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The Generational Digital Divide: Understanding Adult Learners' Self-Efficacy in Online Education

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Justin Melick

Abstract

Higher education is seeing a substantial rise in both the number of adult learners who are returning to college as well as the number of online and blended courses being offered by institutions. Adult learners are returning to higher education and frequently finding themselves in an e-learning environment, which may not have existed during their first stint in college. Online and blended classes often require students to complete technology tasks that they may not be confident performing. This thesis uses descriptive statistics to determine which tasks commonly used in online courses adult learners are least confident performing, giving institutions more accurate data that can be used to create tutorials and orientation materials. This could improve adult learners' confidence with the technology used in an e-learning environment. Additionally, this thesis utilizes a two-way ANOVA to analyze and compare adult learners' confidence levels with technology tasks used in online courses to the confidence levels of traditionally aged students. The findings of this study showed that adult learners were most confident performing the most common basic computing and learning management system (LMS) tasks such as formatting documents, transferring files and turning in assignments using the LMS. The analysis of variance found that adult learners had significant gains in confidence with the technology commonly found in online and blended instruction after taking an online or blended course.

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Chapter One: Introduction

Problem Statement

As colleges and universities continue to offer online and blended learning opportunities they may be leaving some of their older students behind. Between 2002 and 2009 the number of college students taking online courses raised from 9% to 30% (Allen & Seaman, 2011) and colleges and universities are adding new online classes to meet a rapidly growing demand. In addition, between 1994 and 2008 the number of adult learners rose from 6.2 to 7.4 million (Creighton & Hudson, 2002; Hussar & Bailey, 2011). This growing population of online adult learners has lower self-efficacy scores when asked about the very tools they are using to complete the online courses in which they are enrolling (McCoy, 2010). The effect of lower self-efficacy is that adult learners are more hesitant to enroll in online classes, have lower retention rates once in online courses and report lower levels of course satisfaction if they lack technology support (Allen & Seaman, 2013; Beaghan, 2013).

Current research on student self-efficacy with technology presents a gap, showing that educators do not specifically know the types of technology tools that adult learners are uncomfortable with and subsequently need to be trained to use (Cho, 2012). Some universities have addressed this problem by implementing broad computer literacy courses for entire student populations that cover many technology tools as opposed to specific and efficient programs covering the aspects of online learning that adult learners need the most support with (Badke, 2008; Cho, 2012). As suggested by Cho, the content of these programs are not fully backed by research. Additionally the varied needs of adult learners are rarely considered when developing computer literacy programs (Cho, 2012; McCoy, 2010). By acting on the call to further research from Cho this study seeks to

justify the content included in technology literacy programs and identify the specific needs for adult learners by surveying their confidence level with online learning tools.

Importance of the Issue

It has been proven that adult learners have difficulty performing basic computer functions when compared to their younger classmates (Badke, 2008). Universities tend to approach this problem by implementing technology literacy programs (Cho, 2012). Unfortunately, these programs are often not based in research and they do not take into account the different needs of adult learners' (Cho, 2012; McCoy, 2010). When institutions ignore the issue of adult learners lack of confidence with technology or inadequately address it, they run the risk of decreased student satisfaction and increased drop-out rates in e-learning environments (Allen & Seaman, 2013; Beaghan, 2013; Cho, 2012; Hayashi et al., 2004).

Background of the Problem

The skills required to participate in online courses have evolved considerably since the first online education programs started. Computer proficiencies needed to learn successfully in an e-learning environment have changed as technology has become more prevalent as well as exceedingly user friendly. When the first online courses were being offered, Callister and Burbules (1990) describe the typical computer skills needed by students at the university level as being technical in nature. For example, students needed to know specific hardware and software functions, computer terminology, such as the difference between bits and bytes and programing skills. Callister and Burbules provide an illustration of the state of online learning in the early 1990s when they note that "to use a computer effectively as an aid to facilitate learning, neither students or their

teachers need to know what is occurring inside the machine" (p. 4). This is a sentiment that has clearly changed as the state of online education has advanced in a more user-friendly direction.

As computer technologies evolved and subsequently became widely available to consumers, a greater number of institutions started to implement online programs (Scagnoli, 2001). To prepare students to take online courses in the mid-1990s institutions implemented orientation programs that were based on traditional orientation programs for students who met face-to-face. These orientations encouraged an academic and social interaction. Additionally early orientation programs were in the format of a CD-ROM that contained practice class sessions to get students acquainted with the e-learning environment due to the lack of widespread broadband Internet (Scagnoli, 2001).

Harasim (2000) explained that early online courses were largely operated through email systems and, because of this, they were very limited in the level of interaction offered to students. The reliance on email in early online courses placed an importance on students having basic computer networking skills to be able to communicate with their classmates and instructors. A major change in online education and subsequently the skills students need to succeed in an e-learning environment came with the introduction of learning management systems such as *Blackboard*, which was launched at scale in 2000 (Mahnegar, 2012).

With the introduction of learning management systems (LMS), online courses became more complex as users had easier ways to communicate and collaborate with their peers as well as more organized and user friendly. The development of LMSs has led to more in-depth online course orientations in the format of websites that have

interactive tools to allow students to experience the LMS used in their course (Cho, 2010). Beyond the technical functions of the LMSs, newer online orientation programs also go into detail with issues such as how time management differs in an online setting as opposed to the traditional classroom and how to be a better self-directed learner (Cho, 2010).

E-learning is a quickly evolving sector within the field of education. The methods of instruction and tools educators use to implement that instruction have changed quite dramatically over the last 30 years. Hagle et al. (2009) recommend that institutions constantly adapt their orientation tools as the online environment continues to evolve. Additionally, Cho (2010) called for further research to be done on the contents of orientation tools to ensure that institutions are creating effective and efficient programs that will help their students feel more comfortable and confident in an online environment.

Statement of Purpose

The purpose of this study was to conduct a cross sectional survey of all students at a public university who were taking an online or hybrid class in the Winter 2014 semester, thus exploring the confidence levels of adult learners when using specific technology tools that are commonly used in online courses. This research seeks to further knowledge of adult learners' relationship with technology in an e-learning environment by providing a deeper understanding of their perceived proficiency with specific technology. The data generated by this study describes the self-efficacy scores of adult learners with tools used in online classrooms today, such as learning management

systems (LMS), discussion boards, and basic computing functions such as creating and organizing files.

This study was conducted at a midsized public university in the Midwest during the Winter 2014 semester. The instrument was distributed to both undergraduate and graduate students who were enrolled in online or blended courses. In order to analyze the results of this survey, descriptive statistics were used to show how confident adult learners are in performing the tasks commonly performed in an online course setting. Additionally, a two-way ANOVA was used to determine whether a significant difference exists between the self-efficacy scores of adult learners and traditionally aged students for both basic computing tasks as well as online tasks that are used in e-learning environments. Finally, open-ended comments provided by the adult learners were analyzed to determine if their overall feelings towards e-learning at the institution were positive, negative, or neutral.

The results of this study provide new information related to creating technology literacy programs aimed at adult learners. This knowledge is critical to online education, as older students have shown to have unique needs as compared to traditionally aged college students (McCoy, 2012; Rodriguez, Ooms, & Montanez, 2008). As the number of adult learners who are joining and rejoining higher education continues to rise, the results of this study become more valuable to institutions as they try to meet the technology needs of adult learners.

Research Questions

1. What are the confidence levels of adult learners performing basic computer functions that are commonly needed to participate in online courses (e.g., creating documents, transferring and organizing files, etc.)?
2. What are the confidence levels of adult learners performing tasks with a learning management system (LMS) that are commonly needed to participate in online courses (e.g., turn in assignments, participate in discussion boards, read comments, etc.)?
3. Do the confidence levels concerning educational technology tools differ significantly between traditionally aged students and adult learners when controlled for the number of previously taken online or blended courses?

Hypotheses

1. Adult learners are not comfortable with basic computing functions that are commonly used in online courses.
2. Adult learners are not comfortable performing tasks on learning management systems.
3. There is not a significant difference between the comfort levels of traditional students and adult learners in regards to the technology tools used in an online classroom environment.

Research Design, Data Collection and Analysis

This thesis provides a descriptive study, analysis of variance, and qualitative data analysis that examine adult learners' self-efficacy with specific technology tools used in an online classroom environment. Additionally, this study provides an analysis of

variance that describes the relationship a student's age has with their confidence in performing tasks used in online courses. The rationale for this research design stems from the desire to provide generalizable results for institutions that are similar to the one researched in this study, so that educators at similar institutions could use these data to create more accurate technology tutorials and orientations based on the needs of adult learners.

The data for this study were collected in a survey of all undergraduate and graduate students enrolled in at least one online or blended course at the researched institution, with consent of the Department of Institutional Research (see Appendix A). Students in online or blended courses received an email containing a web link to a survey. The instrument was sent to students in the first week of the semester to minimize the amount of experience with educational technology students might gain while using the online course tools during the semester they completed the survey. The data were collected through Survey Monkey® and then analyzed.

Using SAS, descriptive statistics were generated by ranking the data to see which computer skills adult learners are least comfortable performing. This portion of the study is in response to the call for further research made by Cho (2012) and could provide data to guide the creation of more accurately create tutorials and orientation materials for adult learners in online courses.

Additionally, a two-way ANOVA was used to determine if there was a significant difference in the confidence levels of adult learners and traditionally aged students for both the basic computing tasks and online tasks that were surveyed in this study. This comparison was done to either confirm or refute previous studies by McCoy

(2012) and Rodriguez, Ooms and Montanez (2008) that have shown significant differences in the self-efficacy scores between the two generations of students concerning technology used in an e-learning environment.

