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The Elderly And Technology: Bridging The Digital Divide?

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The Elderly and Technology: Bridging the Digital Divide?

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Biographical Sketch

Harriett Hairston was born on September 20, 1959 in Martinsville, Virginia. Hairston's undergraduate pursuits include a Diploma in Paralegal Studies awarded in 1993 from Patrick County Community College (PHCC) in Martinsville, Virginia and a Bachelor of Science in Legal and Social Sciences earned in 1998 at Greensboro College in Greensboro, North Carolina.

In 2006, Hairston applied and was accepted at North Carolina A&T State University Graduate School and began working on a Master of Science in Adult Education which was successfully completed in 2008. She is now a candidate for a Master's of Science in Instructional Technology.

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List of Abbreviations

ABBREVIATION		TERM
EBB	-	Early Baby Boomers
ES	-	Early Silenters
GEN X	-	Generation X'er
IRB	-	Institutional Review Board
LBB	-	Late Baby Boomers
LS	-	Late Silenters
MS	-	Middle Silenters

Abstract

The increased dependence on technology has created a digital world that can be described as "foreign" to digital immigrants; those who are not familiar with technology. Unfortunately, the main of digital immigrants are members of the older population, often described as elderly and seniors, who have a tendency to shun new technologies. One of the aims of this thesis and purpose of the survey research was to ascertain whether or not popular assumptions as to physical and mental factors that contribute to the lack of use and/or interest in new technologies are warranted and bring to light factors that seniors identify as impeding their use of computers and use of the internet.

A population sample of 50 seniors residing in cities and counties surrounding Greensboro, Guilford County, 50 years and older completed a survey that listed statements and activities regarding attitudes, preferences, opinions, experience and/or non-experience of technology. The attitudinal data was analyzed using descriptive statistics and the results coincided with previous studies findings and opened other areas for continued research. One definite determination is made that although the majority of survey participants have a desire to learn technology and feel that they are physically and mentally capable of learning and using new technologies, such as a computer or the internet; that desire to learn, gathered from the respondents' attitudinal responses, suggest that a main factor impending use is lack of self-confidence to go through with that desire.

CHAPTER 1

Introduction

Increased Dependence on Technology

It seems that each year the dependence on technology in the form of computers, cell phones, the internet and other electronic gadgets increases. Physical and mental limitations and special needs that come along with age, such as weakened eye sight, hearing loss, reduced mobility, arthritic hands, print-disabilities, (Reading Rights Coalition, 2010) and decreased memory capacity should not socially isolate anyone. Not having access or being able to use or take advantage of new technologies can be isolating, just as social and environmental factors that create the divide or gap.

The International Telecommunication Union (ITU), a global agency founded by the United Nations that has the weighty responsibility of global regulation of information and communication technology, is concerned that all citizens are provided the technological tools needed to survive in this digital age, even the elderly. During an oral interview at the Organisation for Economic Cooperation & Development (OECD) Ministerial Meeting on the Future of the Internet, Secretary General Hamadoun I. Toure, of the ITU responded to the question, "What is your greatest hope for the internet?" by stating:

> The internet be the tool for democracy for citizen's freedom and for citizens to access information. . . My dream is to see all citizens of the world contributing in their civilizations because society has entered into a knowledge society . . . and everyone should have a fundamental right to access information. . . to use. . . not enough just to access, also create information, share information. . . every citizen contribute to the most important tool in all walks of life today (Toure, 2008).

The concept of each contributing or sharing of information is the vision of one of the most used online encyclopedias, Wikipedia. Its vision and commitment is that every single human being can share in contributing to the sum of all knowledge. This concept seems to work because there are millions of articles that include ten languages. It seems Wikipedia has become the largest and most popular general reference on the internet (Terms of Use, Wikimedia Foundation, 2009).

The success of Wikipedia supports Toure's view of the importance of the internet and it, along with all technology, being available for all to access, share and contribute and seems to be a key concern of the International Telecommunication Union (ITU). The ITU's mission is to monitor and promote the progress and development of telecommunications and information networks, such as the internet and to assist in international or global access to the internet and any other technology, particularly technology that affects global information and global economy (ITU-T, 2010).

Working on an international scale allows the ITU to urge countries to meet the needs of their citizens. During the same interview, Toure emphatically stressed that in order for governmental, business, health and education needs to be met; technological access needs are paramount because it is through the technological tool that the government, businesses, health and education sectors will meet these needs (Toure, 2008). The increased dependence on technology has not only affected entities, such as government, business, health and education, but also individuals in their everyday life. For individuals to be able to access and use that technology is a major priority of the ITU. The ITU is trying to bridge the so-called "digital divide" by building an adequate, safe information and communication infrastructure and developing confidence in the use of cyberspace through enhanced online security (ITU-T, 2010).

Goals of Study

One of the aims of this thesis and purpose of the survey research was to ascertain whether or not certain assumptions about technology and the elderly are warranted because there is a responsibility of every technology user to shorten the digital divide or narrow the technology gap between the elderly and technology. The responses from the survey participants should bring to light many of the barriers that are not so apparent and situations that create a divide or gap between technology users of different ages.

In order to determine how best to shorten the divide or narrow the gap, first, the factor or factors that form the gap between the elderly and technology should be uncovered. The responses of survey participants will provide information about how seniors in Guilford County, North Carolina view technology, clear up assumptions, identify internal and external factors contributing to the digital divide and provide insight into how to shorten or narrow the divide or gap. By analyzing the participants' responses and actively pursuing the correct course, all, including the elderly, will be able to make life more comfortable, secure and relaxed by using new technology, more specifically, computers and the internet.

Since the world's senior population is growing, more and more senior-friendly needs must be accommodated, including computer and internet access and use. Determining which are the most appropriate environments, learning strategies, and ergonomic computer equipment that will be successful in developing seniors' computer and internet competency and enhancing their daily functioning are questions that only seniors can answer, thus the need for this survey research to explore attitudinal and situational factors that may contribute to the digital divide.

Research Questions

1. What are the factors that seniors identify as impeding their use of computers?

2. What are the factors that seniors identify as impeding their use of the internet?

Definition of Terms

Appendix A contains a list of terms and the definition of the term to ensure uniformity and understanding of how these terms are used throughout the research thesis.

CHAPTER 2

Literature Review

Introduction

One of the first and most important steps a researcher takes in the beginning stages of research is to take the time to learn what others have written about his/her research topic. By reviewing previous published literature, a researcher can evaluate and pick key points that can be related to his/her research. Following is a compilation of previous literature that includes studies, reports, interviews that relate to the elderly, technology, computers and the internet.

The Digital Divide

The "digital divide" can be visualized as technology being on one side of a separating factor and potential users being on the other side of that separating factor. The separating factors may cause a wide chasm or even a small gap which prevents or limits potential users from taking advantage of the technology. Some experts, (Mehra, Merkel, & Bishop, 2004) have simply defined the digital divide as "the troubling gap between those who use computers and the Internet and those who do not" (p. 782). Whereas, Craig Warren Smith, (Smith, 2010) founder of Digital Divide Institute, an organization founded in 1999 with the global innovation to connect digital technology for public benefit, the digital divide "term does not refer to the gap in access to digital technology. . . [I]t refers to a gap between those who benefit by the digital economy and those who do not" (para. 1).

