EXPLORING THE DIGITAL DIVIDE: POVERTY AND PROGRESS IN A RURAL COUNTY

by

G. ANDREW PAGE

(UNDER THE DIRECTION OF TALMADGE C. GUY)

ABSTRACT

The purpose of this study is to explore the experiences of information and communication technologies (ICTs) in the lives of individuals in rural underserved communities. Computer technologies are having a profound effect on all areas of society. There are many conflicting views about the potential opportunities or roadblocks brought about due to the advent of the Information Age. A social informatics theoretical framework is used to examine the social and cultural factors within the context of the rural environment and to learn more about the human side of technology from the viewpoint of the adult learner. The importance of geography as a key component of the Digital Divide shows the significance of the social context and the split between the rural and the urban populations. Demographics pertaining to ICT diffusion are presented from the international, national, regional (Black Belt region is a persistent poverty area largely in southern rural America), state; and then the local perspective. A historical overview of a rural county is provided along with current secondary education initiatives that offer adults training with computer technologies. Community members, educators, administrators, students and business leaders were interviewed. The focus for this study was the adult learner's perceptions of this diffusion of technological innovations. Findings from this study show the situational and dispositional barriers to adopting technologies. A Hierarchy of Technology (HOT) continuum, building on the Diffusion of Innovations (DoI) theory, is provided with the descriptive stages in which individuals are situated as they learn from and with ICTs. A 4-C holistic framework (Connectivity, Capability, Content, and Context) for addressing Digital Divide factors is offered as a means to effectively address the issue of access to technology.

INDEX WORDS: ADULT EDUCATION, SOCIAL INFORMATICS, DIGITAL DIVIDE, SOCIAL JUSTICE, INFORMATION AND COMMUNICATION TECHNOLOGIES, RURAL REGIONS, BLACK BELT, PERSISTENT POVERTY, ACCESS TO TECHNOLOGY, QUALITATIVE METHODOLOGY, COMMUNITY ISSUES

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DEDICATION

I dedicate this work to my parents, Rev. W. Grable Page, Jr. and Barbara V. Page for their love, support, and guidance. Thank you for showing me that true living comes from giving. You always went the extra mile for me and now it's my turn to "pay it forward" and attempt to spread some of the happiness. I found these words by Ralph Waldo Emerson that express my sentiment:

> To laugh often and much; to win the respect of intelligent people and the affection of children; to earn the appreciation of honest critics and to endure the betrayal of false friends; to appreciate beauty; to find the best in others; to leave the world a bit better whether by a healthy child, a garden patch or a redeemed social condition; to know even one life has breathed easier because you have lived. This is to have succeeded.

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PREFACE

We live in an Information Age, an era of emerging, assistive, and high technologies and the change associated with this 'progress,' matters in the lives of all. However, there are people living in persistently impoverished areas in the Southern United States who have had little access to these computers, technologies, and the power associated with information. This region has been labeled the *Black Belt*. It is also important to know that the inequity and disparity between the monetarily wealthy and the working poor is reaching new highs.

In February 2003, I attended a symposium on persistent poverty that was the culmination of continuing study sponsored by the University of Georgia. In the published report entitled *Dismantling Persistent Poverty in the Southeastern United States* (Carl Vinson Institute of Government, 2003), I was awestruck by the comparative statistics that showed how the Black Belt region (West Virginia, North Carolina, Tennessee, Georgia, South Carolina, Alabama, Mississippi and Louisiana; See Chapter 2 for more information) has historically been deficient in employment, wages, education, and other socioeconomic indicators than other areas of the United States. I was also intrigued and motivated by the words at the end of the report in the final paragraph.

> *Lastly, technology must be utilized fully to enable poverty areas to participate in the global economy*. [Italics added]. Jobs and economic growth are increasingly dependent on access to the Internet and use of cellular technology. Technical schools are essential to training and retraining a workforce that will need increasingly sophisticated skills. Failure to see and

> invest in technology as basic infrastructure will condemn this region to minimum wage, low- or no-skill jobs and will create yet another generation in poverty. (Carl Vinson Institute of Government, 2003, p. 19)

As a writer, I research, study, and take notes about what is important to me and try to make sense of how things are the way they are so that I can offer solutions and insight for positive change. During the course of this study I have uncovered numerous connections and relationships related to persistent poverty. This has assured me that my pursuits and goals I attempted to accomplish were not only appropriate but, more importantly, worthwhile.

One of the first ironies uncovered during this research process began in 1927, long before the days of computers but at a time of widespread poverty. Arthur Franklin Raper, a young doctoral student at the University of North Carolina, began the data collection for his dissertation. It was to be an ethnographic and historical analysis of Georgia's Greene and Macon Counties, which are at the center of the depressed Black Belt region in the southern United States. Raper's goal was to understand the Depression-era conditions in these two counties that, according to him, "are the beginnings of peasantry in America" (p. 406). His dissertation, completed four years later was published as a book entitled: *Preface to Peasantry: A Tale of Two Black Belt Counties (1936).*

Raper's *Preface to Peasantry* (1936) is a comparison of the devastating economic conditions between two Georgia Black Belt counties (Greene and Macon) and seeks to understand the attitudes of those citizens who live and have lived in those areas. This book has had a profound impact on my understanding of the current state of affairs in Greene County and how the populace is adjusting to the

transition from a manufacturing economy to one that is based on technology and services. To understand the present you must first understand the sociological, historical, and economic forces of the past. Raper's interest in Greene County prompted him to continue his research and eventually write another book solely about Greene County that is entitled *Tenants of the Almighty, (1943*).

Raper (1936) wrote about the tragedy of the Black Belt in Georgia and how it once had the "richest soil and the poorest people" (p. 3). He also notes that diseases such as rickets and pellagra were common among these counties. I have now found my reason for writing. The personal interest in studying how individuals in rural areas make meaning of information and communication technologies (ICTs) goes beyond the fact that I was born in a persistently impoverished county. I am a product of that rural Georgia environment and have suffered from the debilitating effects of vitamin D deficiency rickets for my entire life.

It has been said, by some unknown source, that you have to stand up and live before you can sit down and write. This work is the product of five years of preparation and study. Although I have struggled to accurately capture the meaning of computer technologies in the lives of rural adults, it is not without a great deal of personal reflection that I arrive at this point. During my work in Greene County, I was able to get to know people on a personal level and to share in their joys and concerns. I was given two guided tours of the county; spoke with people at the Chamber of Commerce, the local newspaper, the restaurants, libraries, convenience stores, and museums. Also, I was granted access to see the President of the United States who was making his second visit to Greene County in just nine months. During any election year candidates of all political parties are

known for making speeches in various locations throughout the nation in an effort to solicit votes and give the impression of a grassroots effort. The only other United States President to visit Greene County was Andrew Jackson and this 19th Century visit was before "Old Hickory" actually took office. It is ironic that the Bush Administration has questioned the existence of the Digital Divide and yet this current President has traveled twice in less than a year to raise money (Reported to be $3 million by the *Greene County Herald-Journal*, June 26, 2003) with the assistance of the wealthy individuals who live, and others throughout the state of Georgia who gathered, in the southern lake area of Greene County. This is a region with the famous Ritz-Carlton resort, golf courses, polo fields, and million dollar homes in communities called plantations. I recently read the April 2004 version of the glossy magazine, *Lake Oconee Living.* The magazine highlights the comfortable, good life of the *lake people* [italics added], largely retirees and transplants to Greene County, who now enjoy the tranquil luxurious atmosphere of abundance. Although Greene County is approximately 50 percent African-American (U.S. Census, 2004) the only person of color in the magazine, *Lake Oconee Living,* was the chauffeur for a limousine service advertisement that caters to the wealthy and privileged. But, this work is *not* about those who have access to technology, information, and the associated power of a knowledge-based economy. This is an account about those whose stories have not been told. It is a story filled with much irony and contradictions.