Definition of Terms

Adult Learners

For the purposes of federal reporting for financial aid, adult learners belong to one or more of these categories: are twenty-four or older, married, have a child, or are an emancipated minor (Merriam, Caffarella & Baumgartner, 2007). Other research on generational differences between student groups focuses specifically on the age aspect of this definition (Hussar and Bailey, 2011). Within this study, the term adult learner is defined as undergraduate or graduate students who is twenty-four years or older, based on the definition given by the National Center for Educational Statistics. For the purpose of this thesis, only age will be taken into consideration to determine if a student is an adult learner due to the difficulty of measuring the other variables in the federal definition.

Digital Divide

For the purposes of this study the digital divide refers to the have and have-nots in terms of technology. Demographics factors such as age, gender and socioeconomic status all play a role in creating the digital divide (Livingstone & Helsper, 2007).

Digital Native

According to Prensky (2001), digital natives are individuals who were born after 1980. These students have grown up in a world where they have been immersed in technology. Prensky also suggests that because they have been surrounded by technology their entire lives, they learn differently than students who came before them.

Digital Immigrants

Moritz (2014) writes that a digital immigrant is a person who did not grow up surrounded by digital technology. People born before the mass availability of digital technologies often have to convert pre-digital means of accomplishing tasks into digital ways to accomplish that same task. Moritz also claims that because digital immigrants did not grow up in the digital age, they will never use technology in the same way as digital natives.

Technology Self-Efficacy

Technology self-efficacy refers to student's self-reported ability to perform specified computing tasks (Compeau et al., 1999). Often literature uses the phrase "self-reported computer proficiency" to refer to concept as it is difficult to quantify students' skills with technology by means other than self-reporting.

Educational Technology

Eisenberg (2011) defines educational technology as the computing tools used in an educational environment. This includes both stationary (desktop) and mobile computing as well as their associated hardware and software, such as audio and video equipment and the Internet.

Learning Management System (LMS)

Mahnegar (2012) defines a learning management system as a piece of software that organizes, tracks, manages education. The LMS used in this study was *Blackboard*.

Online Learning/ e-Learning

The term "online learning" or "e-learning" refers to various educational methods used at accredited college and universities such as, distance learning, blended or hybrid

courses, and courses administered completely via the Internet (Bacsich et al., 2009). Online learning and e-learning are used interchangeably in this study

Web 2.0

As defined by Trese (2006), Web 2.0 refers to websites that go beyond just presenting text. These websites offer things such as social networking and interactive tools. These types of websites aid online education and give depth to online assignments.

Delimitations of the Study

Self-efficacy scores with specific technology tools used in the e-learning environments of adult learners have been analyzed in this thesis. Results were compared to the scores of traditionally aged college students in order to analyze the difference in technology needs between the two generations of students. The data were collected using an instrument that measured students' comfort levels with certain technology tools that are critical to online courses.

The survey used in this thesis measures students' self-efficacy regarding the use of the learning management system *Blackboard* as well as other computing tasks critical to e-learning. Because this study examined students self-efficacy regarding *Blackboard*, this research is better generalized to institutions that use this same LMS. For institutions that use a different LMS, the results of this study will be less generalizable but still relevant depending on how similar the LMS is to *Blackboard*.

The data for this thesis came from all students at the institution researched who took at least one online or hybrid class in the Winter 2014 semester and respond to the instrument. Due to using criterion sampling and selecting the entire population of students taking online and blended courses at the sampled university, a large set of data

came from this survey. Additionally, because every student taking an online course received a survey, the results should be generalizable to all students who take online classes at the researched institution as well as institutions with similar demographics, increasing the external validity of this study.

Limitations of the Study

Many of the studies done on topics concerning student's self-efficacy regarding technology have a descriptive research design due to the difficulty in controlling the independent variables in the given environment. Due to the choice of a descriptive research design, causal correlations between student demographics and a specific efficacy score cannot be determined. Though this is a limiting factor on the internal validity of the study, the research design inherently provides educators the overall view of which skills students in an e-learning environment need the most support with.

The instrument used was created to measure the self-efficacy of the sample population. Due to the researcher's background as an educational technology student and graduate assistant working in technology support as well as other personal and professional experiences, the instrument may have been written using terminology that the layperson may not understand. To minimize this potential threat to the internal validity of the study, the researcher had multiple individuals with less experience using educational technology review the survey before it was administered, attempting to ensure that it was free of bias due to the researcher's background with technology. Secondly, because this survey was administered to students through email, the survey data only includes those students who monitor their university email account and respond

to online surveys. Lastly, the researchers own personal beliefs, values, and interests were catalysts in selecting the study topic.

Organization of the Thesis

Chapter two provides a comprehensive literature review of the current research regarding technology literacy and e-learning environments. The third chapter is comprised of the research design, description of the research site and participants, and the instruments and processes used in the analysis of the data. Chapter four contains the findings of the study. Finally, chapter five includes the conclusions drawn from the findings, implications for institutional practices, and recommendations for further research.

Chapter Two: Literature Review

Introduction

Between 2002 and 2009, the number of college students taking online courses each semester increased from 9% to 30% of all college students (Bradley, 2011); due to this colleges and universities are trying to meet this rapidly growing demand. In addition, the number of adult learners has also risen from 6.2 to 7.4 million between 1994 and 2008 (Creighton & Hudson, 2002; Hussar & Bailey, 2011). This growing population of online adult learners has lower self-efficacy scores when asked about the tools they are using to complete the online courses in which they are enrolled in (McCoy, 2012). The effect lower self-efficacy with technology is that adult learners are more hesitant to enroll in online classes, have lower retention rates, and report lower levels of course satisfaction when lacking technology support (Allen & Seaman, 2013; Beaghan, 2013).

Theoretical Framework

The theoretical framework used in this study is Knowles' (1980) theory of andragogy. A section of this theory provides four assumptions about adult learners that are particularly relevant to this study. These four assumptions are as follows:

1. As a person matures, his or her self-concept moves from that of a dependent personality toward one of a self-direction human being.
2. An adult accumulates a growing reservoir of experience, which is a rich resource for learning.
3. The readiness of an adult to learn is closely related to the developmental tasks of his or her social role.

4. There is a change in time perspective as people mature from future application of knowledge to immediacy of application. Thus an adult is more problem centered than subject centered in learning.

Each of the four assumptions that make up Knowles' theory impact the readiness of adult learners to learn about the technology they are using in an e-learning environment.

The first of Knowles' (1980) assumptions states that as people age, they become more self-directed. According to Knowles, older students are more likely to be self-directed in their learning; because of this they would make great candidates to participate in e-learning, as online courses are typically much more self-directed in nature (Cho, 2010: Robinson, 2008). The second of Knowles' assumptions explains that since adults have accumulated a wealth of knowledge over their lifetime, previous knowledge itself can be a rich resource for further learning. This idea about adult learners coincides with what Badke (2008) believes: adult learners' biggest barrier to using technology is making the transition between how things were done in an analog fashion to now, how they are done in a digital manner. This wealth of knowledge on how to perform specific tasks in an analog environment can then be used by educators to draw comparisons on how to do similar tasks in the digital world via computers and the Internet (Badke, 2008).

Finally, the last two of Knowles' (1980) assumptions relate to how adult learners' willingness to learn is closely related to their reasons for returning to college. According to O'Donnell (2005), 40% of adults returned to higher education for work-related reasons in 2003. These reasons include both the pursuit of a new career or a promotion in their current workplace. Thus, adult learners often have an immediate need to learn that is centered on their desire for a new or improved employment situation.

Synthesis of Research Literature

Defining the needs of adult learners. According to the National Center for Educational Statistics, and using the current federal definition, the percentage of adult learners students has risen sharply since the late 1960s. In 1969, adult learners students made up for only 10% of the nationwide student body; in 1991 they rose to 38%; in 2001, they made up 46%, and in the most recent survey in 2009, they made up 54% (Eisenberg, 2011; Kim & Hudson, 2002). Based on these statistics, institutions of higher education have seen a drastic increase in the number of adult learners students arriving on campus.

The importance of employment in coming back to higher education is particularly significant for adult learners. A survey done by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) found that 91% of adult learners cited job related reasons for participating in higher education (Valentine, 1997). The importance of employment to adult learners is clear. In fact, 58% of those students who cited job related reasons for participating in higher education also said that they were going back to college for career or professional upgrading (Valentine, 1997). This number indicates that those students are attending higher education while at the same time working either a full-time or part-time job at the same time.

The fact that most adult learners are coming back to higher education for job related reasons has created a major barrier to entry: the lack of time. Citing the same UNESCO survey, Valentine (1997) wrote that 45% of adult learners have a hard time participating in higher education due to a of lack of time. Beaghan (2013) also found that, although adult learners prefer the traditional classroom, the flexibility that online learning offers is the number one cited reasons for adults returning to higher education.

The growth of e-learning. The increase in online education has been significant over the last decade. In 2002, the Sloan Consortium found that 1.6 million or 9.6% of all college students took at least one online course. This number increased drastically to 6.7 million or 32% of all students in 2011 (Allen & Seaman, 2011). Bradley (2011) reveals many reasons for the growth in online education. Specifically, he cites the ability to contact faculty outside of the classroom, the wealth of information available outside of traditional book based education, and the concept of learning on demand (Bradley, 2011). These benefits of online learning are magnified for adult learners because they allow for them to learn in the limited amount of time they have between work and their personal lives (Beaghan, 2013).

Additionally, the rise of online education is not simply driven by the marketplace that is demanding it, but it is also happening because of the constraints on higher education today. Taylor (as cited in Sankey, 2006) argues that due to the incredible demand for higher education, institutions are being forced to move instruction online. He writes that financially, universities cannot expand in the traditional sense to accommodate these new students because of the overhead costs involved. Instead of building new buildings, paying more in operating costs, and hiring more staff, institutions are starting new classes online both to save money and accommodate more students (as cited in Sankey, 2006).