Further describing the gap, Jakob Nielsen, one of the top experts on internet usability and holder of 79 United States patents, agrees that the gap is a result of some populations having substantially better opportunities to benefit than other populations (Nielsen, 2006**)**. This result between people that have access to digital and information technology that are effectively using

and benefitting from the access and people that have limited and/or no access creates a divide or gap. The resulting imbalance of physical access causes imbalances in resources and skills needed to effectively participate as a digital citizen (Nielsen, 2006).

Nielson points out a population that is especially affected:

> Senior citizens face the second-biggest accessibility problem, but again there is little interest in the guidelines for making websites easier for older users. Companies don't even have the excuse that it doesn't pay to cater to this audience, because retirees are rich these days. Even though seniors are the main remaining source of growth in Internet use, companies are still endlessly fascinated by young users and ignore older, richer users who would be much more loyal customers -- if only someone bothered to sell to them (para. 7).

The Gray Divide

It is true that throughout history there have been those that have benefitted more from some discovery or invention than others for some reason, whether gender, income, race or location, but with the rising population of the elderly or senior citizens (seniors) which includes gender, all races and socio-economic classes, the "dividing" factor that seems to be ever increasing is the "gray divide" (McMurtrey, McGaughey, & Downey, 2008).

The Graying of America

According to Macionis (2000) the "graying" of America is a remarkable trend that is affecting society in the industrial world. One of these remarkable trends is illustrated by Bagchi (2005) when he points out that in the 21st Century, a person will live decades beyond the reproductive stage. Thanks to medical advancements lifespan expanding technologies, and so on, the life expectancy has increased to 79 for females and 73 for males. That is comparable to 49

for females and 43 for males just one hundred years ago (Macionis, 2000). The 2000 U.S. Census reported there are 35 million people 65 and over, and by the year 2030, there will be over 70 million.

A table with figures compiled by the U.S. Census Bureau in 2004 shows the population of the United States by age and sex for the year 2000 and projected population and percentage increase rate for the years 2010, 2020, 2030, 2040 and 2060. According to the projections, by the year 2030, there will be over 70 million persons over the age of 65 in the United States, which will be a 19.6 % increase from the 2000 figures (U.S. Census Bureau, 2004). Is this 19.6 % a reasonable projection? Let's compare the projection for the year 2010 with the latest U.S. Census Bureau People QuickFacts regarding the 65+ population count released in August, 2010. The table predicted that in 2010 there would be almost 40.25 million members of the 65+ population or an increase of 13%.

Examination of the most current population statistics found at People QuickFacts which are updated continually by the U.S. Census Bureau, points out the 65+ population as of December, 2009 has increased by 12.9% (U.S. Census Bureau, 2010). The increase prediction for the year 2010 from the table is 13%. It seems that the 65+ projection for the 2010 increase is right on target. The table also gives information regarding the projections for the year 2020 of a 16.3% increase and for 2030, a 19.6% increase. Only time will tell if the percentage projections continue to be on target, if not actually lower than actual outcomes. In fact, per studies completed by Czaja and Lee (2007) of the University of Miami Center on Aging, the over 65 population worldwide is increasing and with that group, those 80 years and older are increasing at the most rapid rate.

The Graying of Guilford County and Surrounding Counties

With the increase of seniors in America and worldwide, do the demographics of the City of Greensboro follow the "graying" pattern? The answer to that question can be ascertained by examining the demographic results from the 2000 U. S. Census Bureau and the 2003 City and Regional Data Report.

Demographic Report

According to a 2000 U.S. Census Bureau Demographic Report, 26.4 percent of persons living in the State of North Carolina were 62 years and over. The City of Greensboro, relying on the 2000 U.S. Census, included in its 2003 Planning for Greensboro's Future: Annual Compilation of City and Regional Data Report that from 1980 to 2000, that Greensboro's median age increased from 28.9 to 33.0 and for the previous thirty years, the fastest growing age group in the City of Greensboro are those aged 35-44. Since 2000, the fastest growing age group is 45-54, rising from ten percent to 13 percent (City of Greensboro, 2003). This fast growing age group has resulted in a median age increase. In other words, residents of the City of Greensboro are joining the "graying" trend.

The Gray Gap

Residents of the City of Greensboro are already cyber citizens and members of the new digital era with all of its technology, including computers, surfing the internet, electronic gadgets, cell phones, but are the "graying trend" individuals accessing, taking advantage, and reaping the benefits of the new technologies like the Millennials? Much like the 1960's with its "generation gap," the "technology gap," or, the "gray gap" as this researcher will use for the purposes of this study, between Millennials and members of the Gen X, Baby Boom and Silent generations, according to Pew, can be easily seen (Pew Research Center, 2010).

In 2009, a comprehensive study was conducted by the Pew Research Center which included a questionnaire that was given to members of each generation. The questionnaire consisted of a wide range of questions and statements that covered lifestyle, work, education, politics, family values, technology and social media. Examples of questions and statements dealing with technology and social media were: Do you have a profile on a social networking site? Do you Twitter? Who has slept with a cell phone nearby? The results of the responses were not surprising: Seventy-five percent of Millennials (18-29 years old) had profiles on at least one social network; thirty-two percent of Gen X'ers (30-45 years old); fifteen percent of Baby Boomers (46-64 years old); and only 6% of Silenters (65 and older) (Pew Research Center, 2010).

Per the 2007 Tracking Survey conducted by Princeton Survey Research Associates International for the Pew Internet & American Life Project there is a dramatic drop in internet use between 65 and 74 or 39 percent and further downward spiral of only 24 percent use for 75 to 84 year olds (Florida State University, 2009). Of the 84 million Americans that have broadband connections in their homes and go online, 26% are 65 and older compared to the 84% that are 18-29. As age increases, the computer and internet use decreases, only 22% of 70 and older go online and only 24% use a computer (Florida State University, 2009).

Common Assumptions

It is commonly known that many have listed among the reasons for this decrease in computer and internet use by the aged are learning difficulties, such as cognitive processes slowing, decreased memory capacity and lack of the ability to maintain attention as creating the gray gap and digital divide. Of course, there are the special needs and limitations that come with aging, nevertheless, none can assume that the elderly should not have the opportunity to access,

receive and share information, and gain the computer literacy skills needed to survive in this 21st century digital age (Drago-Severson, 2004).

Statements, such as "black students and Hispanics are not as intelligent as white students," "All Asians are very intelligent," "Men are more intelligent than women," are prejudicial, ethnocentric and are uninformed but what about the following ageism statements, (Dockter & Keene, 2009) "Older students are not as intelligent as younger students," "You can't teach an old dog new tricks," being "Too old to learn?" Many make these discriminatory and common assumptions prescribed to age and intelligence and are carried over into technology.

Previous Studies' Results

Comparing latest technologies to the technologies that were used by Silenters and Baby Boomers, such as broadcast TV, 78s and LP's, 8mm film, vacuum tubes and mainframes, cable TV, cassettes, CDs and VCR's, to today's technologies of interactive TV, streaming and MP3's, DVDs, microchips, personal computers and the internet, (Howe & Strauss, 2000) reveals there is no comparison. In fact, in a recent study being conducted regarding the elderly and learning new technologies, many of the participants, expressed uncertainties and admitted keeping a distance from the latest technology, but still felt that they had the cognitive ability to learn (Paul, 2005).