We are all shaped by forces in our culture and the context in which we live. This research seeks to understand this rural social context and provide recommendations for the betterment of those who have lived in this persistently

impoverished County. Figure 1 is a photograph of the representation of rural life constructed in a modern juxtaposition. This sculpture of a majestic horse is located in a pasture overlooking the Oconee River in Greene County. The 'Iron Horse' was originally intended to be an aesthetic and artistic supplement of the University of Georgia campus in Athens, Georgia. However, the abstract art style was rejected by students when it was brought to the campus in the early 1940s. The controversial 10-foot high sculpture created by University of Georgia artist, Abbott Pattison in

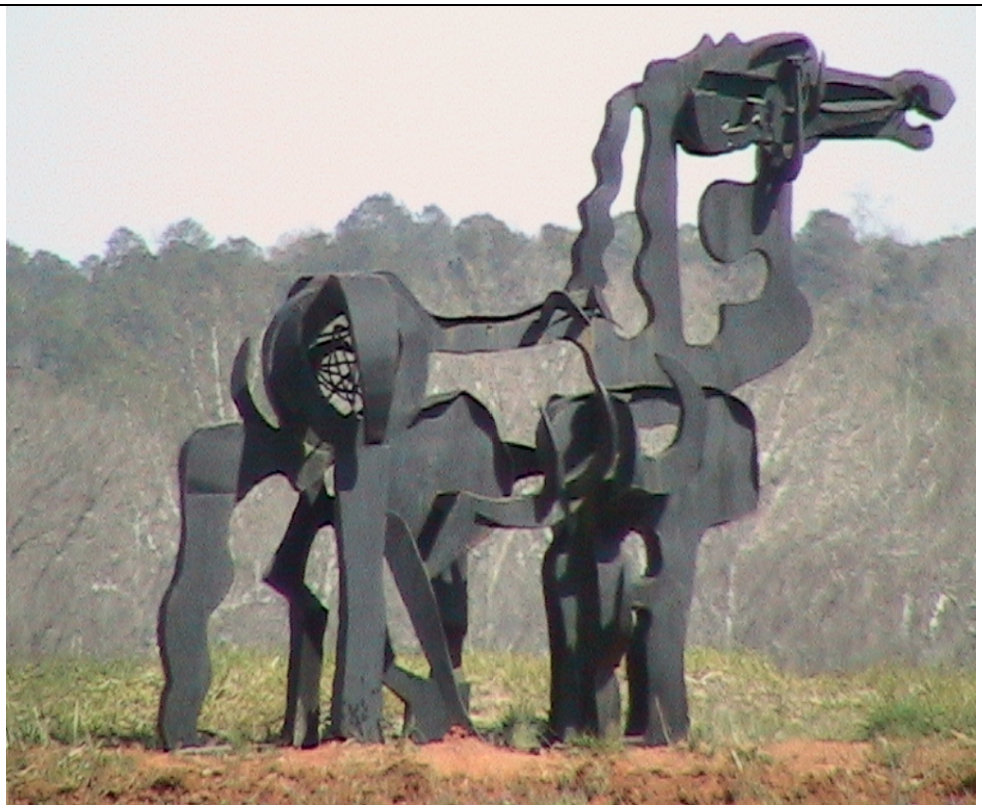

Figure 1. The 'Iron Horse' in rural Greene County, Georgia. © 2004 G. Andrew Page. Original sculpture by Abbott Pattison, 1954.

1954, nearly caused a riot. "The very night the sculpture was erected a crowd of students built a bonfire beneath the horse and beat on the sculpture until

firefighters used water hoses to drive them away" (Walters, 1995, p. 470). The posterior of the horse is now strategically positioned, in defiance, towards the University of Georgia, approximately 30 miles away.

The vignettes that follow in this *Preface* are my interpretations of actual events that occurred between the years of 1990-1999, when I was a teacher in an urban adult education program. These stories are included to set the tone for this research. The lives of these individuals were profoundly affected by computer technology. My writing is a personal attempt to provide knowledge of those struggles and personal displays of courage and give voice to people who society calls marginalized. The last vignette is an email response from an individual who questions the self-efficacy of those who do not make the "choice" to resist change and adopt technology and education. It demonstrates the failure of some to understand the complexity of the reasons behind the adoption of innovations. Figure 2 is a photo from a rural church marquee about the 'Haves' and the 'Have-nots.' While the content of the sermon was probably about something other than computer technology, the juxtaposition of these two groups has been at the crux of the argument about the Digital Divide.

Figure 2. The Rural Digital Divide. © 2004. G. Andrew Page.

Technology is More Than a Tool

Assistive technology has enabled some to express themselves visually. The next time you feel depressed, or less than adequate, think of this inspirational picture (Figure 3). It was drawn with the aid of a computer by an individual who is quadriplegic. His quadriplegia does not define him. Imagine not having the use of your arms and legs and that you are forced to use a wheelchair for mobility. Imagine that the only muscle you can use to move objects is your jaw. This predicament would leave many with a sour disposition as we would conceivably wallow in our own self-pity and depression. Imagine getting up the energy to smile despite the adversity that awaits you at every corner (or curb) and inaccessible turn during the day. Imagine that you had gathered the courage to go back to school and the bravado to endure navigation of wheelchair ramps (when available) and down elevators just to reach your destination--the Computer Lab. Imagine communicating on a computer with a pointing device that you attempt to

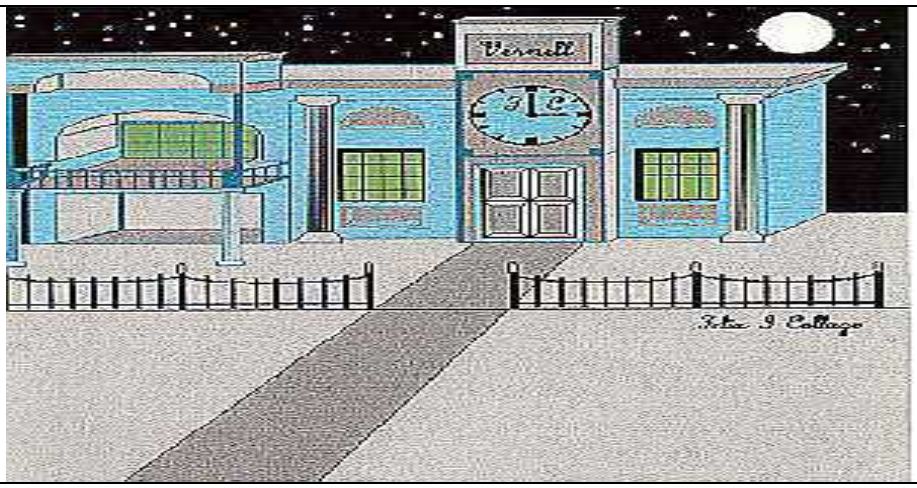

Figure 3. Perspective. (1998). From F. Calago. Used with permission of the artist.

control with the muscles of your jaw because voice recognition software was not available. Imagine slowly tapping one key at a time with this instrument to achieve a desired result. Imagine the level of determination and discipline needed to put yourself through these obstacles each and every day as you slowly work toward an objective. Imagine having the talent to use a computer to draw a geometrically correct perspective of a house and the surrounding landscape around it. Imagine having the patience to put in the detail of the carpentry and borders or the trim around the edges. This is a part of the human side of technology.