Adult learner's technology deficiencies. Traditional 18-24 year old college students are growing up in a world where they have been surrounded by Internet related technologies. Devices such as computers, cell phones, and video games have played an integral part in their upbringings (McCoy, 2012). This immersion with technology that

most millennial students have grown up in has led researchers to hypothesize that today's traditional aged college students feel they have better technology skills than their older peers (Beaghan, 2013; McCoy, 2012).

McCoy (2012) calls for institutions to understand their student's proficiency when it comes to technology because computers, the Internet, and other digital devices are being introduced into the classroom for a multitude of reasons, including student satisfaction and retention. McCoy found "a significant difference in self- efficacy scores among various age groups" (p. 1617). McCoy found that in each of her questions pertaining to students' proficiency with technology, the group of students aged 18 to 25 scored higher than their older classmates. This lower perceived skill level with technology among older adults is an issue institutions are facing as adult learners are returning to universities at an increasing rate.

In a larger study done by Rodriguez et al. (2008) they found that there was a weak correlation between age and a student's confidence with technology. The researchers surveyed 694 students, of which 38% were 18 to 25 years old, 39% were 26 to 35 years old, 13% were 36 to 45 years old and 10% were 46 years old or older. The survey asked students to rate their confidence in their ability to perform specific tasks required to participate in online courses.

Another focus of the study by Rodriguez et al. (2008) was to examine how motivated students were in online courses. The results of the survey show that there was a weak correlation between age and motivation to learn in an online environment. This weak correlation serves as evidence to support Knowles' (1980) assumption that adult learners are motivated by the immediate need to learn as well as their social role.

Beaghan (2013) examined adult learners' feelings towards online environments, comparing them directly to a traditional classroom setting. Sampling 96 adult learners, he found that while the students preferred the traditional classroom, they also had positive attitudes towards online learning, citing that online courses relieve time constraints outside of the classroom unlike traditional face-to-face courses. Additionally, he also found that adult learners perform equally as well in an online course as they do in a face-to-face class although they report to have taken longer to finish assignments in the online setting. Beaghan (2013) hypothesizes that this may be because adult learners are not comfortable with the technology used in the course, which leads to lower rates of student satisfaction.

Institutional responses to adult learners lack of confidence with technology. The lack of technology skills among adult learners presents challenges for universities. Institutions are experiencing a considerable rise in adult learners who are demanding online courses because of time constraints, but at the same time, a large portion of those students are not proficient with the technology used to participate in those classes (McCoy, 2012; Rodriguez et al. 2008). Sankey (2006) writes that "relying on text-based instruction may be disenfranchising many students, whilst technology enhanced environments can provide significant advantages to a growing market of non-traditional learners" (p. 82).

Sankey (2006) discusses how the University of South Queensland in Australia is going about giving support to its adult learners who are enrolled in online classes. She writes that the university implements multiple approaches, such as providing blended courses where face-to-face interaction happens in addition to an online portion, as well as

supplementing the online resources with traditional paper based texts. While these solutions provide traditional resources to students, they do not deal with the long-term problem of adult learners having deficiencies with technology (Lei, 2010).

Some universities have created orientation programs to help students become more confident in using the technology tools found in online courses (Hagle et al., 2009). At a Midwestern university, Cho (2010) helped to create and evaluate an online student orientation with the goal of making students more comfortable learning in an online setting. Online courses represented 12.5% of all credits at the researched institution, which highlights the need to ensure that students are confident using the technology tools that are used in these classes (Cho, 2010). Cho reviewed the literature to design the orientation as well as collected input from faculty who frequently taught online courses. The orientation was created as a webpage and students were sent a link via email to complete the orientation.

Cho's (2010) orientation contained four modules. The first module pertained to the nature of online learning, including how to communicate online and turning in assignments via the Internet. The second module dealt specifically with the LMS used, which was *Blackboard*, and provided information on how to use various features of the LMS that would be used in online classes. The third module addressed the technical requirements that need to be met in order to take an online class such, as computer and Internet access. Finally, the fourth module covered tips for self-directed and asynchronous learning, which Cho explains are prominent in online education. After creating these modules, Cho had the content of this orientation examined by experts to validate it's content.

After the implementation of the orientation, Cho (2010) surveyed the students who participated. Results from the survey revealed that students found the tutorials and other resources provided in the orientation to be useful. Additionally, students who participated in the orientation said that they felt more confident in their ability to participate in their online course after taking part in the online student orientation. Cho called for more research to be done to determine which technology skills should be covered in similar orientations in order to enhance the content of these programs with research.

In a larger study conducted by the Online Consortium of Independent Colleges (OCIC) and universities, Hagle et al. (2009) examined whether there was a connection between its member institutions' orientation materials and their students' satisfaction in online courses. Out of the 64 member institutions of the OCIC, 13 of the schools in this consortium responded to the survey. In the group of responding schools, two thirds of institutions had orientation materials specifically for students in online classes while one third did not. The authors also found that the content of these orientations focused on the technical skills required for online education as well as information on campus resources to assist students with e-learning, such as the IT help desk (Hagle et al., 2009).

In addition to surveying its member institutions, the OCIC also surveyed the students who took online courses at these colleges and universities. Of the students surveyed, 50% said they received orientation materials; of those 68% via email and 23% through the postal service (Hagle et al., 2009). When asked about the effectiveness of the orientation materials, students responded positively, with 78% of respondents saying that the orientations matched what they needed to know in order to participate in an online

class (Hagle et al., 2009). Lastly, Hagle et al. (2009) suggested that schools create their own independent orientation materials, as the e-learning environment differed between schools in the OCIC.

Taking another approach to ensuring students have the technical computer skills needed to participate in online courses, Belmont Abbey College in North Carolina created an introductory level computer science class that is a part of it is general education program (Gupta, 2006). The course covers basic computing functions, such as creating documents, organizing and transferring files, and the use of email, all of which Gupta (2006) explains are needed to be computer literate. Although this class is not a required course for graduation, it was a recommended by most departments in the general education program (Gupta, 2006). Additionally, using this participatory approach to orientation required students to create documents and presentations as a part of the introductory computer science course, unlike the orientation materials created by Cho (2010) and Hagle et al. (2009).

Gender and self-efficacy. Studies done by Cooper (2006) and Mayall (2008) have shown that gender impacts a student's confidence with technology. Mayall surveyed 248 middle school and high school students (48% female, 52% male) from 10 schools around the United States. She asked students to answer how confident they were performing various tasks with technology. Mayall (2008) found that while there was no significant difference in the self-efficacy scores of middle school girls and boys, there was a difference in the scores of high school students. In her discussion, Mayall suggests that the difference in confidence between boys and girls starts to present itself when students get older because these students have more exposure to technology. This data is

also consistent with a study done by Mitts (2008), who found that while half of students in technology courses in middle school are girls, that figure drops to 17% in high school.

In a meta-analysis done by Cooper (2008), he also found that there is a gap between the confidence levels of boys and girls who use technology. Unlike the study by Mayall (2006), Cooper found that girls of all ages report lower self-efficacy scores with technology than their male peers. This gap continues to exist as students age and move from primary and secondary education into colleges and universities. Additionally, Cooper also found that the gap in self-efficacy presented itself in multiple regions around the world. He suggests that societal issues present around the world cause girls to feel less confident with technology.

Summary

Age is shown to have an impact on how students view technology as well as how confident they are using devices in the classroom and in the workplace (Beaghan, 2013; Cooper, 2008; Mayall, 2008; McCoy, 2012; Rodriguez et al., 2008; Scheckelhoff, 2006). Research has demonstrated that adult learners view technology in the classroom differently than their younger classmates (Beaghan, 2008; McCoy, 2012).

Instructors' lack of understand about these differences has led to adult learners having lower retention and satisfaction levels in online courses compared to their traditionally aged classmates (Allen & Seaman, 2013; Beaghan, 2013). Additionally, adult learners are increasing in numbers; therefore, addressing the issues of adult learners and technology is more critical than ever (Eisenberg, 2011; Creighton & Hudson, 2002). Currently, institutions are attempting to remedy this problem by offering technology tutorials and orientations that are targeted at the entire student population (Cho, 2012).

Conclusion

Institutions need to address issues around age, gender, and technology in order to create learning opportunities for all students. When teaching adult learners, instructors need to be aware of the different ways that older students learn and the difficulties they may have with using technology (Badke, 2008; Knowles, 1980). To cope with these differences between generations of students, instructors need to be aware of these differences and provide support materials that explicitly cover the technology tasks that adult learners are least confident with (Cho, 2012). In order to create these types of programs, research is necessary to assess the differences between traditionally aged students and adult learners as well as to identify the technology tasks each group of students has the most difficulty completing. With this knowledge, institutions can then create more targeted technology resources that will instruct adult learners on the tasks they are least comfortable performing.

Chapter Three: Research Design

Introduction

The purpose of this study was to gain a better understanding of the types of technology tools adult learners are least comfortable with in order to be able to provide data, more accurately creating training instruments to increase satisfaction and retention in online courses. Secondarily, this study aimed to further research done by McCoy (2010) that showed adult learners as having different needs with educational technology when compared to traditionally aged college students. To accomplish these goals, this research explored the following three questions:

1. How confident are adult learners performing basic computer functions that are commonly needed to participate in online courses (creating documents, transferring and organizing files, etc.)?
2. How confident are adult learners performing tasks with a learning management system (LMS) that are commonly needed to participate in online courses (turn in assignments, participate in discussion boards, read comments, etc.)?
3. Do the confidence levels concerning educational technology tools differ significantly between traditionally and non-traditionally aged students when controlled for the number of previously taken online or blended courses?