There are multiple facets of intelligence and there are many learning methods. Sharon L. Silverman and Martha E. Casazza, described in their book, *Learning & Development, Making Connections to Enhance Teaching*, that, "[F]or the better part of this century, the construct of intelligence has been defined by what standardized tests measure rather than by a rational analysis of the factors contributing to intelligent behavior in an appropriate environment (Silverman & Casazza, 2000, p. 146)." There have been multiple studies (Ellis & Kurnlawan, (2000); see also Campbell & Wabby, (2003); Hernandez-Encuentra (2009); Hilt, etal (2004) of

seniors and computer learning that have found that encouraging seniors to use the computer daily was found to increase productivity, learning skills, and boost short-term memory. Using email and the Internet, not only encouraged socialization, but was the answer for many seniors who were shut-in (Lawhon, 1996). A study conducted at Auburn University was very effective in developing seniors' skills in computing and was used as a model for retirement and assisted living communities and senior citizen centers (Seals, 2008). Boulton-Lewis, Lovie-Kitchin, & David (2007) study of 2,645 respondents aged from 50 to 74+ years, revealed that the majority of the study participants did not reject new technology, but did not perceive a relevance of using a computer or the internet in their lives. When asked if they felt that they could learn if relevancy was shown, the reply was positive, but would prefer to learn using a one-to-one method rather than in a classroom environment. A case study comparing adult learning theories and teaching computer use to seniors focused on instructional strategies, such as peer led instruction and problem centered learning (Redding, 1998). From the numerous articles and books researched, a common instructional strategy was found in all. The foremost goal was to motivate the seniors to want to become familiar with computer technology and the attitude of those training or working with seniors as being described as encouraging and motivating.

As mentioned, these studies were longitudinal and dealt with computer training that involved mainly computer applications and very little World Wide Web training. Also, at the time of two of the aforementioned studies, technologies had not been developed to address certain barriers of limited vision, hearing and movement. Just six years ago, questions were being asked as to, "whether technology will advance enough to accommodate disability and vision needs" that affect seniors' online experiences (Cosgrove-Mather, 2004).

Since the majority of these studies, a decade has gone by and through the use of new technologies; seniors can take advantage of computers and the internet. Now, senior friendly technologies, such as touch screens, digital monitors, webcams and Web 2.0, with its multimedia, have made it possible for seniors not to be left behind due to print disabilities, inability to type or use a mouse. By taking advantage of the convenience of online banking, ATM cards, GPS, cell phones, just to name a few, seniors can cross the digital divide.

The Hebrew House Project

From the research that was done regarding seniors and the digital divide, there are a few training programs that are set up specifically to close or narrow the digital divide of seniors and technology, and of the few that were discovered, the success rate was very high. One such training program is at Hebrew Home. Buie (2004) stated that as a result of learning their way around the Internet and being able to use e-mail and videoconferencing, the residents at Hebrew Home lives are changing.

The trainers of the senior residents at Hebrew Home are digital natives that have grown up playing video games, surfing the internet, and using cell phones to talk and text; whereas, the seniors are digital immigrants, trying to assimilate into the new world of technology. The result is a narrowing of the technology gap and the gray gap. The trainers are learning about the seniors and developing a positive perspective of the aging. In return, the seniors become or stay mentally active, which often times, lead to physical and social interaction. This truly exemplifies transformational learning which is learning that transforms thinking, actions and the way a person sees the world (Merriam, 2007). Transformational learning begins with an experience, whether simulated (reliving past experience), introspective (mediating or dreaming), or collaborative (community of practice), that causes a person to reflect on that experience, not just

externally, but internally, deeply analyzing and criticizing the underlying beliefs, assumptions (Brookfield, 1987).

So, in order for seniors in Guilford County to receive the full benefit of technology, more specifically, computer and internet use, the cause of their personal "digital divide" must be learned and addressed. In order to determine how many seniors are on the other side of the divide, research must be done to determine the number of seniors, their computer accessibility, internet activity, the barriers and how each of these can be addressed individually. This survey research will focus on gathering information that can be analyzed so that limitations can be overcome and special needs can be addressed and evaluated.

CHAPTER 3

Methodology

Brief Summary

Investigating the factors that contribute to the gap and ascertaining whether or not certain assumptions about technology and the elderly are warranted will lead to a better understanding of the basis of the gap that exists between technology and the elderly. What better way to gain a better understanding than by asking seniors about their use of technology, specifically computers and the internet, and finding out their views regarding technology? Survey research was the qualitative descriptive research method used, which enabled seniors to 'speak up' by responding to a questionnaire regarding statements and activities dealing with technology.

Population and Sample

In order to investigate the factors that seniors identify as impeding their use of computers and internet, a purposive sample of 50 seniors (50 years and older) residing in cities and counties surrounding Greensboro, Guilford County that consisted of two generations – the Silent Generation and the Baby Boom Generation. Persons that are of the same approximate age, have similar ideas, values, attitudes and problems and can be described as a whole, are said to be of the same generation. For example, there was a period of time when there were so many babies being born that more schools, hospitals, houses, etc. had to be built to accommodate that population boom. The persons born during this time were called "Baby Boomers."

For purposes of this thesis, "Baby Boomers," will be divided into two categories that can be described as early boomers, hereinafter referenced as "EBB" and late boomers, hereinafter referenced as "LBB." EBB born 1951 – 1955 had the opportunity to be around at the very beginning of the Space Age and depending on their job, were the first to be exposed to certain

types of technologies. LLB born 1956 – 1960 had the opportunity to grow up with new and evolving technology and were among the first to purchase and enjoy new technologies, such as beta Videocassette Recorders (VCR's), Compact Discs (CD's), Pagers, touch tone telephones, Pong video arcade game, Liquid Crystal Display (LCD) watches/clocks/ and clock radios, the Crock Pot and microwave ovens.

The parents of Baby Boomers were labeled as the Silent Generation. Members of the Silent Generation for purposes of this thesis will be divided into three categories, which are early, middle and late. Early Silenters will be hereinafter referenced as "ES," Middle Silenters, hereinafter referenced as "MS," and Late Silenters, hereinafter referenced as "LS." LS were born around 1946 – 1950, whereas MS were born during 1940 – 1945, and ES were born prior to 1940.

Survey Development and Design

In order to investigate the factors that seniors identify as impeding their use of computers and internet, a qualitative data approach was taken in which a survey instrument or questionnaire was designed specifically for the sample with questions that involved attitudes, beliefs, preferences, opinions, experience and/or non-experience of technology. The objective was to identify the contributing factors that impede their use of computers and internet with an aim to address those identified factors in later research. As stated in the Population and Sample section of this thesis, the participants would result from purposive sampling of 50 persons, aged 50+, residing in cities and counties surrounding Greensboro, Guilford County. A copy of the survey instrument, entitled, "What Do You Know About the Digital Divide?" is contained in Appendix B.

The survey instrument consisted of three parts, mainly closed statements using a Likert scale, which measured attitude responses. After a short definition defining technology and giving examples, Part I listed twenty general statements regarding technology in which the participant responded by checking the appropriate response of Strongly agree, Tend to agree, Neither agree nor disagree, Tend to disagree or Strongly disagree. Figure 1 shows the format used in Part I. 20 Statements section of the survey:

PART I. 20 Statements.