The Computer Genius: Capturing the Zeitgeist

It has been reported that the Greek philosopher Seneca (circa 80 B.C.) said: "There is no genius without some form of insanity." These words are true for this story about a young man who found solace with computers and used the technology to communicate his genius.

When I first met Randy in 1992 I was unsure about his reasons for coming to the Adult and Continuing Education Center. He had a heavy backpack containing all his life's possessions, (mostly old clothes) but also a neatly organized set of sacrosanct computer diskettes in a shoebox. These diskettes were his lifeblood of

information. Randy had a disheveled look with messy Einsteinian hair, unshaven face, and wrinkled clothes. His scraggly black beard barely covered his noticeable need of dental attention. He smoked the cheapest cigarettes, and he wore the stale cloak of tobacco smoke, which he carried with him in perpetuity. Randy was homeless and was spending his nights at a local night shelter. But he was more than a mere drifter or vagrant. Randy was a computer genius or a hacker in computer slang. Most people have the default image of a hacker as being a sinister person intent on destruction. However, Randy was a benevolent hacker. He would offer to help anyone with computer problems or questions and would even provide them advice on what to do in the future if they should be confounded with technology again. He would generally work *pro bono* although he was definitely not a *persona non grata*.

This shy, short individual, who was the epitome of a diamond in the rough, fascinated me. Randy had the ability to solve ANY computer problem and was more knowledgeable about computers than the so-called experts with computer science degrees. On several occasions I found him showing the computer teacher new technological concepts and shortcuts. Randy was an eccentric genius too. He was so focused on working on the computers that he either refused or forgot to bathe. But, despite these rough exterior traits, Randy was a generous person who loved to share computer knowledge with others.

Each day when the computer lab opened, Randy was the first to arrive and he would quickly get into his ‘zone’ that was like Csikszentmihalyi’s (1996) concept of creative *flow*. Flow occurs when individuals experience a highly charged and focused state of consciousness and awareness. Randy was in a state of flow when

he was working with computers. Randy easily developed a database for the entire school to use so that we could keep digital records of enrollment. He showed me how to debug computers and tweak them for optimal performance. It was basic stuff for him and Randy always had the energy to answer my many questions and at the same time provide understandable solutions. Randy was able to respond with zeal to the Zeitgeist of the Information Age. The term "zeitgeist" comes from the German "zeit" meaning "time" and "geist" meaning "spirit." The term is defined in English by *Merriam-Webster's Collegiate Dictionary* as "the general intellectual, moral, and cultural climate of an era."

During the next several months I grew to appreciate the sheer magnitude of Randy's expertise with computers. The computer teacher, Charles, and I were especially pleased to see that Randy was adjusting to a more sedentary and less eclectic life as he broke away from his nomadic lifestyle and steadily made his way into what some would call a state of 'normalcy.' As I look back on those days, I actually grew accustomed to Randy's smell and I smile at his many eccentricities like drinking warm soda. Cold beverages irritated his sensitive teeth so Randy was always ordering a soda with no ice or carrying around his own warm liter of carbonated beverage, which he placed on the floor by the computer workstation where he would spend the next several hours. It was unconventional but it worked for him and it worked for me too.

Perhaps the most glaring personal need in our society is the individual's need to belong to something or someone. Family relationships can sometimes be taken for granted and we don't always appreciate their importance. Lonely people become broken, depressed, and they learn to avoid pain as they shelter themselves in their

small world. I learned that this was the case with Randy during one of our many poignant conversations over coffee.

A year prior to his arrival into my life Randy had experienced deep pain and loss. About a year ago, there was a car accident involving Randy and his young wife. The car overturned into a river. Randy's wife had drowned in the car that night. Randy had managed to escape with several bumps and bruises and was treated at a nearby hospital. He tried to come to grips with the harsh reality but could not achieve final acceptance and closure from this moment that haunted him. He would leave this region to avoid the pain and memory. However, Randy would find that hell is portable.

"This is why I decided to leave California and see the world," Randy explained rather straightforwardly. Although I am not a counselor but a mere listener who was intrigued, Randy continued to unload some of the psychological baggage that was bearing down on him. Afterwards, I asked Randy if he wanted to contact his mother, and he agreed it would be a good idea to let her know he was doing well. It had been some time since they had communicated. When we reached her by phone Randy's mother mentioned to me how proud she was of Randy and admonished him to "stay in touch and keep working hard."

Randy began to lift himself from his life on the streets through his work with computers. This was progress for Randy because he seemed happier and he often talked about how bright the future was becoming: a future filled with many lucrative computer opportunities. He was hired part-time at the school to assist in the computer lab. Soon word began to travel, and people were hiring Randy as a consultant to work on their personal computers. His time was valued and

appreciated in the form of regular paychecks and more recommendations to clientele for his services. He called himself *The Computer Doctor*. He even personally designed a set of business cards to get the word out. Eventually, with the help of some friends, Randy was able to secure a place to call home, and he purchased his very own personal computer. Things seemed to be working out, as Randy was being re-socialized and transformed into the person he wanted to become. He actually smiled more and was making the most of his busy lifestyle. Despite his extreme fear of water from the car accident that killed his wife and the resulting depression, Randy finally bathed. It was a momentous occasion.

It was Charles, the computer teacher, who interrupted my class to tell me the news privately in the hallway between our classrooms. In his soft-spoken voice, and with his hand on my shoulder, Charles recounted the events that ended Randy's life. Randy had been stabbed, at his home. Randy managed to get to a phone and call 911 but the paramedics could not medically assist him until the police arrived. The door was locked from the inside and Randy could not get close enough to open it because of the severity of his wound. This was a crime scene and the emergency technicians could be in danger from the perpetrator. The paramedics could not disturb a crime scene because they perceived their lives to be endangered. They did not know that the perpetrator had already fled the scene. The police still had not arrived and the paramedics had to wait . . . and wait. Eventually, the police arrived but . . . the paramedics' service was of no use. Despite the fact that he lived less than 1 mile from a major hospital, Randy continued to bleed from the numerous stab wounds. Life left his body. He was 37 years young.

Although it has been twelve years since Randy's death, I still find myself thinking of him and using the computer methods he taught me. I miss his friendship, his smile and bad jokes. I imitate his willingness and desire to help others learn with computers. He used technology for good deeds and as a means by which to communicate with the world. We need more people like him.

Email Re: Rural Technology

*[*Note: The following was personal electronic communication (Used with permission) from an individual living in a persistently impoverished rural county in Georgia. It is about how they enjoy the benefits of computer technology*]*.

> In my case, technology is a tool. By using the tool, I am able to build the kind of life that I want. Technology provides me with the means to stay in the area that I love. Without it, I would have been forced to move years ago. Rural areas need ways to keep middle and upper-middle income households. Businesses such as Innovative Educators use the technology to compete with larger companies in areas where thier (sic) overhead is much higher. Their leveraging of technology has kept about 10 such needed jobs in our community. Those who resist technology are doomed by their own choice. There are only two choices in life, change or death. Our community has more than its share of people who don't understand the value of education and learning new skills. It's no coincidence that those are the people at the bottom of the economic ladder. There are ample opportunities for learning new skills. The HOPE Grant offers a no-cost technical education. XXXX County even provides transportation. It is difficult to have any concern for those who don't take advantage of these opportunities.