To answer these questions, a survey instrument was used that gathered demographic information as well as the self-efficacy scores related to specific technology skills.

The remaining portion of this chapter contains a description of the participants. Additionally, this chapter includes the rationale for the instrumentation used as well as an

explanation of how the data was collected. Finally, a description of the treatment and analysis of the data gathered from the study is provided.

Participants

Participants in this study were selected using criterion sampling. The criteria for inclusion in the study required that the student be enrolled in an online or blended course during the Winter 2014 semester. Courses include all fully online or blended courses (blended courses are held in an online setting the majority of the semester). The university sampled was a medium sized institution in which the student population is made up of nearly 60% females and 40% males. The student body is also made up of 90% White students, 7% African-American, 4.2% Latino, 3.4% Asian or Pacific Islander and 1.7% American Indian or Alaskan Native.

There were 2,543 students taking at least one online or blended class in the Winter 2014 semester based on communication with the Department of Institutional Research (Anonymous personal communication, Feb 14th, 2014). Of those students taking online classes, 1,365 were between the ages of 17 and 23 while 1,178 were adult learners, 24 years of age or older (Anonymous personal communication, Feb 14th, 2014).

Instrumentation

After receiving permission from the authors, the researcher developed the instrument used in this study by combining parts of the surveys used by Rodriguez et al. (2008; see Appendix B for permission) and Stephens (2006; see Appendix C for permission). From the Stephens (2006) study, the researcher used a portion of the questions named "Business Computer Self-Efficacy Scale" (p. 41-45). The researcher also used the Rodriguez et al. (2008) study to inform questions that are related to specific

tasks students need to perform in an online learning environment (p. 119). By combining these two portions of the previously administered instruments, the researcher was able to create a survey that covered a wide variety of specific computer tasks required to participate in an online course.

Questions included in the Stephens (2006) survey ask students to identify their confidence in performing basic computer functions such as saving files, organizing folders, opening media, and understanding of basic computer terminology. The instrument included these types of items, as they are essential to be able to participate efficiently in an online course (Stephens, 2006). Rodriguez et al. (2008) focused their questioning on a student's ability to perform specific tasks online. The researcher used these questions and then modified the terminology to include the name of the LMS used at the university as opposed to generic Internet tasks. These questions included asking students about their ability to perform tasks such as finding documents, submitting assignments, and taking quizzes within *Blackboard*. Additionally, this study uses a Likert scale that was modeled after scales used by Stephens (2008) and Rodriguez et al. (2008).

The demographic information collected in the instrument was also based on the work of Rodriguez et al. (2008). Since age was a necessary variable being examined, the researcher elected to ask participants for their age in a question that allows students to select an age range. The ranges used divide students between traditionally aged, 18 to 24 year old students and then a selection of older age ranges for adult learners; these age ranges derive from those used by McCoy (2012). An option for participants who are 17 or under existed as well, although no participants selected this option. The need to

exclude minors from this study came from the lack of IRB approval to research students younger than 18 years old.

The researcher also inquired about the student's gender as done by Rodriguez et al. (2008) and McCoy (2012), although the researcher also included options for "other" and "no answer" unlike the previously conducted studies. The choice to include gender as a demographic question on the instrument was made to increase external validity as it was a common demographic found in previous studies by McCoy and Rodriguez et al.

Data Collection

The data for this study was collected during the winter semester of the 2013/2014 academic year. The instrument was distributed via a link in an email to all students taking an online or blended course (n=2,543). The survey was approved by and was distributed through the Department of Institutional Research.

Before taking the survey, students saw an informed consent statement that informed them of the purpose of the research. Additionally, this preamble includes information pertaining to contacting the researcher, faculty advisor and Human Research Review Committee Chair (i.e., the Institutional Review Board) if any questions arise and also provides details about how the information will be used. This information was provided before participants submitted their answers to the survey and is an adaptation of a script used by the researched institution's Statistical Consulting Center. All survey data was securely stored on *Survey Monkey* using an account that is managed by the Statistical Consulting Center of the researched institution.

Data Analysis

To answer the first and second research questions, the researcher analyzed data pertaining to adult learners' self-efficacy scores with specific tasks that are common in online education. Mean confidence scores were used to describe the self-efficacy of participants. Each task is measured on a Likert scale, which was given numerical values, and the mean score was calculated by adding the participants' responses and dividing by the number of adult learners who responded. Tasks were first grouped by either basic computing tasks or LMS tasks, then ranked in order to show which technology behaviors adult learners are the least confident in performing.

To answer the third research question, a two-way ANOVA was used to determine if adult learners were less confident performing relevant tasks than traditionally aged students when controlled for previously taken online or blended classes. This test revealed whether or not there was a significant difference between the self-efficacy scores of the two groups of students. In this test, the age of the students, either traditional or adult learner, is an explanatory variable, while the number of previous online courses taken is the control variable. Lastly, *Gpower* was used to determine that between 260 and 1600 responses are necessary to produce significant results (Anonymous personal communication, Nov 18th, 2013).

Finally, both the researcher as well as a knowledgeable outside individual analyzed the additional comments submitted by some adult learner participants. These comments were analyzed to determine if they were positive, negative or neutral in regards to the educational technology at the researched institution. An inter-rater

reliability test was used to determine how reliable the analysis was when comparing the two individuals' categorizations of each comment.

Summary

This study uses both descriptive statistics and a two-way ANOVA to illustrate adult learners' self-efficacy scores pertaining to educational technology. Additionally, this study determines if those scores are significantly different from traditionally aged students when controlled for where or not the student had previously taken an online or blended class. An instrument that is adapted from studies performed by Stephens (2006) and Rodriguez et al. (2008) measures students' confidence in performing both basic computing tasks as well as tasks that are performed on a LMS. This instrument was distributed to all students taking online or blended courses in the winter 2014 semester.

Chapter Four: Results

Context

This study collected and analyzed data from students who were taking at least one online or blended class in the winter 2014 semester. Of the 2,543 students who met the criteria, 543 responded to the survey used in this study, a 21% response rate. Of the 543 respondents, 295 or 54% were over 23 years old, which is the criterion used to classify participants as adult learners. This is in contrast to the actual number of adult learners who are taking an online or blended course that same semester at the researched institution, which was 1,178, or 46%. Additionally, 85% of respondents reported as female and only 15% as male. These figures closely resemble the actual numbers that show 77% of students taking an online class that semester as female and only 23% as male.

Findings

The results of this study are presented in three sections. The first section addresses the first two research questions using descriptive statistics to show adult learners' comfort levels on specific tasks. The second section answers the third research question by showing how the confidence levels of traditionally aged college students compare to those of adult learners when controlled for whether or not the students had previously taken an online or blended course. Finally, the third section provides an analysis of responses to the open-ended question in the instrument to provide qualitative meaning and context to the study.

Descriptive Statistics. The first two research questions were determined by analyzing descriptive statistics. The first of those questions is "how confident are adult

learners performing basic computer functions that are commonly needed to participate in online courses (creating documents, transferring and organizing files, etc.)?"

Table 1 illustrates adult learners' frequency for each item classified as a basic computing tasks needed for e-learning.

Table 1: *Response Frequencies (%), Adult Learners Basic Computing Tasks*

Local Task	Not at all confident	Somewhat not Confident	Neutral	Somewhat Confident	Very Confident
Creating documents	0.68	1.36	1.36	7.46	89.15
Properly formatting documents	1.36	4.75	5.08	19.32	69.49
Organizing files on a computer	1.69	3.05	3.73	16.95	74.58
Transferring files between devices	3.05	7.80	5.42	26.44	57.29
Troubleshooting basic computer problems	3.73	10.51	14.24	35.25	36.27
Understanding terminology associated with technology	4.07	14.92	13.9	35.39	31.53

Examining the results from this data set revealed that adult learners who responded to the survey are most confident in using word processing software to create documents. The data confirms that the frequency of adult learners reporting that they are either somewhat or very confident creating documents was 96%. The confidence of adult learners decreases when asked about troubleshooting basic computer problems and understanding computer terminology. For these tasks, 61% and 66% of the respondents were either somewhat confident or very confident respectively. Additionally, the overall confidence score for adult learners performing basic computing functions was 4.28 out of a maximum of 5 as demonstrated in Table 2, which is calculated by adding up the scores of each basic computing task and dividing by the maximum score.

Table 2: *Mean Confidence Scores for Adult Learners*

Task Category	Mean Confidence Score
Basic	4.28
Online	3.925

Findings illustrating the second research question are shown in Table 3. The question this data set pertains to is "how confident are adult learners performing tasks with a learning management system (LMS) that are commonly needed to participate in online courses (turn in assignments, participate in discussion boards, read comments, etc.)?"

Table 3: *Response Frequencies (%), Adult Learners, Learning Management System Tasks*

LMS Task	Not at all confident	Somewhat not Confident	Neutral	Somewhat Confident	Very Confident
Logging into Blackboard	1.02	.34	1.36	4.75	92.54
Locating course documents	2.37	3.39	5.76	24.07	71.86
Participating in discussion board	2.37	3.39	5.76	21.69	66.78
Submitting assignments	1.36	5.42	2.37	29.15	61.69
Checking your grades	1.02	1.36	4.07	17t.29	76.27
Reading instructors comments	2.71	6.78	8.14	32.2	50.17
Email your professor	2.37	6.64	8.47	23.39	59.32
Create and share video content	20.68	26.44	20.0	24.41	8.47
Participate in a collaborative project	11.53	24.41	17.97	30.51	15.59
Using Blackboard Collaborate	11.86	20.0	14.24	28.47	25.42
Using the library's online databases	4.75	6.78	5.42	31.86	51.19

Examining this data set reveals that adult learners who responded are less confident with the less commonly utilized features of *Blackboard*. For example, 32% and

53% of adult learners said they were either somewhat or very confident in creating video content and participating in live online course sessions via *Blackboard Collaborate*, respectively. The lack of confidence in the ability to create and share video reported by adult learners can be corroborated by a qualitative response from one survey participant who said, "Creating and loading videos can be extremely frustrating. An easy to use instruction guide would be very helpful." These findings stand in contrast to the more commonly used features in *Blackboard* such as locating documents and participating in discussion boards, of which adult learners reported 95% and 88% respectively that they were either somewhat or very confident performing. Additionally, as shown in Table 2 the mean confidence for LMS tasks for adult learners is 3.92 out of a maximum of 5.