STATEMENT	RESPOND BY PUTTING ✓ IN [ ]				
1. I use technology daily.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]

Figure 1. Example of Part I. 20 Statements of Survey which shows format of Question 1

Part II of the survey instrument described ten activities which focused on the motivation of the respondent to interact with technology in which the participant was to indicate how often each activity was performed by checking the appropriate response of Always, Almost Always, Sometimes or Never. Figure 2 shows the format used in Part II. 10 Activities section of the survey:

PART II. 10 Activities.

ACTIVITY	RESPOND BY PUTTING ✓ IN [ ]			
1. I use the internet as a news source.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]

Figure 2. Example Part II. 10 Activities of Survey which shows format of Activity 1

Part III of the survey instrument was used to obtain demographic information of age, sex, education, residency, retirement status and gave the participant an opportunity to respond to the open-ended question, "Is there any information about this topic you would like to share?"

After the survey instrument was developed and prior to distribution, the survey instrument was reviewed by two instructional technology experts for subject matter content, format and reliability. The survey instrument was field tested by administering the questionnaire to a 50+ retired technology user to be sure that questions were clear and understandable. Also, prior to distribution, approval of the survey instrument and any solicitations for participants, such as flyers and cover letters was sought and granted by the Institutional Review Board (IRB) at North Carolina Agricultural & Technical State University.

Feedback was provided by the IRB and revisions were made in order to ensure that the content and format of the survey instrument were nonthreatening and made no unreasonable demands on the participants.

In consideration of possible vision and writing problems of the participants, hand completed survey instruments were created using the easily read font face, Verdana, and a font size of 14. For ease of use, double spaced lines were provided for any hand written responses to the open-ended question and the survey instrument was printed single sided on five pages. The survey designed and taken online by participants using Survey Monkey was customized for user-friendly interaction with the same Likert choices in Parts I and II.

Part III. Participant Information was designed with a multiple choice format in which participants selected options from a drop down menu for age, amount of years of education, and city and county. Figure 3 is a screen capture of Part I. Statement Number 1:

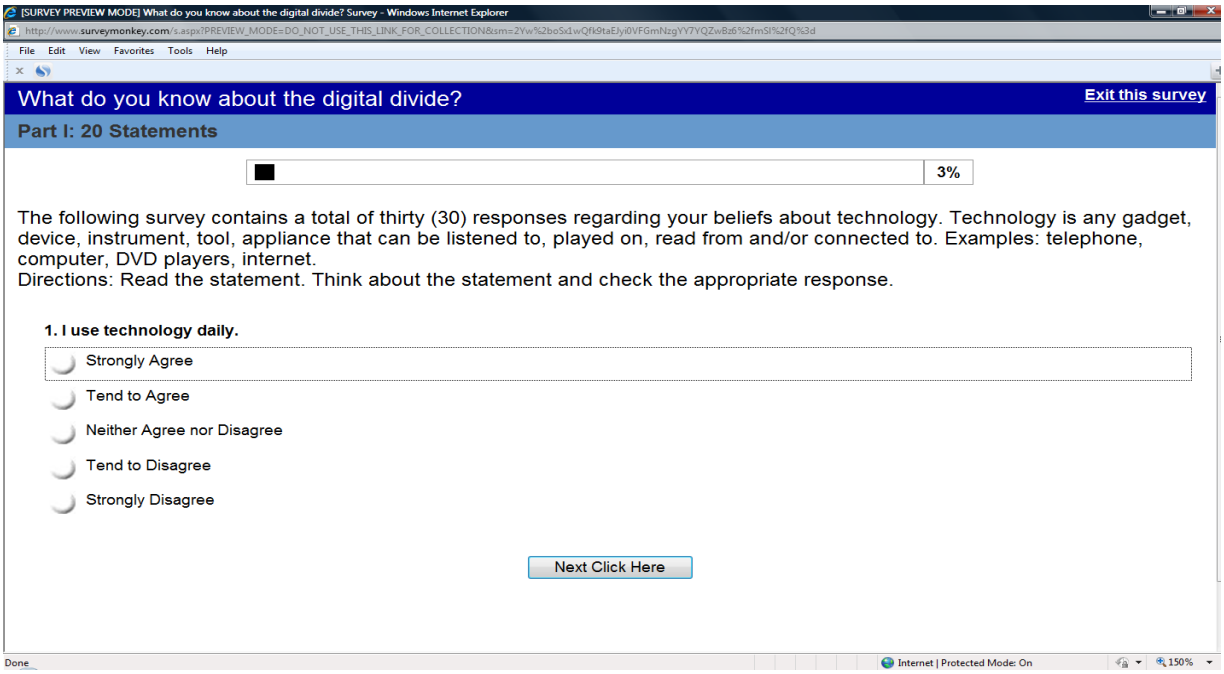

Figure 3. Print Screen of survey completed online using Survey Monkey

Data Collection

This section summarizes the methods used to collect the raw data, the process of compiling the results and, finally, the statistic analysis of the results from the surveys. Surveys were distributed electronically using Survey Monkey, a web survey application, and by personal contact. Following obtaining permission from the schools' administration and classroom instructors and professors, access to adult learners at a community college (Guilford Community College), and a four year university, (North Carolina Agriculture & Technical State University) was granted. After introducing self, explaining the study and answering any questions, an invitation was presented to any who wished to volunteer to participate. For participants who chose to complete questionnaires immediately, verbal instructions regarding informed consent were given and the questionnaire was completed and returned in a sealed envelope. Others provided an email address in which instructions and a link to the survey were emailed. Flyers

were posted in the community, but no response was received. Several questionnaires were completed in various areas of the community by means of setting up a table and displaying the flyer regarding the study.

Since the hand completed questionnaire did not have the participant's name or any other identifying information, the first step in compiling survey results was to randomly assign a number to each completed questionnaire. Surveys that were completed online using Survey Monkey contained no participant identifying information and results were compiled by Survey Monkey and confidentiality was maintained by user identification and password protected safeguards. No harm to participants, problems of confidentiality or deception was anticipated or encountered while gathering data.

CHAPTER 4

Results & Discussion

After fifty completed surveys were collected and randomly numbered, the compilation of results was tallied and the cumulative frequency and cumulative percentage of each item on the questionnaire were calculated. As Figure 4 reflects, the majority of the population sample was in the LLB and EBB categories. Forty-one percent (41%, 17) were between the ages of 50 – 55, with next highest participation (32%, 13) between the ages of 56 – 60.