> For example, I am able to live in my home town [Actual name edited] and work from my home thanks to DSL service. I work for a company in Chicago. Also, Innovative Educators (www.innovative-educators.com) operates a catalog business in my home town [Actual name edited]. This would not be possible without the Internet. Computer technology makes it possible for people to remain in the rural areas that they love. Let me know if you need anything else. Good luck. Personal communication, March 23, 2003

These accounts represent how computer technology has directed changed the lives of three individuals and, in turn, how this change has impacted others. My goal for this research was to gain a better understanding of how technology has impacted the lives of other rural individuals. I set out to learn how they have been personally impacted by the issues of change and transition at the beginning of the Information Age. It is my hope that through this understanding we all can collectively grow more in a direction that challenges disparity and promotes all of humanity.

The following words have been attributed to many different sources, but I found it in Rogers (2001) and I believe that it sums up my approach and sentiment about this research endeavor.

> Go to the people
>
> Live among them
>
> Learn from them
>
> Love them
>
> Start with what they know
>
> Build on what they have. (p. 282)

Finally, I am acutely aware of the stigma associated with Southern, rural individuals (rednecks, hillbillies, backwards people, etc.). I am aware of how the rich, white elite holds hegemonic political and economic power and the poor are left dependent with little opportunity. Over time this debilitating mindset has consequences and is a component of the persistent poverty region known as the Black Belt. I am aware of the spatial polarization of race, class and gender in rural areas and the associated disadvantages of social stratification. One of my urban colleagues sarcastically calls this “my heritage” when referring to rural individuals. I agree with the sarcasm. I read about recent research conducted in rural communities in the northern United States and how individuals were able to cooperate and build upon their social relations and social capital to achieve the goal of an electronic community network (Oxendine, Borgida, Sullivan & Jackson, 2003). I immediately feel an almost idealistic desire to incorporate these ideas of cooperation and community in the rural Southern United States. However, reality quickly sets in and I remind myself of all the barriers and negativity associated with change and the seemingly impenetrable forces which seek to maintain the status quo.

I close with the words W.E.B. DuBois used in his final prayer 100 years ago in *The Souls of Black Folk,* a book written about the impoverished Black Belt of the Southern United States:

> Hear my cry, O God the Reader; vouchsafe that this my book fall not still-born into the world wilderness. Let there spring, Gentle One, from out its leaves vigor of thought and thoughtful deed to reap the harvest wonderful. Let the ears of a guilty people tingle with truth, and

> seventy millions sigh for the righteousness which exalt the nations, in this drear day when human brotherhood is mockery and a snare. Thus in Thy good time may infinite reason turn the tangle straight, and these crooked marks on a fragile leaf be not indeed (DuBois, 1903, *The After-Thought*).

Yes, I am the product of technology . . . in some way we all are. Medical, business, educational or whatever the type, technology has and is changing my life. Due to technology I am able to walk. When I was very young, my parents were told by teams of the best physicians (we had to travel hundreds of miles to from our rural home to the urban medical center) that I would not be able to enjoy a "normal" life and would be confined to a wheel chair. Technology has given me abilities and capabilities. I now am able to walk and maintain some semblance of *Homo erectus*. Like the participants in this study, I too, am a derivative of a rural environment.

I have learned that there are many ironies associated with technology. How can technology power satellites millions of miles away from Earth and yet we have people without healthcare, food, and the basic necessities? How can we use technology to the fullest extent in supplementing the education of students if we are not knowledgeable of the role that technology has or plays in the lives of individuals in these impoverished counties? Where is the equity? Wilson (2000) points out that equity considerations are "increasingly important as the ability to gain access improves and the cost of access decreases" (p. 262). What do we know about these citizens and their interactions with computer technology? How is technology impacting their lives? Are we being naïve to assume that technology will

be the panacea for the educational, societal, and economic woes of these individuals?

G. Andrew Page

December, 2004

CHAPTER 1

BACKGROUND TO THE PROBLEM

> Technology should be our friend in the creation of a better life; it should complement human abilities, aid those activities for which we are poorly suited, and enhance and help develop those for which we are ideally suited. That, to me, is a humanizing, appropriate use of technology. (Norman, 1993, p. 8*)*

In some location in every country of the world, a privileged, dominant group has the optimum information and communication technologies (ICTs) readily available, with the fastest speeds and access to powerful information that has the ability to transform their lives. These groups also possess the necessary educational background and technological understanding to operate these tools for their advantage. This scenario is in direct contrast with individuals living in impoverished urban and rural regions who have little or no access to computer technologies. Nor do they have the requisite education to maximize their learning potential and become digitally empowered. Demographic factors such as income, (NTIA, 1999, 2001), cost (Morissett, 1996) education, race, (Novak & Hoffman, 1998) that contribute to this disparity. This disparity has been called the *Digital Divide* (Morrisett, 1998).

The world is quickly changing from an industrial to a post-industrial and knowledge-based economy that uses ICTs (Salzman, 1994). A relationship exists between society and its technologies, and this association creates new possibilities

and concerns. MacFarlane (1998) comments on this societal transition to what he calls a *knowledge* [Italics added] *economy:*

> Over the coming decades higher education will be transformed by a powerful combination of economic, social and technological forces. The role which technology will play in this process is complex, but can be considered in an illuminating way in terms of three interacting economies–a cognitive economy, a learning economy and a knowledge economy. (p. 82)

Jarvis (2001) comments on this current condition of change for survival: “Within a generation we have moved from a world where most people could still expect to undertake little or no education after adolescence, to one where such education is a condition of economic survival for most if not all” (p. 25). Information and computer technologies and their importance in the Age of the Internet have been compared to the advent of electricity in the Industrial Age (Castells, 2001). All evidence indicates that our society/culture requires for more knowledge about the effective use of computer technologies to improve the standard of living for all. There are many unrealized opportunities. The learning economy has the potential to transform the learner’s environment, and the knowledge economy will potentially be able to connect the consumers and producers of various markets.

Technology affects all areas of life, a fact that generally ignored by the creators and designers of such structures. Society creates technology, but society is also created by technology. Daniel Bell (1995) points out, as Marx argued in *Das Capital,* ". . . in changing the technical world, man changes his own nature" (p.1).

Morrisett (1996) asserts, “If human nature is partially the result of a society's technologies, it becomes crucial to examine technology both to ascertain the effects of technological history and to attempt to infer the consequences of technological decisions on the future development of society” (p. 1). We currently live at the beginning of the Information Age and whether we embrace the diffusion of technology or not, it affects our lives directly and indirectly.

The Digital Divide exists predominantly in rural locations (Klinkenborg, 2004; Lenhart, 2003, NTIA, 1999). However, the connectivity gap in rural areas has been decreasing (U.S. Department of Commerce/NTIA, 2001). However, many experts (Castells, 1996; 2001; Warschauer, 2003) fear that if universal access to ICTs does not soon become a reality, millions of rural Americans will be further disassociated from a technologically proficient world. However, if technology continues to advance at its present pace, it will either bridge the disparity between the haves and have-nots or widen the gap as more technologically related divides separate and polarize.