Analysis of variance (ANOVA). Findings regarding the third research question were determined by using a two-way ANOVA on the data set using *SAS*. The question to be answered in this analysis is "do the confidence levels concerning educational technology tools differ significantly between traditionally aged students and adult learners when controlled for the number of previously taken online or blended courses?"

First, Table 4 shows a comparison between the mean confidence scores of traditional students who have and have not previously taken an online or blended course. This table reveals that there is not a significant difference ($p > .05$) between the mean confidence level of traditional students who have (4.07) and have not (3.92) previously taken an online or blended course.

Table 4: *Confidence Level, Traditional Students Previously Online Experience or Not*

Student	Mean Confidence	P-Value
Traditional: No Online or Blended	3.92	.076
Traditional: Yes Online or Blended	4.07	

Table 5 illustrates a comparison between the mean confidence scores of adult learners who have and have not previously taken an online or blended course. This comparison shows that there is a significant difference ($p < .05$) between the mean confidence scores of adult learners who have (4.23) and have not (3.86) previously taken an online or blended course.

Table 5: *Confidence Level, Adult Learners Previously Online Experience or Not.*

Student	Mean Confidence	P-Value
Adult: No Online or Blended	3.86	.0001
Adult: Yes Online or Blended	4.23	

Beyond comparisons within each age group, the data set was also used to compare traditionally aged students to adult learners when controlled for whether or not the student had previously taken taken online or blended classes. Table 6 shows that there is not a significant difference ($p > .05$) between the mean confidence levels of traditionally aged students and adult learners who have not previously taken an online or blended course.

Table 6: *Confidence Level Traditional Students vs. Adult Learners, No Previous Online Experience*

Student	Mean Confidence	P-Value
Traditional: No Online or Blended	3.92	.55
Adult: No Online or Blended	3.86	

Finally, Table 7 illustrates a comparison between traditionally aged students and adult learners who have previously taken an online or blended course. This analysis showed that there was not a significant difference ($P > .05$) in confidence between these two groups.

Table 7: *Confidence Level Traditional Students vs. Adult Learners, Previous Online Experience*

Student	Mean Confidence	P-Value
Traditional: Yes Online or Blended	4.07	.0764
Adult: Yes Online or Blended	4.23	

Analysis of the additional comments. The final analysis uses an inter-rater reliability test to examine the additional comments the adult learners provided. This portion of the survey was not required and 88 of the 295 adult learner participants chose to respond to the prompt "Please provide any additional comments about your experiences with educational technology." To analyze this data both the researcher and another individual in the field of educational technology read the responses and determined if their connotations were positive, negative, neutral or were not applicable to this study. The results of this analysis are presented in Table 8.

Table 8: *Analysis of the open-ended response questions*

Response Connotation	Researcher	Outside Individual	Inter-Rater Reliability
Positive	29	28	
Negative	37	40	91%
Neutral	8	8	

The results of this analysis reveal that both the researcher and outside individual found that the additional comments provided by the adult learners were mixed. Although results of the analysis did not show that the comments were overwhelmingly positive or negative, both reviewers found that there were more negative comments than positive. The inter-rater reliability of this analysis showed that the researcher and outside reviewer agreed on 91% of the student responses. Examples of positive responses that both the researcher and outside individual agreed on are "I enjoy taking on-line classes. It works out very well with my work schedule and family." and "Love hybrid online courses at (institutions name)." An example of a negative comment found by both raters is, "I am

sometimes frustrated with the time spent learning to use the technology rather than using that time to learn the class content."

Summary

This study used self-reported survey data from 543 students taking an online or blended course in the winter 2014 semester. Based on the data gathered through the survey, adult learners are more confident performing basic computing tasks (mean score=4.28) than LMS tasks (mean score=3.925). Within the basic computing category the data reveals that adult learners are least confident when troubleshooting basic computer problems and understanding computer terminology. From the list of LMS tasks, adult learners are least comfortable performing the less commonly used features such as creating and sharing video content as well as participating in live class sessions via *Blackboard Collaborate*.

A two-way ANOVA was utilized to compare the mean confidence scores between students of the same age group who have and have not previously taken an online class. Additionally this same comparison was done between age groups when controlling for whether or not the student had previously taken online or blended courses. This analysis demonstrates that there is not a significant difference between traditionally aged students who have and have not previously taken an online or blended course, but there was a significant difference between adult learners who have taken a previous online course and those who had not. Additionally, this analysis reveals that there was not a significant difference between the mean confidence levels of traditionally aged students and adult learners when controlled for whether or not the students had previously taken an online or blended course. Finally, an analysis of the additional comments provided by the adult

learners showed that there were slightly more responses that were negative than were positive.

Chapter Five: Conclusion

Summary of the Study

Adult learners are returning to institutions of higher education realizing that the classroom has changed drastically since they had previously attended college. The growth of e-learning in higher education presents new challenges for adult learners. To ensure students of all ages are comfortable performing the tasks needed to learn in an online environment, institutions have created orientations and tutorial materials, though these materials are often not made specifically with the needs of adult learners in mind (Hagle et al., 2009). The lack of tutorials and orientations that take into account the unique attributes of adult learners may have led to this group of students being less confident with technology (Cho, 2012; Rodriguez et al., 2008). These lower self-efficacy scores that are found with adult learners have had a negative effect on their experiences with e-learning as these less confident older students have been shown to have lower retention and satisfaction rates in online courses (Allen & Seaman, 2013; Beaghan, 2013).

The need for orientation and tutorial materials that are specifically designed with adult learners in mind is adapted from part of Knowles (1980) theory of andragogy that states as a student ages they become more of an independent learner who is motivated by the immediate application of the content they are learning. Cho (2012) and McCoy (2010) acknowledge that current tutorials and orientation materials do not take into consideration adult learners' preferences for a more independent learning environment. Additionally, Cho also says that the contents of tutorials are not always based on research.

The results of this study are intended to help universities to create tutorials and orientation materials for online and blended courses that are based in research and take into consideration the unique characteristics of adult learners. To accomplish this goal this study used the following three research questions:

1. How confidant are adult learners performing basic computer functions that are commonly needed to participate in online courses (creating documents, transferring and organizing files, etc.)?
2. How confident are adult learners performing tasks with a learning management system (LMS) that are commonly needed to participate in online courses (turn in assignments, participate in discussion boards, read comments, etc.)?
3. Do the confidence levels concerning educational technology tools differ significantly between traditionally and non-traditionally aged students when controlled for the number of previously taken online or blended courses?

In order to answer these questions, a cross sectional quantitative study was developed and implemented during the winter 2014 semester. The instrument used to gather data for this study was formed by combining questions used by Stephens (2006) and Rodriguez et al. (2008). These questions asked students to rate how confident they are performing both basic computing and learning management system tasks on a Likert scale. The data that was gathered from this study was then analyzed using both a two-way ANOVA and descriptive statistics.

Findings from this study demonstrate that adult learners were the least confident performing basic computing tasks such as troubleshooting computer problems and understanding computer terminology. In terms of the LMS tasks, the adult learners

surveyed were least confident performing tasks such as creating video content and participating in live online course sessions via *Blackboard Collaborate*.

Finally, the analysis of variance demonstrated that there was not a significant difference between the self-efficacy scores of traditionally aged students and adult learners when controlled whether the student had previously taken an online or blended course. When comparing the two age groups to each other there was not a significant difference in the confidence levels of traditionally aged students who have and have not previously taken an online or blended course. Although between the two groups of students there was not a significant difference in the self-efficacy scores, within the adult learner group there was a significant difference in the confidence scores when comparing adult learners who have and have not previously taken an online or blended course.

Conclusions

The purpose of this study was to determine what technology tasks adult learners are least confident with in an e-learning environment. This study also serves to further compare the confidence levels of traditionally aged students with adult learners as previously done by McCoy (2010) and Rodriguez et al. (2008). Furthermore, this thesis also responds to the call made by Cho (2012) to research adult learners' self-efficacy in order to create more accurate tutorials and orientations for students entering online courses.

Regarding the first research question, a majority of the adult learners responded that they were very confident performing four of the six tasks surveyed. While this data does show that a majority of students are confident performing the basic computing tasks,

there were still students who said that they were not comfortable performing each of the tasks needed to participate in an online or blended course.

The second question reveals that adult learners performing tasks in the LMS are more divided in terms of their confidence. While 50% of adult learners participants performed seven of the ten LMS tasks very confidently, many of these tasks showed large percentages of students performing certain tasks less confidently. For example, 29% of students responded that they were only somewhat confident in their ability to turn in an assignment using the LMS. Additionally, 20% of adult learners said they were not confident at all in their ability to create and share video content.

Finally, the third research question was addressed by executing a two-way ANOVA to analyze the difference in confidence levels between the traditionally aged students and adult learners. This analysis revealed that, for traditionally aged students, there was not a significant difference in the students' self-efficacy when comparing students who had previously taken an online or blended course to those who had not. However, adult learners' responses did show a significant difference when comparing those students who had previously taken an online or blended course and those students who had not.