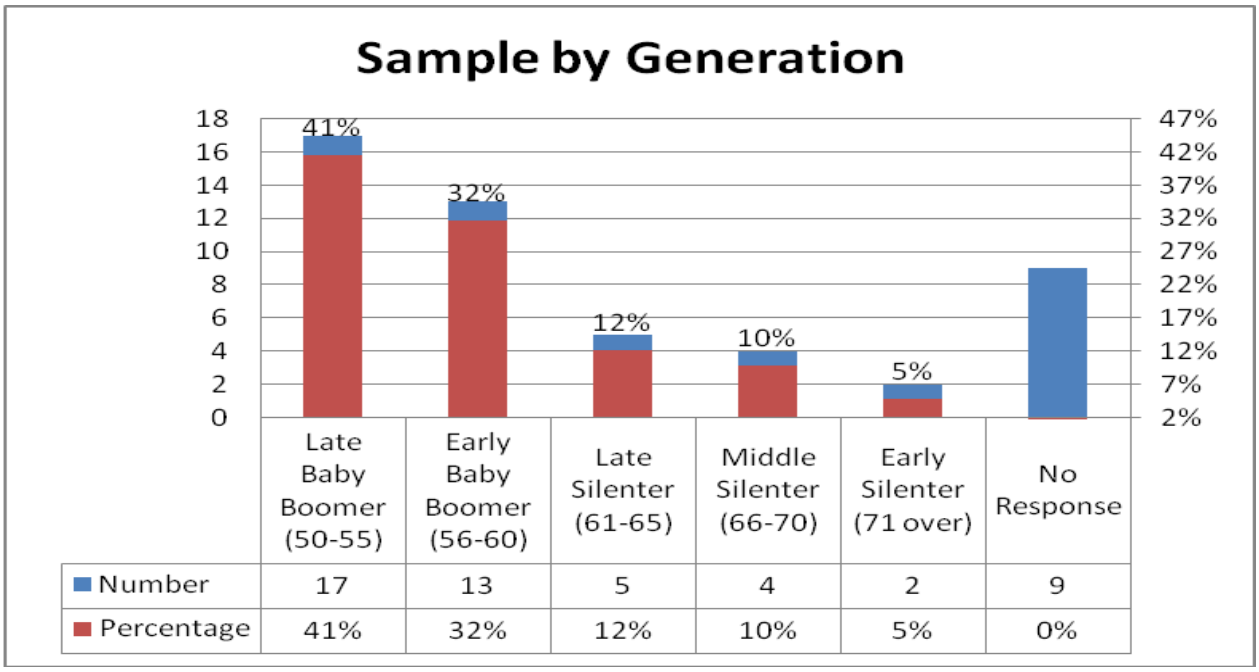

Figure 4. Sample by Generation

Appendices C and D contain tables that chart the frequency, or number, of responses and percentage of each response for each question that was responded to. For example, Appendix C, entitled "Results of Part I of Survey," shows that the frequency or number of participants that responded to Statement Number 1, "I use technology daily," was forty-nine. Of the forty-nine

that responded, following is the breakdown of the percentage and number for each response: Strongly Agree, 90%; 44; Tend to Agree, 6%, 3; Neither or Disagree, 0%, 0; Tend to Disagree, 2%, 1; Strongly Disagree, 2%, 1. The percentage does not include the one participant that did not respond to Statement Number 1.

The statement that was not responded to the most frequent was Statement Number 12, "I would like to have a computer, but I am too afraid to learn how to use it." Three participants chose, willingly or mistakenly, not to respond to this statement. Since participants' responses were confidential and unidentifiable, further interviewing could not be conducted to ascertain whether the no response was an oversight or intentional. This researcher can only speculate as to the reason(s) why three participants were reluctant to respond. The statement is two-fold. First, the desire to have a computer is present and second, the fear of learning how to use it is present and this overrides the desire. Besides the 23%, 11 that chose to Neither agree nor Disagree, the 10%, 5 (Strongly agree, 6%, 3; Tend to agree, 4%, 2) that being afraid to learn how to use it was a factor in impeding having a computer.

Fourteen percent 14%, 7 responded to Statement Number 8, "I am curious about new technology," by checking Neither Agree nor Disagree, 8%, 4; Tend to Disagree, 4%, 2; and Strongly Disagree, 2%, 1; whereas, the remaining 86% (Strongly Agree, 37%, 18; Tend to Agree, 49%, 24) agreed to being curious. Even though the majority were curious about new technology, only 45%, 22 (Strongly Agree, 35%, 17; Tend to Agree, 10%, 5) agreed with Statement Number 7, "Someday I will learn how to use a computer;" and a whopping 45%, 22 chose to check Neither Agree nor Disagree, and the remaining 10% checked Tend to Disagree, 2%, 1 and Strongly Disagree 8%, 4. Eight percent, (Strongly Agree, 4%, 2; Tend to Agree, 4%, 2 admitted to Statement Number 9, "I do not want to learn how to use a computer," along with

27%, 13 of participants responding Neither Agree nor Disagree. These results were not surprising considering the results of prior studies. Lack of curiosity, fear and disinterest have been identified as factors that contribute to the gray gap.

Surprisingly, over one-half or 55%, 26 (Strongly Agreed, 17%, 8; Tend to Agreed, 38%, 18) either strongly agreed or tended to agree that people aged 50 are considered elderly. Even though the majority of the survey participants viewed aged 50 as elderly, 81%, 39 (Strongly Disagreed, 54%, 26; Tend to Disagree, 27%, 13), over three-fourths of participants disagreed with Statement Number 4, "Only young can learn how to work new gadgets." Statement Number 17, "I have the ability to learn how to use a computer" was the attitude of 98%, 48 (Strongly agree, 82%, 40; Tend to Agree, 16%, 8) of the participants; whereas, only 69%, 40 (Strongly agree, 56%, 27; Tend to agree, 13%, 6) of participants responded to Statement Number 18, "If I had the opportunity, I would learn how to use a computer. Almost 30%, (Neither Agree nor Disagree, 29%, 14) responded that, if he/she had the opportunity, he/she would learn how to use a computer by neither agreeing nor disagreeing. It could be a coincidence that almost the same percentage, 29% (Strongly agree, 6%, 3; Tend to Agree, 6%, 3; Neither Agree nor Disagree, 16%, 8) responded to Statement Number 19, "When I look at a computer, I get nervous."

Interesting, that an approximate amount, 33% (Strongly agree, 6%, 3;Tend to Agree, 4%, 2; Neither Agree nor Disagree, 23%, 11) responded similarly to Statement Number 12, "I would like to have a computer, but I am too afraid to learn how to use it." Being afraid to learn and getting nervous just looking at a computer are fears that can be addressed by lowering the factors that contribute to the stress that is felt with learning any new activity. How could this stress be lessened? In previous studies, the general findings of Ellis and Kurniawan (2000), Hernandez-Encuentra, (2009) and Lawhon, (1996), concur that even in a formal learning environment, such

as a computer lab with several students that seniors did succeed in increasing computer and internet skills for the seniors who were able to learn in that formal environment. However, as Redding (1998) described, the preferred learning environment for seniors, was peer led instruction.

Peer led instruction in an informal environment, such as the learner's home, with one-on-one instruction from a patient and trusted family member or friend would create a less stressful, responsive and no pressure learning environment. As to having a family member or friend trying to help the participant to learn how to use new technology, responses to Statement Number 20, "A member of my family or friend has tried to help me learn how to use new technology," 57%, 28 responded (Strongly disagree, 12%, 6; Tend to Disagree, 6%, 3; Neither Agree nor Disagree, 39%, 19) that they had not been helped to learn or chose to neither agree nor disagree. Even though the majority of participants, 88%, 43 (Strongly agree, 57%, 28; Tend to Agree, 31%, 15) agreed with Statement Number 15, "Everyone should learn how to use the internet;" it seems that having someone to help with the learning may be a setback or factor impeding use considering the response of Statement Number 20, "A member of my family or friend has tried to help me learn how to use new technology," that only 43%, 21 (Strongly agree, 16%, 8; Tend to Agree, 27%, 13) of participants acknowledged that a member of their family or friend had tried to help them learn how to use new technology. The remaining 57%, 28 (Neither Agree nor Disagree, 39%, 19; Tend to Disagree, 6%, 3; Strongly Disagree, 12%, 6) chose not to agree. The 57%, 28 that chose not to agree that a family member or friend had tried to help them learn how to use new technology does not point out whether or not that those participants sought help.