Much controversy surrounds the Digital Divide debate and how people use or don’t use technology. There are people who believe that technology determines the way in which people act and react to change. John Dewey echoes this technologically deterministic philosophy:

> Change in methods of production, distribution and communication are the chief determining conditions of social relationships and, to a large extent, of actual cultural values in every advanced people, while they have reacted intensively into the lives of all “backward peoples.” (Dewey in McDermott, 1981, p. 400)

We need to become more aware of how the diffusion of ICTs affects the lives of the so-called *backward peoples* [italics added] which Dewey mentions. A key focus of this study builds on Guerstein (2003) work which argues for the importance of studying these rural communities and how they are transitioning into the Information Age. This research asked those who have just recently begun to embrace computer technology to explore their perceptions of this experience. He states: “Of particular interest is the context of communities and opportunities resulting from dramatic changes in local circumstances and opportunities resulting from technology change and globalization of production and competition” (p. 5).

Rural individuals are affected by technology and the diffusion of technology into rural areas has been examined (e.g., Beaulieu, 2002; Beckner & Barker, 1994; Bright, Evans, & Marmet, 2000; Butzen & Liston, 2003; Byers, 1996; Campbell , 1995; Collins & Dewees, 2000; Donnermeyer, & Hollifield, 2003; Guerstein, 2003; Schön, Sanyal, & Mitchell, 1999; Shipp, 2003; Stark, 2002; Tickamyer & Duncan, 1994; U.S. Department of Commerce, 1999b; U.S. Office of Technology Assessment, 1991, Vail & Hilliard, 1997; Wolford & Hollifield, 1997). Yet, there remains a great need for a “bottom-up” exploratory approach to understanding the ramifications of technology in the lives of rural individuals.

The Digital Divide

> Likewise, the essence of technology is by no means anything technological. Thus, we shall never experience our relationship to the essence of technology as long as we merely conceive and push forward the technological, put up with it, or evade it. Everywhere we remain

> unfree and chained to technology, whether we passionately affirm or deny it. But we are delivered over to it in the most possible way when we regard it as something neutral. (Martin Heidegger, *The Question Concerning Technology and Other Essays,* 1977)

The Digital Divide indicates a deeper socioeconomic, educational, gender, class, racial and political divide within our society. Poverty remains a major contributor to the educational and unequal diffusion of technology in the United States (Solomon, Allen, & Resta, 2003; U.S. Department of Commerce, 2000, 2001). Poverty affects all areas of society, including the social, emotional, and the physical health of individuals (Alaimo, Olson, & Frongillo, 2001). Poverty in the United States has increased consistently during the twentieth century (Carl Vinson Institute of Government, 2003; Glasmeier, 2002). In today's world this lack of technology-oriented knowledge is called *digital illiteracy* and *information poverty*. Cronin (1995) defines information poverty as "not knowing what options exist, being an information 'have-not,' that threatens to create a class of electronically colonized info poor techno-peasants" (p. 32). According to Buckley (1987), information poverty indicates the absence of computers and access to communication. Physical access to computers is the basis of measurement used by the U.S. Department of Commerce/NTIA (National Telecommunications and Information Administration, 1999, 2000, 2001, 2002) in addressing the Digital Divide: "People without computers and access to communication lines will be the information poor in the future unless other avenues for access are provided" (p. 47). These studies explicitly demonstrate that a difference of opinion exists within

the academic community regarding the definition of access and the extent of the Digital Divides. Kearsley (2000) offers these comments on the Digital Divide:

> A much worse aspect of the culture gap is the so-called Digital Divide. It has been well documented how computers are easily available to the "have" (i.e., middle and upper class urban/suburban) and not so available to the "have-nots" (i.e. poor rural/inner city individuals). This introduces a social stratum to online learning, which is highly undesirable. In theory, this cultural gap can be obliterated once computers and Internet access become as cheap as television sets or radios, but that has not happened yet. (p. 43)

To actively participate in the information-age society, individuals must become digitally literate (Negroponte, 1995). This condition that requires access to, and knowledge of, the use of networked computing devices. An inability to understand the potential of a computer system and to communicate effectively is a sign of digital illiteracy or information poverty. Rural geographical areas are more at risk for having high levels of information poverty than urban areas and the Southern region of the United States has the highest levels of digital illiteracy in the world (U.S. Department of Commerce/NTIA, 2000). In our world today we are surrounded by technology in many forms (e.g. cellular phones, price scanners, cars with computers, genetically engineered food etc) and it is important to become digitally literate to understand these changes and to be a participating member of society.

For this study, *information poverty* is defined in a geographical context between urban and rural areas. Information poverty and digital illiteracy are viewed

as a disadvantage because it deprives individuals of valuable information that could benefit them. These benefits can take many forms including educational, social, professional, financial, or just information as a matter of convenience. Information is power, social, and human capital and digital literacy requires that individuals be equipped with new skills, such as reading and creating graphs and charts, locating and accessing electronic material on the Internet and being able to critically reflect on that information's relevance and topicality. Websites like the 21st century Information Fluency Project, designed (http://wizard.imsa.edu/), by the Illinois Mathematics and Science Academy (IMSA) provides online tips regarding evaluating online materials, search engines, and conducting queries for information. However, access to a network must first be gained.

Why is it so important to study the impact of learning with ICTs on rural individuals? Mack (2001) responds that we are at a crucial juncture in society, and those without the skills to access this information will be the unemployed and disenfranchised of tomorrow. For example, the contrast between the technology "haves" in the urban center of Atlanta and the rural "have-nots" in rural Georgia, less than 100 miles away, is staggering. Also, it is alarming to see the disparity between the rural "haves" and the rural "have-nots."

Statement of the Problem

This study looks at the rural adult learner through the lenses of social justice and social informatics to inform, explain, and understand the role of technology from the viewpoint of the user. The social informatics framework provides a perspective of the disenfranchised. This research provides knowledge about the factors that play a crucial role in making sense of this relatively new domain of

adult learning. The effective use of ICTs has the potential means to achieve the larger goal of empowering individuals and communities by promoting economic and social justice. Technology can help accommodate the learning styles, learning and physical disabilities of some adult learners (e.g., *Preface: Technology as a Tool*) and the skills can be potentially taught quicker than conventional means.

While there have been studies (e.g., Castells, 1999; Kvasny, 2002) of the urban poor using technology, there is still a large chasm in the research regarding rural areas in the United States and the effect of computer technology on the lives of these adult learners. There has been much research (e.g., Bonk & Dennen, 2001; Kvasny, 2002; Tennyson & Nielsen, 1999) on groups of learners using information and computer technologies in various sample populations (i.e., metropolitan areas, community colleges, and universities). While learners in these major metropolitan areas have enjoyed the benefits from computer technology, many in the rural areas are at a disadvantage due to issues of access, bandwidth, and a basic knowledge of computers (U.S. Department of Commerce/NTIA, 1999). A review of the current research found a limited amount of research focusing on adults learning computer skills in a rural locale that has historically been high in poverty and unemployment (Malecki, 2003).

As learning with technology becomes ubiquitous in developing regions, it is imperative to add to the knowledge base of adult education the experiences associated with marginalized populations in underserved areas. It is much more than an issue about technology; it is about inclusion within the complex technology oriented society, learning and survival (Jarvis, 2001). Digital literacy is especially essential for adults and another major issue of technology and learning. As

suggested by Gilster (1997), digital literacy is defined as, “utilizing and manipulating information in a nonlinear format . . . it deals with strategies for evaluating the content of what you find on-line, verifying its authenticity, and placing it in the context of other information sources” (p. 10). The individual must be able to draw his or her own conclusions and create their own knowledge path. They must be able to apply the knowledge of ICTs to their lives.

The process of becoming digitally literate requires removing three major types of barriers: (1) Situational barriers such as living in a historically underserved and impoverished area; (2) Institutional barriers that discourage adults from participating in educational activities; and (3) Dispositional barriers such as a lack of self-efficacy and poor perception of themselves as learners (Cross & McCarten, 1984, p. 37). This study examines the situational and dispositional variables related to adults learning with ICTs.