Additional analysis compared the traditionally aged students confidence levels to that of the adult learners. For students who had not previously had an e-learning experience, the traditionally aged students were shown to be more confident performing the tasks surveyed. Although the younger group of students were more confident, the gap between the confidence scores of the two groups was not statistically significant. Finally, when comparing the traditionally aged students and adult learners who had previously

taken an online or blended course, the adult learners were found to be more confident, although the gap in self-efficacy scores was not statistically significant.

Discussion

Results from this study illustrate the fourth assumption made in Knowles' (1980) theory of andragogy**.** Knowles states in this portion of his theory that adult learners readiness to learn is based on the immediacy in which they will need to apply the content they are being presented. The results of this study pertaining to research question three found that only the adult learner group showed a significant difference in confidence scores between those who had and had not previously taken an online or blended course. These results imply that the adult learners showed significant gains in their confidence scores due to their immediate need to be able to perform these tasks.

When comparing the results of this study concerning research question three to other studies done by McCoy (2010) and Rodriguez et al. (2008) these results, while not statistically significant, align with the previous research. More specifically, the study done by Rodriguez et al. with a sample size similar to this study found that there was a weak correlation between a student's age and his or her confidence with technology. McCoy's study, which had a much smaller sample size, found that there was a significant correlation between a student's age and his or her confidence with technology.

While the analysis of the additional comments left by the adult learners showed that there were more negative comments than positive, many of the positive comments demonstrated similarities to the conclusions made by Beaghan's (2013) qualitative study. Beaghan found that adult learns had positive feelings towards online learning due to the convenience it offers. For example, two responses that correspond with his findings are:

"I like that I do not have to drive to the campus to take classes. Saves time to be spent with my family" and "I enjoy the convenience of online and hybrid classes." These responses correspond with Beagham's conclusions that adult learners appreciate that online learning allows them more time to spend with their families. Beyond the similarities to Beagham's study, these responses also connect to Knowles (1980) third assumption of adult learners: as students get older their preferences for how they learn is directly related to their social role.

Finally, this study responded to the call made by Cho (2010) to research the content that is included in online and blended course tutorials and orientations. The results of this study related to adult learners' confidence levels with specific tasks have educational implications as they allow for institutions to more accurately create tutorials and orientations for adult learners who are entering an e-learning environment. Although the content of the materials were not based on research in both Hagle et al. (2009) and Cho's (2010) studies, they did show the impact that tutorials and orientations can have on students in online courses.

Recommendations for Practice

This study provides implications for both educational practice as well as future research on the subject of adult learners in e-learning environments. Since adult learners were shown to be least confident with more advanced, less commonly used features of the LMS and also most confident after taking an online or blended course, a few conclusions can be drawn.

First, instructors may be less likely to ask students to perform the more advanced features out of an incorrect perception that they would not be able to use a particular tool

(Meyer & McNeal, 2011). Results from this study suggest that adult learners become more comfortable after having experience performing those tasks. Therefore, instructors who integrate more advanced features into online and blended courses may help students become more confident with these tools.

Secondly, the significant gains of confidence in adult learners after taking an online or blended course suggests that the ways in which either the course instructor or IT staff created tutorials used in some online courses at the institution are teaching students to use a given feature is effective. Additionally, gains in confidence may also be due to the types of strategies and activities implemented in online instruction. By using similar methods of instruction to teach adult learners about the more advanced features of the LMS, students may show improvements in confidence performing those tasks.

Finally, beyond what can be done during an online course, the results of this study also suggest that experience in general has a positive impact on adult learners' confidence. Pre-course orientations or other prerequisite technology courses similar to the types of classes in Hagle et al. (2009) and Gupta's (2006) studies would likely raise the adult learners confidence with technology before entering the e-learning environment.

Recommendations for Further Research

To further research the topic of adult learners self-efficacy in online and blended courses, future research could be improved by addressing some of the limitations that existed in this study. First, assessing adult learners abilities to perform tasks as opposed to asking for self-reported confidence levels will create more meaningful research.

Future research would benefit from having a wider variety of participant ages. With a large number of adult learners from different age groups, future research could

further explain how age impacts older students' self-efficacy using technology. Additionally, this survey did not ask the students to identify their income or other factors that could impact their access to technology at their home. These factors have been shown to impact students' confidence with technology (Livingstone & Helsper, 2007).

Finally, further research on this topic would benefit from a longitudinal design, as instructional technologies are developing at an increasing rate. Surveying the same students at the conclusion of their first online experience might provide more informative data. If future research employed a more longitudinal approach, it could answer some of the presently unanswered questions regarding how the advancement of technology impacts adult learners in e-learning environments.

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Appendix A

Institutional Analysis Permission

GRAND VALLEY STATE UNIVERSITY
www.gvsu.edu

November 5, 2013

Justin Melick
Dept. of Special Education, Foundations, and Technology
Grand Valley State University

Justin,

I will provide means for email communication for the following research project:

Educational Technology Confidence
Principal GVSU investigator(s) – Justin Melick
Invitee population – All students enrolled in online or hybrid GVSU classes in the Fall 2013 or Winter 2014 semesters, unduplicated (N = about 4,000)
Nature and timing of contact – One invitation message per invitee, sent via email during the first term of enrollment in a qualifying course. Up to one reminder message sent one or two weeks after the initial invitation. Content of messages must be exactly as approved by HRRC.

The e-mail addresses will not be released directly to you, but will be used to distribute your messages from a GVSU mail server.

This use of the data is in compliance with both FERPA and GVSU policies.

Philip Batty
Director, Office of Institutional Analysis

Appendix B

Rodriguez, Ooms and Montanez Permission

Justin Melick <melickju@mail.gvsu.edu>

Technology Self-Efficacy Survey

Michael C. Rodriguez <mcrdz@umn.edu> Wed, Nov 6, 2013 at 11:11 AM
To: Justin Melick <melickju@mail.gvsu.edu>
Cc: ann.ooms@gmail.com, marcel@nmsu.edu

Justin, feel free to use any of the questions you find helpful. The tool we used was for research purposes and is not copywritten. Use this email as full permission to use the items for your research. We hope it goes well.

Michael

Michael C. Rodriguez PhD
Campbell Leadership Chair in Education and Human Development
Quantitative Methods in Education, Educational Psychology
250 Education Sciences, 56 East River Road
Minneapolis, MN 55455
[Quoted text hidden]

Appendix C

Stephens Permissions

Justin Melick <melickju@mail.gvsu.edu>

Technology Self-Efficacy Survey

Paul Stephens <prs@fsmail.bradley.edu> Wed, Nov 13, 2013 at 12:03 PM
To: Justin Melick <melickju@mail.gvsu.edu>

Justin,

Of course, feel free to use any questions you think would be appropriate to your study. I would like to see the results of your work. So, if you can share your finished product at the end of your thesis process, I would appreciate that. Good luck.

Paul
[Quoted text hidden]

Appendix D

Raw Survey Results

Educational Technology Confidence

SurveyMonkey

1. How confident are you performing the following tasks?

	Not at all confident	Somewhat not confident	Neutral	Somewhat confident	Very confident	Rating Count
Logging into the course Blackboard site	0.5% (3)	0.4% (2)	1.1% (6)	3.3% (18)	**94.7% (522)**	551
Locating course documents on Blackboard	0.7% (4)	0.4% (2)	1.6% (9)	21.2% (117)	**76.0% (419)**	551
Participating in courses discussion board on Blackboard	2.2% (12)	4.9% (27)	8.0% (44)	27.9% (154)	**57.0% (314)**	551
Submitting assignments via Blackboard	1.1% (6)	4.5% (25)	2.9% (16)	30.5% (168)	**61.0% (336)**	551
Checking your grades in Blackboard	0.5% (3)	1.6% (9)	3.4% (19)	17.2% (95)	**77.1% (425)**	551
Reading instructors comments on graded assignments on Blackboard	2.0% (11)	8.9% (49)	10.2% (56)	32.8% (181)	**46.1% (254)**	551
Email your professor or classmates using Blackboard	2.0% (11)	8.3% (46)	9.8% (54)	22.3% (123)	**57.5% (317)**	551
Create and share video content with your classmates using Blackboard	25.6% (141)	**29.0% (160)**	20.3% (112)	17.4% (96)	7.6% (42)	551
Participate in a collaborative project using Blackboard	15.1% (83)	**26.0% (143)**	20.1% (111)	24.9% (137)	14.0% (77)	551

Participate in an online course session via Blackboard collaborate	14.0% (77)	18.5% (102)	19.1% (105)	**26.5% (146)**	22.0% (121)	551
Use the library's online databases to search for scholarly articles	3.4% (19)	7.6% (42)	5.6% (31)	31.2% (172)	**52.1% (287)**	551
					answered question	**551**
					skipped question	**0**

2. How confident are you performing the following tasks?

	Not at all confident	Somewhat not confident	Neutral	Somewhat confident	Very confident	Rating Count
Creating documents using word processing software	0.4% (2)	0.9% (5)	2.0% (11)	8.3% (45)	**88.4% (482)**	545
Properly formatting documents using word processing software	1.7% (9)	2.9% (16)	5.3% (29)	22.0% (120)	**68.1% (371)**	545
Organizing files on a computer	1.3% (7)	2.8% (15)	4.0% (22)	17.6% (96)	**74.3% (405)**	545
Transferring files between computing devices	3.7% (20)	10.1% (55)	7.3% (40)	24.4% (133)	**54.5% (297)**	545
Troubleshooting basic computer problems	7.0% (38)	14.9% (81)	12.8% (70)	**33.6% (183)**	31.7% (173)	545
Understanding and using the terminology associated with computers and technology	7.2% (39)	17.4% (95)	16.3% (89)	**30.5% (166)**	28.6% (156)	545
					answered question	**545**
					skipped question	**6**

3. Please provide any additional comments about your experiences with educational technology.

	Response Count
	139
answered question	**139**
skipped question	**412**

4. What is your age?

	Response Percent	Response Count
17 and under	0.0%	0
18-23	**45.7%**	**248**
24-34	38.7%	210
35-45	9.6%	52
46 and over	6.1%	33
answered question		**543**
skipped question		**8**

5. What is your gender?

	Response Percent	Response Count
Male	14.9%	81
Female	**84.9%**	**461**
No Answer	0.2%	1
	Other (please specify)	0
	answered question	**543**
	skipped question	**8**

6. Number of Previous Online/Hybrid Courses

	Response Percent	Response Count
0	22.7%	123
1	24.7%	134
2	14.5%	79
3	8.8%	48
4+	**29.3%**	**159**
	answered question	**543**
	skipped question	**8**

Appendix E

Traditional Student's Open Ended Question Responses

Traditional Students Short Answer Responses

"Do you have any additional comments about educational technology?"