According to Activity Number 2, "I seek assistance about technology when needed," the majority 40%, 19 sometimes sought help, 33%, 16 always sought help, 25%, 12, almost always

sought help and 2,%, 1 never sought help with technology when needed. In fact, Activity Number 4, "I avoid situations that involve learning new technology, was admitted to by 4%, 2 of participants. Bear in mind these new technologies involved all gadgets, not just computers and the internet. One-half (50%, 24) admitted sometimes avoiding a learning new technologies situation; whereas, 15%, almost always avoid situation and a courageous 31%, 15 never avoid, but step up and meet the learning new technologies challenge.

The ten activities described in Part II of the survey were intended to get a picture of participants' amount of use, non-use, willingness and/or unwillingness to learn how to use new technology. Two of the activities listed were using the internet as a news source (Activity Number 1) and using the internet to communicate and meet people (Activity Number 7). Results reveal that 45%, 22 sometimes use the internet as a news source and 49%, 24 sometimes use the internet to communicate and meet people. These high percentages is not unexpected since the majority of participants are not retired (68%, 28) and job includes using some type of technology, which includes the use of a computer that has access to the internet.

The degree of willingness/unwillingness to use new technologies was imputed by determining the frequency in which participants helped others and sought help themselves. The frequencies of seeking help has already been discussed; however, the willingness/unwillingness of "actually helping a family member and/or person older than myself use new technology," (Activity Number 5) revealed that most (31%, 15) had sometimes helped, 29%, 15; followed by 27%, 13 always helped, compared to the 14%, 7 that never helped others.

Sometimes (35%, 17) was the response to Activity Number 6, "I choose NOT to use technology that is offered to the public that make everyday activities quicker. For example, I wait in a long customer line, instead of using the empty express self-checkout lane. I wait in a

long bank teller line, when an ATM is available for use." The participants that always chose not to use was 10%, 5 and 10%, 5, almost always. Soon, this 20% may not have a choice between interacting with a computer, machine, internet or human. In some locations, an ATM, internet transaction, and computerized telephone prompts may be the only methods of customer service offered or available. Besides, ATMs and internet transactions usually offer a faster and more convenient alternative than a human transaction that requires the time and cost of travelling to and from the human.

The survey defined technology as any gadget, device, instrument, tool, appliance that can be listened to, played on, read from, and/or connected to. Examples of technology were telephone, computer, DVD players and the internet. As to whether or not Statement Number 3, "All technology is good," the majority (31%, 15) tended to agree. Statement Number 6, "Technology can be relied upon," 35%, 17 tended to agree. One popular technology that has mixed opinions is the use and overuse of cell phones.

Statement Number 10, "I use my cell phone only for emergencies" and Statement Number 11, "Learning to do all the things my cell phone does will take too much time" and Activity Number "I use the cell phone while driving" and Activity Number 9, "I have been distracted by a person talking on a cell phone" applied to cell phone use and the attitude toward cell phone use. Cell phone use has become one of the most frequently used new technologies. The cell phone has evolved into a device that can be used not only to make and receive telephone calls, but also function as a digital camera, digital video recorder/player, calculator, calendar, alarm clock, stop watch, notepad, digital player, and GPS receiver, just to name a few.

Since about the same amount of participants agreed, 41%, 20 (Strongly agree, 12%, 6; Tend to agree, 29%, 14) and disagreed, 36% (Strongly disagree, 22%, 11; Tend to disagree, 14%,

7) regarding Statement Number 11, “Learning to do all the things my cell phone does will take too much time,” it is deduced that these respondents have and use cell phones, even though some are taking advantage of the different uses the cell phone offers. This deduction is further supported by the responses of Statement Number 10, “I use my cell phone only for emergencies,” which was strongly disagreed to by 49%, 24 of participants and 55%, 27 responding to Activity Number 8, “I use the cell phone while driving,” with the response of Sometimes.

Bear in mind that the data analysis strategy used in this section was to analyze the attitudinal responses of Part I of the survey, that contained statement in which participants’ revealed their attitudes, beliefs, preferences, opinions towards their experience or non-experience with technology and, then compare Part I responses to the behavioral responses of Part II of the survey. Part II contained activities which involved actual interaction and/or learning new technologies and/or avoiding interaction. Lastly, by reflecting on the cumulative percentages of responses to statements in Part I versus responses to Part II activities, a better understanding and a clearer picture of attitudes towards technology and the actual interaction between respondents and the use of the internet and computers can be seen; therefore, open the door for more exploration of factor(s) that impede seniors’ (50+) use of computers and the internet.

CHAPTER 5

Conclusion & Recommendations

Not surprising, in this digital age, daily interaction with technology, specifically computers and the internet, is becoming more and more a necessity instead of a choice and digital immigrants, or persons that are newcomers to the world of computers, internet, and information technologies are finding their lack of technology use a major problem. Whether the major problem(s) created is social isolation being unemployable, unfortunately, the majority of digital immigrants are those 50+. Thanks to modern day medical technological tools, a longer life span has resulted in a "graying of America." As new technologies continue to weave into the everyday routine activities of life and become the normal means of communicating, interacting, and working, the importance of becoming familiar with and using new technologies should be of utmost urgency to those 50+; this is not the case.

The digital world can be described as "foreign" to digital immigrants and, unfortunately, the majority of digital immigrants are members of the older population, often described as elderly and seniors. Results from previous studies regarding the elderly and technology are similar in that many elderly have uncertainties about new technology (Paul, 2005) and that many elderly do not perceive a relevance of using a computer or internet in their lives (Redding, 1998). Results from this survey revealed that although the majority (90%, 44) responded Strongly agree to the statement, "I use technology daily," almost one-third or 35%, 17 chose Strongly agree that "Someday I will learn how to use a computer. Apparently the technology being used is not the computer and internet.

Yet, non-use, uncertainty and lack of relevance do not mean that the elderly feel that they do not have the cognitive ability to learn how to use the internet or a computer or that they are

not curious about the internet. Of the survey participants, 82%, 40 responded to Statement Number 17, "I have the ability to learn how to use a computer," by strongly agreeing. As well as, 86%, 42 (Strongly agree, 37%, 18; Tend to agree, 49%, 24) responded that they were curious about new technology. Also, the majority of survey participants strongly disagreed (54%, 26) with Statement Number 4 that "Only young people can learn how to work new gadgets."

It is interesting that findings of Paul (2005) and Boulton-Lewis (2007) highlighted the 'ability to learn' attitude of the elderly, but does not go deeper into the identifying the attitudinal and situational factors that may contribute to the barriers that create a dividing gap between the elderly and technology. Further identifying internal and external factors contributing to the digital gap will provide insight into how to shorten or narrow the divide or gap. The need for all, including the elderly, to be technology users is paramount and goes without stating further; whereas, identifying factor(s) of why some showed interest and grasped new technologies and others did not, is a question that sparks research.

Although many findings from this study coincided with previous studies findings, other areas for continued research were opened. The aim of this thesis and the purpose of this survey research were to ascertain whether or not assumptions about technology and the elderly were warranted and bring to light barriers that may not be apparent and situations that create a divide or gap between technology and the elderly, specifically factors that impeded computer and internet use. When analyzing the results of this research, questions that dealt with the elderly and technology were identified and are well worth the time and effort to investigate. For example, is education a factor in the readiness to learn new technologies for the elderly or does job skill requirement play a more prominent factor for the elderly? Furthermore, what issues will

unfold over time as the aging population continues to increase? Will further development of the senior-friendly technology affect the narrowing of the digital divide?