In the last decade there has been a growing movement to provide computer technology training and educational services in rural underdeveloped areas as a means for addressing the problem with equity, access and education. Solomon, Allen and Resta (2003) note: “Surveys show that low-income areas and high-risk students are least likely to receive the benefits of exemplary uses of education technology and telecommunications” (p. xiii). This research helps bridge the gap between our knowledge of these opportunities and how adults learn with these technologies.

Through the diffusion of technologies into rural areas individuals can potentially become literate in the ideas and advances of our time. But, does this view education as an investment in human capital by only focusing on the

technological competencies, skills and knowledge while failing to recognize the socially contextual implications? Is there more to education and lifelong learning in these rural areas than just learning how to master technology so that one can be potentially employed?

Purpose of the Study

The purpose of this study was to explore the experiences of rural adult learners as they used information and communication technologies. There are cultural, social, political, psychological, and economic issues that must be addressed in direct and significant ways if rural individuals are going to be able to meet the demands of the technological information society. This study was guided by the following questions that relate to computer technology, the psychology of the adult learner, and the rural culture. The issues are much deeper than physical access to computers and the having a close proximity to Internet access.

1. What are the experiences of the rural adult learner with and from information and communication technologies?
2. What situational and dispositional factors influence or impede learning with and from computer technologies?

This study is about their socio-cultural experience and the meaning computer technologies play in the lives of adult students. Learning is embedded in our lifeworld (Rogers, 2001) and digital literacy is becoming essential for every student in all areas of society. Labbo et al., (1998) note that, “We assume that a primary goal of educational uses of technology is to foster the habits of the mind, the skills and the conceptual insights required for participation in the digital workforce of the 21st Century” (p. 8). But, is this assumption a reality or even becoming a reality for

the populace in rural America due to an inequitable social structure? Shapiro (1998) argues, “Vast differences in the material and cultural resources available to different groups will ensure that success in schools reflects the deep inequalities between races and classes in American society” (p. 48). For all races and classes, fluency in computer technology is a relative concept due to the inherent complex nature of technology. Papert and Resnick (1995) note that all individuals should be able to articulate a complex idea and construct meanings with significance through using computer tools. From this view, technology is a part of the social network of humanity.

Significance

The significance of this study is multifaceted but predominately stems from the exploration of the meanings adults make when using computer-aided communication and learning in a rural environment. There is still an enormous portion of our world that has not been exposed to ICTs. Only 4.4% of developing countries currently are Internet hosts (Steinberg, 2003). This study examines the socio-cultural context of education in areas that have traditionally been marginalized. It will also inform adult educators and students, community developers, designers of technology and policy leaders about the role of technology in these peoples’ lives. Other stakeholders include policy makers and community technology center (CTC) organizers. This research will help us all understand whose interests are being served and to what extent they are being met.

Studies have examined the demographics on computer ownership and have compared it to minority group affiliation, gender, age, geographic location and more. However, researchers (Kenway, 2001; Kvasny, 2002; Warschauer, 2002)

point out there is *more* [italics added] to the Digital Divide than physical access to computer technology and argues for a deeper analysis of the inherent social factors. Besser (2001) argues for "effective use of information, the ability for an information user to be more than a passive consumer, and the availability of relevant, useful, appropriate, and affordable content" (para 1). This research addresses these issues.

The gap this research seeks to fill concerns the human side of utilizing ICTs in a rural low-income community. Specifically, we do not know about the situational and dispositional factors facing this population of adults. This research seeks to go beyond a mere analysis of adults learning with technology and the circumstantial evidence of bridging the Digital Divide. Nichols and Allen-Brown (1997) argue:

> Educational technologists should become more engaged with research about many foundational, essential, provocative, and morally pertinent issues that are largely unconscionably ignored . . . The issues include societal relations, feminism, and popular culture. Further issues include critical relations of educational technology to language, visuals, race, capitalism, the military, politics, ethics, and ecology. (pp. 245-246)

The complex issues in this study involve digital literacy and equity, empowerment, and economic/social justice. Theoretically, this study adds to the knowledge base of adult education and instructional technology by specifically providing empirical research about the Digital Divide and how that chasm is being addressed with respect to the social context. With this knowledge, researchers, software designers, instructional designers, and educators will be able to tailor their educational practice to better meet the needs of the adult learner. Provided in the

literature review will be evidence of empirical research that examines social informatics, philosophical issues related to technology, and social justice. This will demonstrate the importance of learning how to better meet the needs of adult learners who are using and applying computer technologies to their lives and thereby helping promote personal sustainability. It is important to explore these social inclusion issues critically so that we can better understand what we as a society are gaining and what we are relinquishing.

Definitions

Definitions of learning, economics, and computer-related terms used in this study include:

Black Belt: The Southern Region in the United States known for persistent poverty. It stretches from West Virginia to Eastern Texas.

Computer-assisted instruction: A computer-based educational program or lesson developed with an instructor's assistance in which the learner(s) interact with the material using a computer (Williams, Poprock, and Covington, 1999).

Diffusion of innovations (DoI): Defined as "the process by which an innovation is communicated through certain channels over time among members of a social system (Rogers, 1983, p. 4).

Digital Divide: The Digital Divide is defined as the gap that separates those who have access to technology and the Internet and those who do not, a disparity which exists along the lines of education, income, culture, geography, and race (U.S. Department of Commerce, NTIA.1999).

Digital empowerment: This term refers to the way in which individuals gain and maintain control over their own lives and communities (Gutierrez, 1995).

Digital equity: "An educational means ensuring that every student, regardless of socioeconomic status, language, race, geography, physical restrictions, cultural background, gender, or other attribute historically associated with inequities, has equitable access to advanced technologies, communication and information resources, and the learning experiences they provide" (Solomon, Allen & Resta, 2003, p. xiii).

Digital literacy: As suggested by Gilster in *An Electronic Age* (1997), it involves utilizing and manipulating information in an electronic nonlinear format. Also, the individual must be able to draw his or her own conclusions and create their own knowledge path using computer technology (Landow, 1994).

Gini coefficient or Ratio: The Gini Ratio (or index of income concentration) is a statistical measure of income equality ranging from 0 to 1. A measure of 1 indicates perfect inequality; i.e., one person has all the income and rest have none. A measure of 0 indicates perfect equality; i.e., all people have equal shares of income. The United States Census Bureau has used grouped data to compute all Gini ratios. For a more detailed discussion, see *Current Population Reports,* Series P-60, No. 123. The formula for the Gini Ratio/Coefficient is:

$$G = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n}\left|x_1 - x_j\right|}{2n^2\mu}$$

Human capital: Term coined by economists Theodore Schultz and Gary Becker (1993) which is defined as the stock of workers and their skills, and is nearly three times as important as physical capital in terms of their relative contributions to national output.

Information poverty: “Not knowing what options exist, being an information ‘have-not,’ that threatens to create a class of electronically colonized info techno-peasants” (Cronin, 1995, p. 32).

