Sites(Twitter, facebook)				
Digital Cameras				
Interactive Whiteboard				
Elmo				
Student Response Systems				
Text Messaging(cell Phone)				

Now please check the box of your confidence level in using the following for PERSONAL USE:

	1- Very Confident	2- Confident	3- Unconfident	4- Very Unconfident
Computer				
Email				
Internet Explorer(Web Browsers)				
Microsoft Word				
Spreadsheets				
PowerPoint				
Social Networking Sites(Twitter, facebook)				
Digital Cameras				
Interactive Whiteboard				
Elmo				
Student Response Systems				
Text Messaging(cell Phone)				

SECTION 3-

Using the following scale please answer Section 3

1- Stongly Agree 2- Agree 3-Disagree 4- Strongly Disagree

1- Strongly Agree	2- Agree	3-Disagree	4-Strongly Disagree

1. I feel confident that I understand computer capabilities well enough to maximize them in my classroom.	1	2	3	4
2. I feel confident that I have the skills necessary to use the computer for instruction.	1	2	3	4
3. I feel confident that I can successfully teach relevant subject content with appropriate use of technology.	1	2	3	4
4. I feel confident in my ability to evaluate software for teaching and learning.	1	2	3	4
5. I feel confident that I can use correct computer terminology when direction students computer use.	1	2	3	4
6. I feel confident I can help students when they have difficulty with the computer.	1	2	3	4
7. I feel confident I can effectively monitor students' computer use for project development in my classroom.	1	2	3	4
8. I feel confident I can mentor students in appropriate uses of technology.	1	2	3	4
9. I feel confident about assigning and grading technology-based projects.	1	2	3	4
10. I feel confident that I can consistently use educational technology in effective ways.	1	2	3	4

1- Strongly Agree	2- Agree	3-Disagree	4-Strongly Disagree

11. I feel confident that I can provide individual feedback to students during technology use.	1	2	3	4
12. I feel confident I can regularly incorporate technology into my lessons, when appropriate to student learning.	1	2	3	4
13. I feel confident about selecting appropriate technology for instruction based on curriculum standards.	1	2	3	4
14. I feel confident about keeping curricular goals and technology uses in mind when selecting an ideal way to assess student learning.	1	2	3	4
15. I feel confident about using technology resources (such as spreadsheets, electronic portfolios, etc.)to collect and analyze data from student tests and products to improve instructional practices.	1	2	3	4
16. I feel confident I am comfortable using technology in my teaching.	1	2	3	4
17. I feel confident I can be responsive to students' needs during computer use.	1	2	3	4
18. I feel confident that, as time goes by, my ability to address my students' technology needs will continue to improve.	1	2	3	4
19. I feel confident that I can develop creative ways to cope with system constraints and continue to teach effectively with technology.	1	2	3	4

1- Strongly Agree	2- Agree	3-Disagree	4-Strongly Disagree

20. I feel confident in my ability to integrate multiple technologies into my instruction.	1	2	3	4
21. Integrating technology is not pertinent to my curriculum because of the time it takes to create technology-based lessons.	1	2	3	4
22. I am aware of all the resources available to me to help me successfully integrate technology into the classroom.	1	2	3	4
23. The ease of use and access to technology plays a role in the use of it in my classroom.	1	2	3	4
24. I use technology for personal use more than classroom use.	1	2	3	4

Is there anything else you would like to add on technology and your confidence that has not been addressed in this survey? _____

_____

_____

_____

_____

_____

_____

Thank you again for taking the time to complete this survey. Your input is greatly appreciated.

Appendix B: Consent for Reproduction of Ling Wang Survey

Use of Technology Survey

Ling Wang <lingwang@nova.edu>
Tue 1/14/2014 12:21 PM
Dear Heather,

Yes, please feel free to use the survey in your thesis.

Good luck!

Ling

Ling Wang, Ph.D.

Professor of Graduate School of Computer and Information Sciences

Nova Southeastern University

954-262-2020

Heather Diane Brown
Tue 1/14/2014 9:23 AM
Inbox; Sent Items
To:
lingwang@nova.edu;
...
Cc:
Heather Diane Brown;
Dr. Wang,

My name is Heather Brown and I am a graduate student at Marshall University working on my thesis to complete my master's degree. I am looking at the impact of pre-service and in-service training on a teacher's ability to effectively integrate technology in the classroom. I would like permission to use your Technology Integration Survey with the teachers in the school where I am doing my research. You can contact me with any questions at brown695@live.marshall.edu or 304-763-4116(home). Thank you for your time in reading my request and I look forward to your response.

Sincerely,
Heather Brown