In conclusion, the digital divide does not have to widen because of age or physical limitations. Common assumptions are just that, assumptions that do not "fit" today's digital citizens. Previous studies and this thesis results have presented percentiles and percentages that show that 50+ are and can learn to use the internet and computers for their jobs and in everyday life. The majority of participants have a desire to learn technology and feel that they are physically and mentally capable of learning and using new technologies, such as a computer or the internet, but main factors impeding are internal fears and lack of self-confidence and motivation.

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APPENDIX A

Definition of Terms

Term		Definition
Access	-	The right to obtain or make use of or take advantage of something.
Aged, Senior, Elderly	-	For the purpose of this study, persons 50 and over.
Ageism	-	Any prejudicial attitude, action, or institutional structure which subordinates a person or group because of age or any assignment of roles in society purely on the basis of age.
Automated Teller Machine (ATM)	-	Also known as a Cash Machine where persons can access their bank account and conduct financial transactions.
Baby Boomer	-	Person born between 1946 – 1964.
Cyber citizen, Digital citizen	-	Person who uses the internet to communicate, socialize, do business, etc. over the internet.
Digital Age	-	Period of time that is marked by the incorporation of computers and the internet into every public and private sector.
Digital Divide	-	A gap between people with effective access to digital and information technology and those with very limited or no access at all. It includes the imbalances in physical access to technology as well as the imbalances in resources and skills needed to effectively participate as a digital citizen.
Digital Immigrants	-	Persons that are newcomers to the world of computers, the internet, and other information technologies.
Digital Natives	-	Persons born since 1980 who have grown up using computer, internet and wireless technology.
Early Baby Boomers	-	Persons that are, at the time of this thesis (2011), in the 56-60 age range.
Early Silenters	-	Persons that are, at presently at the time of this thesis (2011), in the 71+ age range

Term		Definition
Generation X'er	-	Person born between 1965 – 1980.
Global Positioning System (GPS)	-	A navigation system consisting of satellites orbiting the earth that is maintained by the U.S. government that provides locations and directions to those with GPS receivers anywhere on the Earth.
Gray Gap	-	For purposes of this study, the result of the lack of technology use and know how, particularly computer and internet technology, that persons of younger generations use; whereas persons of older generations do not, due to lack of knowledge. Similar to the Generation Gap of the 1960's that resulted between the younger generation and members of older generations.
Late Baby Boomers	-	For purposes of this study, persons that are, at the time of this thesis (2011), in the 50-55 age range.
Late Silenters	-	For purposes of this study, persons that are, at the time of this thesis (2011), in the 61-65 age range
Middle Silenters	-	For purposes of this study, persons that are, at the time of this thesis (2011), in the 66 -70 age range.
Millennial	-	Person born between 1981- 1991.
Print-disabled	-	A person who cannot effectively read standard printed material due to blindness, visual disability, physical limitations, organic dysfunction or dyslexia.
Senior Friendly	-	Description of technology that design accommodates the needs of seniors or persons 50 and over, as defined for this research study.
Silenter	-	Person born between 1925 – 1945.
Technology	-	Use of tools and materials by humans to solve problems and manage the environment
Technology Gap	-	The result of technology, particularly computer and internet technology that becomes ubiquitous and full participation in society becomes more difficult for those without such access.

Term		Definition
Web 2.0	-	The newer, more interactive multimedia found on the Internet such as blogs, wikis, YouTube, FaceBook, MySpace, Twitter, social networking, and other collaborative methods of information creation and exchange.

APPENDIX B

Survey Instrument

The following survey contains a total of thirty (30) responses regarding your beliefs about technology. Technology is any gadget, device, instrument, tool, appliance that can be listened to, played on, read from, and/or connected to. Examples: telephone, computer, DVD players, internet.

PART I: 20 Statements. DIRECTIONS: Please read the statement. Think about the statement and put a check ✓ under the appropriate Response.

	STATEMENT	RESPOND BY PUTTING ✓ IN [ ]				
1.	I use technology daily.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
2.	People aged 50 and above are considered elderly.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
3.	All technology is good.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
4.	Only young people can learn how to work new gadgets.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
5.	I would like to learn how to send email.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
6.	Technology can be relied upon.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
7.	Someday I will learn how to use a computer.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
8.	I am curious about new technology.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
9.	I do not want to learn how to use a computer.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]

	STATEMENT	RESPOND BY PUTTING ✓ IN [ ]				
10.	I use my cell phone only for emergencies.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
11.	Learning to do all the things my cell phone does will take too much time.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
12.	I would like to have a computer, but I am too afraid to learn how to use it.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
13.	If I get a job that requires me to use a computer, I will be very nervous.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
14.	Young people communicate better than older people through technology, (i.e. text messaging, email) while older people communicate better face-to-face.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
15.	Everyone should learn how to use the internet.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
16.	I know how to use a mouse.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
17.	I have the ability to learn how to use a computer.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
18.	If I had the opportunity, I would learn how to use a computer.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
19.	When I look at a computer, I get nervous.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]
20.	A member of my family or friend has tried to help me learn how to use new technology.	Strongly agree [ ]	Tend to agree [ ]	Neither agree nor disagree [ ]	Tend to disagree [ ]	Strongly disagree [ ]

PART II. 10 Activities. DIRECTIONS: Please indicate how often you perform the activity by putting a check (✓) in the appropriate column.

	ACTIVITY	RESPOND BY PUTTING ✓ IN [ ]			
1.	I use the internet as a news source.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
2.	I seek assistance about technology when needed.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
3.	I decide before I try to learn how to use certain technology that it is not worth the effort.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
4.	I avoid situations that involve learning new technology.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
5.	I actually helped a family member and/or person older than myself to use new technology.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
6.	I choose NOT to use technology that is offered to the public that make everyday activities quicker. For example, I wait in a long customer line, instead of using the empty express self-checkout lane. I wait in a long bank teller line, when an ATM is available for use.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
7.	I use the internet as a way to communicate and meet people.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
8.	I use the cell phone while driving.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
9.	I have been distracted by a person talking on a cell phone.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]
10	When considering whether or not to purchase a new technology, I consider the costs verses the benefits.	Always [ ]	Almost Always [ ]	Sometimes [ ]	Never [ ]

PART III. Respondent Information. DIRECTIONS: Please fill in the blanks.

Age:_____

( ) Male ( ) Female

Highest Grade Completed: _____

City and County in which you reside: _____

Are you retired? ( ) YES ( ) NO

If presently employed, does job include using technology? ( ) YES ( ) NO

Is there any information about this topic you would like to share?