1. Because of CIS 150 my computer confidence has been given a huge boost. I have never done a project through blackboard.
2. My online class is implemented through Edmodo.
3. I've had some really good and really bad professors. Some are great teachers and know how to teach online but some just throw everything in with a month left of class when we have not been doing anything for two months.
4. I have taken an introduction with computers class
5. This is my first online class at GVSU, and so far, so good. The professor can be a little demanding, but as far as submitting assignments and web chatting, I am very confident I can succeed in this course.
6. I like online classes for classes that don't involve much theory and more just information easy to understand.
7. As long as the prof is helpful and explains well, there's no problem. Otherwise, makes class difficult
8. Blackboard's new style for viewing grades is horrible. It's confusing and I can never tell which class I am looking at. They also take way too long to remove old courses.
9. It is sometimes difficult to complete online course materials because blackboard sometimes isn't working properly. Otherwise, most components of the online course is fairly straight forward.
10. This is my first online course and so far I am not impressed and would prefer just to have a traditional class. The links to online lectures are not reliable and I at times have be unable to gain access and had to complete assignments without previously
11. My biggest problem is the professors not knowing what they are doing. They end up doing things in a way that is not the fastest possible and becomes confusing at times.
12. I find that when everything is running properly, most things are easy to use. However, when there is a glitch in the technology or software or whatever, it creates confusion, and a lot of frustration.
13. I find with educational technology that I am frustrated more often as a result of technical difficulties that occur more often than not.
14. It can be the best thing or the worst thing!
15. If something goes wrong with my computer I am pretty helpless. I'm pretty good about following instructor's directions and figuring blackboard and e-mails and such on my own. My biggest worry about online classes is the loss of internet connection and not physically knowing something is turned in.
16. CIS 150 boosted my "computer confidence" in a huge way, I went from being computer illiterate to being the nerd who everyone asks questions.

17. Collaborate doesn't work on updated macs with JAVA 7 and IT doesn't know how to get it back to JAVA 6 which is frustrating because all of my lectures are on collaborate for my hybrid class. The online class was supposed to be more convenient and has turned into being stressful. I am not the only one with this problem. I understand no one can fix it but then alternatives need to be provided to mac users.
18. If directions are not clear, it is harder for students to understand what is needed from them because their is not that person-person interaction.
19. It's only hard to access documents on Bb when professors have terrible organization skills.
20. I have had several classes at Grand Valley that took time to properly explain and educate us on using educational technology to our advantage
21. I have not really used the Blackboard virtual office hours. Some teachers have offered it, but I am more comfortable with email. Honestly, I just haven't attempted it.
22. I haven't taken any sort of computer or technology class since middle school so I am a lot less confident with computers than I should be. It is pretty easy however to find whatever information I need on the Internet so I know enough to get by.
23. I personally do enjoy educational technology because I feel that it improves the classroom and communication between the student and instructor.
24. The only thing I do not like is when the software changes its appearance. Blackboard was very different last year, and it took some getting used to because of this difference.
25. I don't like Blackboard. I wish there was something more simple and user friendly. There is a lot of unnecessary stuff on there.
26. Took a computer applications class in high school.
27. This is my first time doing a class that is all online but I have had classes where certain aspects of it were mainly online learning and participation.
28. I have had a positive experience and I love educational technology.
29. I enjoy online courses and assignments because you receive your grade instantaneously.
30. I have taken CIS 150
31. A class was required for high school, and the CIS 150(don't remember the number but it was the entry level course), which I learned most of what I know. Other than that it was basic things on Word and Excel.
32. It is very convenient
33. Having both Macs and PCs at the library is helpful because I am not familiar with Macs as much as I am for PCs
34. Educational technology definitely increases the amount of work that can be accomplished and allows for work to be completed faster. Some find difficulties with online documents and posting assignments, but it gets easier the more you do it.
35. SPSS for stats is awful to understand. I wish I had more practice with excel.

36. So far I am completely lost. I have never taken an online course and I'm nervous that I am going to miss a deadline or something wont work on the computer and I have no way of asking because everything is online
37. A lot of times exams or things posted are incorrect due to professor error and their inability to do so, or their lack of blackboard training. Not the students
38. I have not yet had any experiences with educational technology.
39. I have used sites like Blackboard before at GVSU for assignments and looking at grades. Overall I think that Blackboard and the like are very helpful and easy to use.
40. I am confident taking courses that require me to post and reply to comments on Blackboard's discussion board or take quizzes online. However, I have had not experience collaborating on group projects via Blackboard.
41. I did my undergrad at NMU, where they used EduCat instead of Blackboard. Getting used to the different software is sometimes difficult.
42. Not a fan. The best learning happens in the classroom
43. Blackboard is for the most part very user friendly in my opinion. There have been issues before, but the tech assistance has always been able to resolve them.
44. Went to a K-12 apple associated school
45. I've for the most part had positive experiences with hybrid online classes and would defiantly recommend them to other students!

Appendix F

Adult Learners Open Ended Question Responses

Adult Learners Short Answer Responses

"Do you have any additional comments about educational technology?"

1. As an older student I wish that there was a course just on computers and educational tech.
2. It's definitely an experience you need to take time out of your day to really focus on how to browse and work the online courses.
3. Technology is exciting and I am always ready to learn new ways to use it in furthering my education.
4. I teach in a 1-1 school.
5. There are so many instructions and devices tucked away in so many areas on the page. I do not always find them because there is usually too much information on the page.
6. It is a good place for students to post assignments and submit work. It is also a great place to access class resources. However, I have not seen it used effectively to stimulate a typed dialog among students.
7. Pretty easy to manage. User Interfaces seem appropriate in most cases.
8. The one function I do not like in Bb is e-mailing those in my assigned group. Responders are not able to respond to all and it makes group communication difficult. Our group has decided to use Outlook with our preferred e-mail accounts.
9. Black board seems too busy. I am sure I'll gain more confidence the more I use it. I do not understand why we don't just use the Google platform (as it appears that it can do anything that blackboard can).
10. As a student that hasn't taken classes in over 15 years it was very difficult to understand blackboard when I first got back. It should be recommended that a course be taken for blackboard before enrolling in classes.
11. I have not had to use much technology beyond word processing until recently. I always feel anxious when doing something (such as using Blackboard collaborate) for the first time, but it quickly becomes familiar. I have been pleased with the quality of GVSU.
12. Creating and loading videos can be extremely frustrating. An easy to use instruction guide would be very helpful.
13. I like that I do not have to drive to the campus to take classes. Saves time to be spent with my family.
14. I feel Blackboard is effective but professors need to make sure their documents are all working so the unfamiliar Blackboard user isn't overly confused.
15. Last semester was the first time I took an online class in at least 5 years. I had a lot of trouble using blackboard and submitting assignments via Google doc. eventually due to computer frustration I dropped one of my classes. I even contacted the help desk.
16. I am sometimes frustrated with the time spent learning to use the technology rather than using that time to learn the class content.

17. Limited. However, I have now taken 6 online classes, so my confidence is improving. It would be helpful to have more instruction on how to use blackboard and other educational technology tools before classes begin.
18. It seems to me one of the biggest challenges is adapting to how each professor organizes their course blackboard page. The professors with great experience and confidence using these items do this well.
19. My somewhat not responses are due to the fact that I have not needed to complete those types of tasks. However, I am confident that if I needed to complete tasks in that format I would be able to figure it out.
20. It has been a learning process. I have had minimal experiences with technology prior to online courses and these experiences were on Apple products.
21. I am part of my schools tech team.
22. The items I am not confident in are selected because I haven't attempted to do these tasks yet. Usually I can figure these things out on my own, then I know what I am doing.
23. I like hybrid courses.
24. A large part of how well I am able to use blackboard depends on how well my teacher is able to use blackboard. Typically, when I am unable to find things or are frustrated, it is because of poor organization by the teacher.
25. Online classes are good, however I fell like they require a major amount of busy work in order to do well!
26. Good luck with your research! I think it's very valuable in analyzing instructional delivery options.
27. I feel that I am pretty competent in educational technology as I keep up with what's new through professional development. I also consider myself to be tech savvy. I use the computer/ tablets in my classroom as well.
28. Love it!
29. I don't prefer online courses; I like to use technology as a tool to assist not be the only method of my education. I prefer an in person class as I feel I learn more working with the professor and other students.
30. I teach online classes to middle school students. :) K-12 grade online.
31. I think tools such as Google docs are easier to manage and let all the members of a group participate at the same time. Also, blackboard has everything clustered and it makes it feel like is harder to manage it.
32. I enjoy the convenience of online and hybrid classes but find them to be very boring due to the lack of face-to-face contact with peers and instructors. And, the repetitive Discussion Board postings and written paper assignments that are usually the bulk.
33. The current reliance on technology in education adds a level of stress to my life as a student that didn't exist in my earlier educational experiences.
34. I learned Moodle while at NMC in Traverse City. This is my first class with Blackboard, and I'm working through the tutorial, but am also using actively for class. Will be learning as I go.
35. The help menu can be your best friend!