Learning ‘with’ and ‘from’ computer technologies: Learning ‘from’ ICTs is associated with computer-based instruction or integrated learning systems. This is juxtaposed with learning ‘with’ technologies which is more of a constructivist approach whereby students create their own representations of knowledge rather than merely being saturated and bombarded with information and data (Reeves, 1998).

native Greene County citizens: This term refers to the individuals who have lived and are living in persistently impoverished Greene County for at least two generations. These are also the individuals who participated in this study. I used a lowercase “n” to distinguish between these people and the Creek Native Americans who are the indigenous inhabitants of Greene County. I also want to make a distinction between the native Greene County citizens and those who have immigrated (since 1979) to the Lake Oconee community. The etymology of the word: it arrived in the English language c.1374, from .Fr. natif (fem. native), from L. nativus "innate, produced by birth," from natus, pp. of nasci, gnasci "be born," related to gignere "beget," from PIE base *gen-/*gn- "produce". The noun is c.1450, originally meaning "person born in bondage," later (1535) "person who has always lived in a place. "Applied from 1652 to original inhabitants of non-European nations where Europeans hold political power; hence, used contemptuously of "the locals" from 1800 (Online Etymology Dictionary, 2001).

Poverty: Poverty is measured by the U.S. Government using 48 thresholds that vary by family size and number of children within the family and age of the

householder. To determine whether a person is poor, one compares the total income of that person's family with the threshold appropriate for that family. If the total family income is less than the threshold, then the person is considered poor, together with every member of his or her family. Not every person is included in the poverty universe: institutionalized people, people in military group quarters, people living in college dormitories, and unrelated individuals under 15 years old are considered neither as ‘‘poor’’ nor as ‘‘non-poor,’’ and are excluded from both the numerator and the denominator when calculating poverty rates. The Office of Management and Budget (OMB) mandates that all federal agencies (including the Census Bureau) use this poverty definition for statistical purposes (OMB Statistical Policy Directive 14, May 1978).

Social informatics: Computer technologies are influenced by social elements and relationships and this has implications for work, education and other interactions.

South: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia.

Technology: For this study technology is defined as an “electronic means of communication and transmission, and all mechanisms and means used for the production, storage, retrieval, aggregation, transmission, communication, dissemination, interpretation, presentation, or application of information” (*Technology Bill of Rights*, 2003).

Acronyms

The following is an alphabetical list of the acronyms used in this study.

CAI = Computer assisted instruction

CTC = Community technology centers

GCTEC = Greene County Technical Education Center

HOT= Hierarchy of technology. An evolving continuum specifically showing the stages of ICT integration. This allows individuals to situate themselves in their understanding

ICTs = Information and communication technologies. This term is used interchangeably with the term *computer technologies.*

ISI = Information society index

SI = Social informatics

TED = Technology-based economic development programs

WAP = Wireless application protocol

WiFi= wireless fidelity

CHAPTER 2

REVIEW OF THE LITERATURE

> Humanity is acquiring all the right technology for all the wrong reasons. (R. B. Fuller, 1981, p. 5)

> The illiterate of the twenty-first century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn. (A. Toffler, 1980,*)*

Overview

The preceding chapter gave an overview of the research problem with a general understanding of the social context and the importance of understanding marginalized individuals as they experience ICTs. In this chapter I will shed light on what previous studies have found. This review of the literature is divided into three distinct, yet overlapping, sections: (1) Digital Divide issues relating to underserved and rural populations, (2) a brief history of Greene County Georgia, and (3) the social informatics framework and its relationship to social constructivism and adult education. The social informatics theoretical framework is articulated as the appropriate theoretical base to understand the human side of technology as it relates to adult education. This literature review provides a synthesis of the discourse in the areas of adult education, instructional technology, and social work.

Digital Divide Issues

> Without dialogue there is no communication, and without communication there can be no true education. (Paulo Freire, 1986, p. 73)

This section of the literature review will cover the salient issues relating to the evolving Digital Divide debate about the diffusion of technologies. First, because the topic of a Digital Divide is related to poverty and inequality, I will provide examples from the research on social justice and technology. Secondly, I will offer social informatics as the appropriate theoretical framework for addressing these issues. Thirdly, I present a philosophical overview of the complex and conflicting views about the complex meaning of access and to computer technologies in society as a whole. Then I address the issues of access and the relationship between geography and ICT from the perspective of the international, national, regional, state and local areas. I conclude this chapter with a brief historical portrait of persistently impoverished Greene County in a region known as the Black Belt.

Poverty and ICTs

> People who are depressed-and make no mistake, people in depressed conditions for generations ARE depressed - do not connect at all with "content." The content of their lives is so prescribed and scripted and narrow that they cannot take advantage of even what most would consider GREAT content. *(Digital Divide Listserv* electronic communication, 2003)

Poverty is a relative term but it is viewed as the opposite of well-being. When physical poverty is viewed from an international perspective it is difficult to define.

While there is no single adequate definition that is universally acceptable I have decided to use Johnson's (1966) definition of poverty: "When the resources of families or individuals are inadequate to provide a socially acceptable standard of living" (p. 183).

According to a September 26, 2003 press release from the U.S. Bureau of the Census: "The nation's official poverty rate rose from 11.7 percent in 2001 to 12.1 percent in 2002 and median household money income declined 1.1 percent in real terms from 2001 to $42,409 in 2002" (U.S. Census Bureau, 2003, p. 1). Besides the obvious economic attributes, poverty has many forms of manifestation including physical, social, and informational.

Information poverty is defined as "not knowing what options exist, being an information 'have-not,' that threatens to create a class of electronically colonized info poor techno-peasants" (Cronin, 1995, p. 32). Britz and Blignaut (2001) argue information poverty relates to the availability and accessibility of essential information that people need for development. Although it is an international problem, information poverty manifests within specific situations and contexts. Rural areas have a disproportionate share of the poverty in the United States, and underdevelopment, accompanied by limited opportunity, are systemic in rural communities (Tickamyer & Duncan, 1990).

Walters (2001) provides an overview of the issues related to human rights in the Information Age and notes the inequality of the distribution of power and its impact on society.

Some would argue that there is a need to restore and preserve a more balanced distribution in the technological infrastructure and operating

system of the informational economy. The power to operate and program the digital economy should be broadly and democratically distributed. Health, education and culture ought to remain public resources, not merely profit-seeking commercial enterprises. The societal goods serve individuals in community and support or hinder human freedom and well-being. The IT policies we undertake on the cusp of the twenty-first century ought to cover the needs of the most vulnerable members of our society and enable all individuals to develop their own abilities of productive agency. (p.21)

Figure 4 shows the (2003) poverty rates by region of metro and non-metro (rural) areas within the United States and the national average for all Those who are at risk of information poverty due to poverty and geography could potentially benefit from the immense potential of effective uses of ICT. This