_____

_____

_____

_____

_____

_____

APPENDIX C

Results of Part I of Survey

Statement		Strongly agree		Tend to agree		Neither agree nor disagree		Tend to disagree		Strongly disagree		No Response	Total Responses
		#	%	#	%	#	%	#	%	#	%	#	
1.	I use technology daily.	44	**90**	3	**6**	0	**0**	1	**2**	1	**2**	1	49
2.	People aged 50 and above are considered elderly.	8	**17**	18	**38**	4	**8**	6	**13**	12	**25**	2	48
3.	All technology is good.	11	**23**	15	**31**	10	**21**	12	**25**	0	**0**	2	48
4.	Only young people can learn how to work new gadgets.	2	**4**	3	**6**	4	**8**	13	**27**	26	**54**	2	48
5.	I would like to learn how to send email.	17	**35**	7	**15**	19	**40**	0	**0**	5	**10**	2	48
6.	Technology can be relied upon.	12	**25**	17	**35**	14	**29**	4	**8**	1	**2**	2	48
7.	Someday I will learn how to use a computer.	17	**35**	5	**10**	22	**45**	1	**2**	4	**8**	1	49
8.	I am curious about new technology.	18	**37**	24	**49**	4	**8**	2	**4**	1	**2**	1	49
9.	I do not want to learn how to use a computer.	2	**4**	2	**4**	13	**27**	6	**12**	26	**53**	1	49
10.	I use my cell phone only for emergencies.	5	**10**	5	**10**	5	**10**	10	**20**	24	**49**	1	49
11.	Learning to do all the things my cell phone does will take too much time.	6	**12**	14	**29**	11	**22**	7	**14**	11	**22**	1	49
12.	I would like to have a computer, but I am too afraid to learn how to use it.	3	**6**	2	**4**	11	**23**	5	**11**	26	**55**	3	47

Statement		Strongly agree		Tend to agree		Neither agree nor disagree		Tend to disagree		Strongly disagree		No Response	Total Responses
		#	%	#	%	#	%	#	%	#	%	#	
13.	If I get a job that requires me to use a computer, I will be very nervous.	2	**4**	5	**10**	12	**24**	8	**16**	22	**45**	1	49
14.	Young people communicate better than older people through technology, (i.e. text messaging, email) while older people communicate better face-to-face.	14	**29**	14	**29**	9	**18**	2	**4**	10	**20**	1	49
15.	Everyone should learn how to use the internet.	28	**57**	15	**31**	3	**6**	2	**4**	1	**2**	1	49
16.	I know how to use a mouse.	40	**82**	6	**12**	3	**6**	0	**0**	0	**0**	1	49
17.	I have the ability to learn how to use a computer.	40	**82**	8	**16**	1	**2**	0	**0**	0	**0**	1	49
18.	If I had the opportunity, I would learn how to use a computer.	27	**56**	6	**13**	14	**29**	0	**0**	1	**2**	2	48
19.	When I look at a computer, I get nervous.	3	**6**	3	**6**	8	**16**	9	**18**	26	**53**	1	49
20.	A member of my family or friend has tried to help me learn how to use new technology.	8	**16**	13	**27**	19	**39**	3	**6**	6	**12**	1	49

APPENDIX D

Results of Part II of Survey

Activity		Always		Almost Always		Sometimes		Never		No Response	Total Responses
		#	%	#	%	#	%	#	%	#	
1.	I use the internet as a news source.	9	**18**	12	**24**	22	**45**	6	**12**	1	49
2.	I seek assistance about technology when needed.	16	**33**	12	**25**	19	**40**	1	**2**	2	48
3.	I decide before I try to learn how to use certain technology that it is not worth the effort.	6	**13**	5	**10**	23	**48**	14	**29**	2	48
4.	I avoid situations that involve learning new technology.	2	**4**	7	**15**	24	**50**	15	**31**	2	48
5.	I actually helped a family member and/or person older than myself to use new technology.	13	**27**	14	**29**	15	**31**	7	**14**	1	49
6.	I choose NOT to use technology that is offered to the public that make everyday activities quicker. For example, I wait in a long customer line, instead of using the empty express self-checkout lane. I wait in a long bank teller line, when an ATM is available for use.	5	**10**	5	**10**	17	**35**	22	**45**	1	49
7.	I use the internet as a way to communicate and meet people.	7	**14**	7	**14**	24	**49**	11	**22**	1	49

Activity		Always		Almost Always		Sometimes		Never		No Response	Total Responses
		#	%	#	%	#	%	#	%	#	
8.	I use the cell phone while driving.	1	**2**	2	**4**	27	**55**	19	**39**	1	49
9.	I have been distracted by a person talking on a cell phone.	7	**14**	12	**24**	27	**55**	3	**6**	1	49
10.	When considering whether or not to purchase a new technology, I consider the costs verses the benefits.	16	**33**	17	**35**	15	**31**	1	**2**	1	49

APPENDIX E

Results of Part III of Survey

Age	**50 - 55**		**56 - 60**		**61 - 65**		**66 - 70**		**71 and over**		**No Response**
	#	%	#	%	#	%	#	%	#	%	#
	17	41%	13	32%	5	12%	4	10%	2	5%	9

Sex	**M**		**F**		**No Response**	
	#	%	#	%	#	%
	17	36%	30	64%	3	

Highest Grade Completed	**11th and under**		**GED High School**		**Associate Degree**		**Bachelor's Degree**		**Master's Degree**		**Ph.D.**		**No Response**
	#	%	#	%	#	%	#	%	#	%	#	%	#
	7	15%	8	17%	7	15%	9	20%	11	24%	4	9%	4

Retired	**Yes**		**No**		**No Response**
	#	%	#	%	#
	9	22%	28	68%	13

APPENDIX F

Sample Responses, including comments from Part III of Survey

Age	Sex	Highest Grade Completed	City	County	Retired	Technology Used at Job	Comment
55	F	14		Guilford		Y	
53	M	14	Greensboro	Guilford		Y	
66	F	18		Guilford	Y		Use daily, not to meet people
66	M		Jamestown	Guilford	Y		
52	M	12	Greensboro	Guilford			All persons should know to use the computer in case of an emergency
	F	9	Greensboro	Guilford		Y	
	M	16	Greensboro	Guilford	Y		
	F	22	Greensboro	Guilford		Y	I wish I had more knowledge.
53	M	11	Greensboro	Guilford		Y	More study of the internet and use without fear
60	F	12	Greensboro	Guilford	Y	Y	More study on how to use the internet. Learn how to use more computer commands without fear.
68	M	6	Greensboro	Guilford			Tech is very important to me and currently necessary. I am very interested in computer.
61	M	16	Greensboro	Guilford			
	F		Greensboro	Guilford			Yes, I sometimes wish that there was a system catering to people wanting just to send and receive messages without all other features.
	F	12	Gibsonville	Guilford		Y	
51	M	11	Stokesdale	Rockingham		Y	
63	F	10	Greensboro	Guilford			
58	M	17	Julian	Guilford		Y	
52	M	12	Greensboro	Guilford		Y	
53	M	18	Asheboro	Randolph	Y	Y	
76		10		Guilford			

Age	Sex	Highest Grade Completed	City	County	Retired	Technology Used at Job	Comment
52	F	10	Pleasant Gardens	Randolph	Y		
	F	18		Guilford		Y	Great Topic!
			Greensboro	Guilford			
50	M	22	Greensboro	Guilford		Y	
57	M	16		Davie			
60	F	12		Guilford	Y	Y	
72	F	16	Sophia	Randolph			
51	F	12	Jamestown	Guilford		Y	
	F	12	Gibsonville	Guilford			
50	F	13	Greensboro	Guilford		Y	
54	F	13	High Point	Guilford			I feel instructions are usually geared toward people who use the device on a regular basis. They are not clear to a novice. This leaves me felling less empowered and insecure about furthering my education in this area. Information should be aimed at all people in order to be understood by beginners.
54	F	12	Greensboro	Guilford		Y	
64	M	18	Greensboro	Guilford		Y	

APPENDIX G

Demographics