36. The new technology available such as Wiki and Prezi, welcomed as using but not directions on how to utilize these for 'older' students who did not grow up with these
37. The biggest issue is developing familiarity and communication especially in unfamiliar modalities. That is, the most difficult part even knows where to start if the process is foreign.
38. Most of the issues I'm not confident with is because I have not had the opportunity to use them. Same holds true with MS Office I can muddle my way through, but I have never needed to use these in my everyday work, so excel and PowerPoint are very foreign.
39. I have taken more than one course online and I prefer online courses to the traditional classroom setting.
40. I am a visually impaired off campus student and I feel I have never been so far out of the loop with technology as I am at GVSU. I have been to WMU, NMC and Spring Arbor and have never been as lost as I am at GVSU.
41. I don't like how GVSU has arranged their website and don't feel it's very user-friendly. After not having taken a class in awhile, I find it hard to remember how to navigate around.
42. This semester I will be taking my 6th online or hybrid class.
43. How well you are able to navigate on blackboard depends on how the teacher sets it up.
44. This is my first online course and my first graduate course. I am fearful that something will slip through the cracks unbeknownst to me and impact my grade and/or credibility.
45. My first GVSU class was a hybrid course and my professor gave us no overview on Blackboard. To say the least, I was totally lost. I had to learn Bb on my own and troubleshoot as I went on in the course. I really struggled in the beginning because I didn't.
46. There needs to be more PD on the topic for teachers that are trying to incorporate it into their classes.
47. I am a DNP student and appreciate the hybrid courses. I also sincerely appreciate on line access to library services - awesome resource!!
48. I teach high school and my school has a 1:1 ratio with students and iPads. I'm comfortable using them. I use Moodle at my school for my students.
49. Through my Assistive Technology course I feel a lot more confident in using different media sources. I have also learned some new technology terminology.
50. I received by first bachelor degree 10 years previous to returning to school to seek a second degree. Blackboard was new to me, but has become very comfortable. A great addition to learning makes communication so much easier.
51. I have completed other educational tech course at GVSU, that makes me more confidant about ed-tech.
52. In today's society it's extremely important to feel comfortable with technology or at least have the confidence that you can figure out a problem using prior knowledge.
53. Scared as hell to take an online class

54. The experience for students in educational technology is really based on how accessible faculty make it. Sometimes it is hard to find documents because they are in odd places on blackboard. Some of the items you asked me to rank were not used in my course.
55. I have found the professors who teach online courses very helpful with any questions or problems that arise concerning use of computer technology.
56. I enjoy taking on-line classes. It works out very well with my work schedule and family.
57. Limited BB instruction. All that I know has been self-taught or trial and error.
58. I have been participating as an online student for approximately 5 years now. I find it very easy.
59. Blackboard is not the most user-friendly, but with some guidance and instruction, easy to learn how to use.
60. Love hybrid online courses at GVSU.
61. I've always enjoyed my online classes. They are interesting, and it is easy to complete work according to my schedule. Often times the orientation information for online classes seems designed for people with no computer experience and is a waste of time.
62. Sometimes teachers do not set up Blackboard classes logically, but most are fine and the system is easy enough to use.
63. Processing my requests for help is extremely slow if at all. Professor response is very unconcerned. Request for information is responded to inadequately and if I don't understand I am made to feel like an idiot. In comparison to my previous university
64. I use a website to communicate with my students and their parents on a daily basis and I regularly integrate videos and other digital media into my classroom.
65. I have not had a ton of experience with educational technology; however I am very confident that I am able to use any and all features during the learning process.
66. It is just assumed that everyone knows how to use Blackboard, and it's not really fair. I have had to just 'figure out' how to do most of the things I need to do.
67. I am nervous about video components of my online course. I am also nervous about creating a Wiki during this course but hope to find a good partner who can explain it to me a bit better.
68. I personally do not like having to take an online or hybrid course, it is counter to my learning style. I have difficulty reading long passages while on the computer and must print them off for comprehension.
69. I believe that online courses should be open and available a week earlier than on campus courses in order to give users adequate time to adjust and understand the new platform. Sometimes, depending on the prof, navigation of all the material just to get used to the layout.
70. I would put myself in the middle between fluent and novice with HTML and CSS3, I can use PC and Mac easily, I keep up with current technology.

71. Meeting deadlines is more challenging because it's easy to forget about the class.
72. The one issue I see is that the technical abilities of the professors vary and this variation results in various "usages" of blackboard.
73. It would be very helpful if there was a minimum standard of input a professor needs to meet. An example would be posting grades for each assignment within 1 week. This would apply to online and offline courses.
74. What is frustrating is when the professor of the online class does not set up enough space for students submit assignments and you get an error message. Then the help desk tells you to get with the professor about the space, when I feel the Bb Help Desk should have fixed the problem.
75. I am very comfortable with tech. Just have not used all the blackboard features yet
76. The Hybrid Occupational Therapy program has excellent online set-up and is easy to understand and utilize.
77. I have difficulty when switching from mac to pc. Also, several professors use various forms of technology to teach; it is not standardized between faculty. Frustrating!
78. Although I love computers and technology, I prefer going to a real, live class and interacting with a professor and classmates. But sometimes that just doesn't work out, so I'm glad online courses are an option.
79. I have always been interested in tech (consumer electronics, internet, smartphones, etc) and try to stay up to date and incorporate what I can in my classroom as a teacher.
80. Working on a computer all day every day makes it easy to navigate through most issues and programs.
81. At times course documents can be difficult to find, depending on the professor. In some classes as much as 20% of the time is spent trying to understand what is required/expected.
82. Some courses are set up different of BB than others. This is confusing. The discussion section needs a lot of work. You shouldn't have to jump through so many hoops to partake in and keep track of a discussion. Why do instructors not link readings directly?
83. It can be very interesting if the material is of quality.
84. I believe if instructors exposed students to collaborate on BB even at a minimal level (explore it for yourself and write a summary on it) would help students feel more comfortable using it.
85. I have had a wonderful experience with educational technology. I am a hybrid student, so majority of my work is done on the computer. The GVSU professors have laid out the blackboard site very well, making it very easy to navigate.
86. I think it's a very useful tool if one has access to the Internet such as foreign language education.

87. As long as the instructor provides well-laid and detailed instructions on BB for an online course. There is no reason for one to struggle with an online course. Access to 'real-time' help relating to BB issues would be an added advantage.
88. I’m very technologically illiterate.

Appendix G

HRRC Approved Protocol Letter

GRAND VALLEY STATE UNIVERSITY
www.gvsu.edu

DATE:	December 5, 2013
TO:	Justin Melick
FROM:	Grand Valley State University Human Research Review Committee
STUDY TITLE:	[539568-1] The Generational Digital Divide: Understanding Adult Learners Self-Efficacy in Online Education
REFERENCE #:	14-099-H
SUBMISSION TYPE:	New Project
ACTION:	EXEMPT
EFFECTIVE DATE:	December 5, 2013
REVIEW TYPE:	Exempt Review

Thank you for your submission of materials for your planned research study. It has been determined that this project: *IS COVERED* human subjects research* according to current federal regulations and MEETS eligibility for exempt determination under category 45 CFR 46.101(b)(2).

Exempt protocols do not require formal approval, renewal or closure by the HRRC. Any revision to exempt research that alters the risk/benefit ratio or affects eligibility for exempt review must be submitted to the HRRC using the *Change in Approved Protocol* form before changes are implemented.

Any research-related problem or event resulting in a fatality or hospitalization requires immediate notification to the Human Research Review Committee Chair, Dr. Paul J. Reitemeier, 616-331-3417 **AND** Human Research Protections Administrator, Mr. Jon Jellema, in the Office of the Provost, 616-331-2400. See *HRRC policy 1020, Unanticipated problems and adverse events.*

Exempt research studies are eligible for audits.

If you have any questions, please contact the Research Protections Program, Monday through Thursday, at (616) 331-3197 or rpp@gvsu.edu. The office observes all university holidays, and does not process applications during exam week or between academic terms. Please include your study title and reference number in all correspondence with our office.

*Research is a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge (45 CFR 46.102 (d)).

GRAND VALLEY STATE UNIVERSITY
ED 693/695 Data Form

NAME: Justin Melick

MAJOR: (Choose only 1)

____ Adult & Higher Education	____ Educational Differentiation	____ Library Media
____ Advanced Content Specialization	____ Education Leadership	____ Middle Level Education
____ Cognitive Impairment	__x__ Educational Technology	____ Reading
____ College Student Affairs Leadership	____ Elementary Education	____ School Counseling
____ Early Childhood Education	____ Emotional Impairment	____ Secondary Level Education
____ Early Childhood Developmental Delay	____ Learning Disabilities	____ Special Education Administration
____ TESOL		

TITLE: The Generational Digital Divide: Understanding Adult Learners' Self-Efficacy in Online Education

PAPER TYPE: (Choose only 1)

____ Project

__x__ Thesis

SEM/YR COMPLETED: Spring/Summer 2014

SUPERVISOR'S SIGNATURE OF APPROVAL 

Using key words or phrases choose several ERIC descriptors (5 - 7 minimum) to describe the contents of your project. ERIC descriptors can be found online at: http://www.eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&_pageLabel=Thesaurus&_nfls=false

1. Educational Technology
2. Adult Learners
3. Technology Self-Efficacy
4. E-learning
5. Online courses
6.
7.
8.