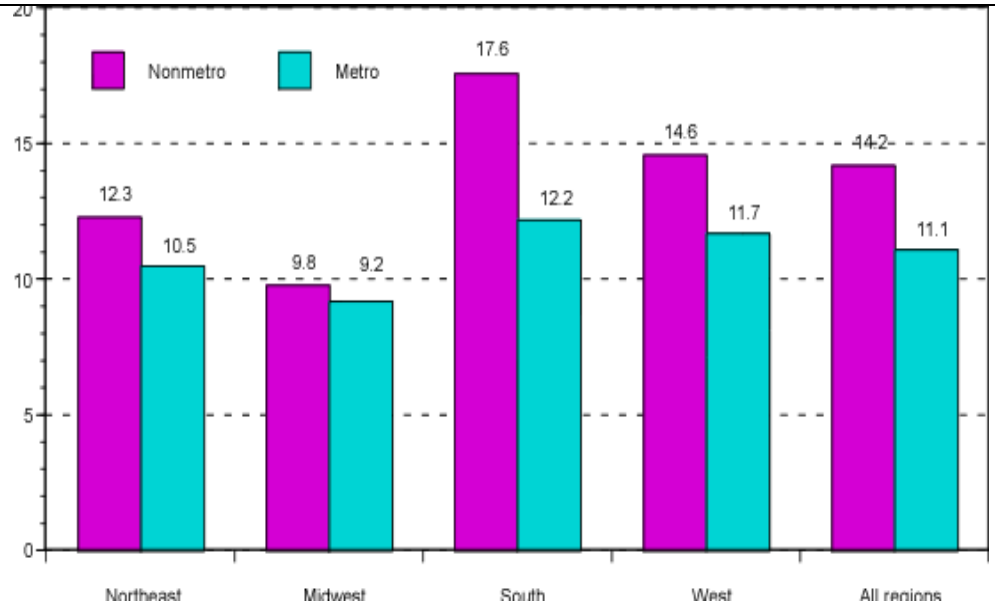

Figure 4: U.S. Poverty Rates by Region (2003). From "Poverty, Income see Slight Changes; Child Poverty Rate Unchanged" (2003). U.S. Bureau of the Census (2003). Census Bureau Reports.

graph shows how poverty is higher in the rural areas of four geographic regions of the United States. Nonmetro poverty is higher in all regions of the country.

Researchers have (e.g., Castells, 2001; Lazarus & Lipper, 2000; Kvasny, 2002; Warschauer, 2003) addressed the impact of computer technologies on the lives of low-income individuals. These underserved regions are among the neediest and would benefit most from having computer resources such as employment information, health information, educational information, and more. Fowells and Lazarus (2001) studied adult learners and found that "82 percent of participants said the (computer) program improved their educational opportunities and 55 percent of the adults used the program to seek employment or a better job" (2001, p. 8).

A recent report from the Annie E. Casey Foundation (2002), examining the challenges and opportunities of technology and the gap between the 'haves' and the 'have-nots,' states:

> Because twenty-first century techno-literacy and empowerment is so important, it is imperative that governments, industry, and philanthropic organizations support programs that provide access and training in underserved communities, particularly for young people. Unfortunately, program cuts proposed at the federal level could drastically diminish the ability of neighborhoods to address the Digital Divide. (Wilhelm, Carmen, and Reynolds, p.1)

ICTs are beginning to provide more and more educational opportunities in rural communities with the potential of making a difference in the educational and

training endeavors of these adult learners. In *Future Wealth,* Davis and Meyer (2000) point out the importance of the adoption of the Internet and related technologies by all sectors and regions of the world. “. . . The Net is providing the world’s population with access and opportunity” (p. 157). The U.S. Bureau of the Census (2001) found that there is a correlation between income, education, and computer usage. A higher education and income means it is more likely that an individual would be including ICT in his/her life. However, correlation does not prove causality.

Another key variable in examining the Digital Divide is *time*. As time progresses more and more, individuals will have the opportunity to embrace (at varying degrees) the diffusion of technology and the skills necessary to obtain, manipulate, and utilize information.

As early as 1984, Bates suggested that new computer technologies promised "a wider range of teaching functions and a higher quality of learning, lower costs, greater student control, more interaction and feedback for students" (p. 223). However, the incorporation of ICTs into education is not without its critics.

Social Justice and Computer Technologies

Poverty is about the unequal distribution of resources and access to opportunity. Inequality is a form of injustice. An excellent complement to social justice for isolated rural communities and the perceived socioeconomic advantages of computer technology is offered by John Rawls (1971). According to Rawls, there are two major principles for social justice. The first principle is that each person is to have an equal right to the most extensive total system of equal basic liberties compatible with a similar system of liberty for all. The second principle is that social

and economic inequalities are to be arranged so that they are both: (a) to the greatest benefit of the least advantaged and (b) attached to officials and positions open to all under conditions of fair equality of opportunity (p. 302). The Gartner Group (2000) has found that the disadvantage experienced by minority groups is related to education and the inherent inequalities brought on by technology. These findings point to the lack of access to educational opportunities leads to limited employment. However, Cullen (2001) argues that this report is possibly erroneous because it "assumes that all sections of the community place an equal value on access to the Internet, and that it is only a lack of resources that prevents people from doing so, but this assertion is untested" (p. 313).

A just social system defines the scope within which individuals must develop their aims. It provides a framework of rights, opportunities and the means of satisfaction which these ends may be equitably pursued (p. 31). Digital equity and the opportunity brought about from computer technologies are arguably an important right to a citizenry that values a participatory government and an opportunistic market system. However, is this the reality for rural Americans? The U.S. Department of Labor Statistics (2002) projects that by the year 2010, jobs in the computer and mathematical fields are expected to increase by 67%. How will this impact the lives of rural citizens?

Human and Social Capital via Technology?

If we take into account the contextual side of technology we can discover what participants are experiencing and better understand the social context (Fromm, 1968, p. 35). An insightful excerpt from the book: "Computers should become a functional part in a life-oriented social system and not a cancer which

begins to play havoc and eventually kills the system" (p. 96). Further research is needed to "examine the attitudes towards and barriers preventing use of the Internet before socio-economic reasons alone are assumed to be the major barrier to participation in the information age" (Cullen, 2001, p. 313).

Human capital analysts propose that training and education raises the level of opportunities for individuals as they learn new skills. Nobel Prize economist Gary Becker stated that social inequality is "generally positively related to inequality in education and other training . . . unemployment tends to be strongly related, usually inversely, to education" (1993, p. 12). In the next few years there will be a major demand for technologically trained individuals. Can ICTs lead to economic empowerment in rural persistent poverty regions?

Any community empowerment initiative is about an investment in human, social and technological capital. Wang (2002) notes that human capital is a crucial factor and training is essential for computer technologies to have any significant impact on rural social and economic development. Similarly, Hudson (1995) in a report to the World Bank on rural telecommunications found that "rural and developing regions show that telecommunications can contribute to social and economic development" (p. 3).

In a scathing critique of human capital theory and technology, Baptiste (2001) argues against treating individuals as mere cogs in a wheel of the capitalistic machine where an individual's socioeconomic status is related to their educational attainment. He states "An adaptive adult education program might try to alleviate poverty by attempting to change the behavior of the poor while ignoring the social, political, and economic conditions that help to maintain poverty" (p.

197). When educational programs are centered on human capitalist theory they tend to treat humans “fated adapters” (p. 198) when they could be viewed as “creative transformers” (p. 198).

To ensure that more individuals can participate in the new knowledge-based economy brought about by the advances of computer technology, many emphasize the importance of extending opportunities to those living in marginalized areas. Many rural communities are providing community technology centers so that individuals can learn computer skills and gain certification (Cisco, 2003). The Georgia Department of Technical and Adult Education (DTAE) has addressed the demand for skilled workers in technical fields by building technical colleges and smaller satellite educational centers throughout the state. The state of Georgia in fiscal year 2000 allocated $51 million (Total budget $13.2 billion) to the technology-based economic development (TED) programs. Georgia is in the top five states in the nation in spending for these types of technology programs (Bozeman, 2000). These programs, according to Bozeman (2000) “are not the cause of income inequality…but are part of the cure…by latching them even more closely to higher education and to the broad based development of scientific and technical human capital” (p. 3).

How do these citizens make meaning from this shift to lifelong learning via technology? The next section provides insight on the importance of the social context in interpreting and understanding specific groups in order to answer these contemporary questions.

Figure 5 shows the geographical distribution of the Technical Colleges and satellite educational centers for adults in 2003. There are a total of 56

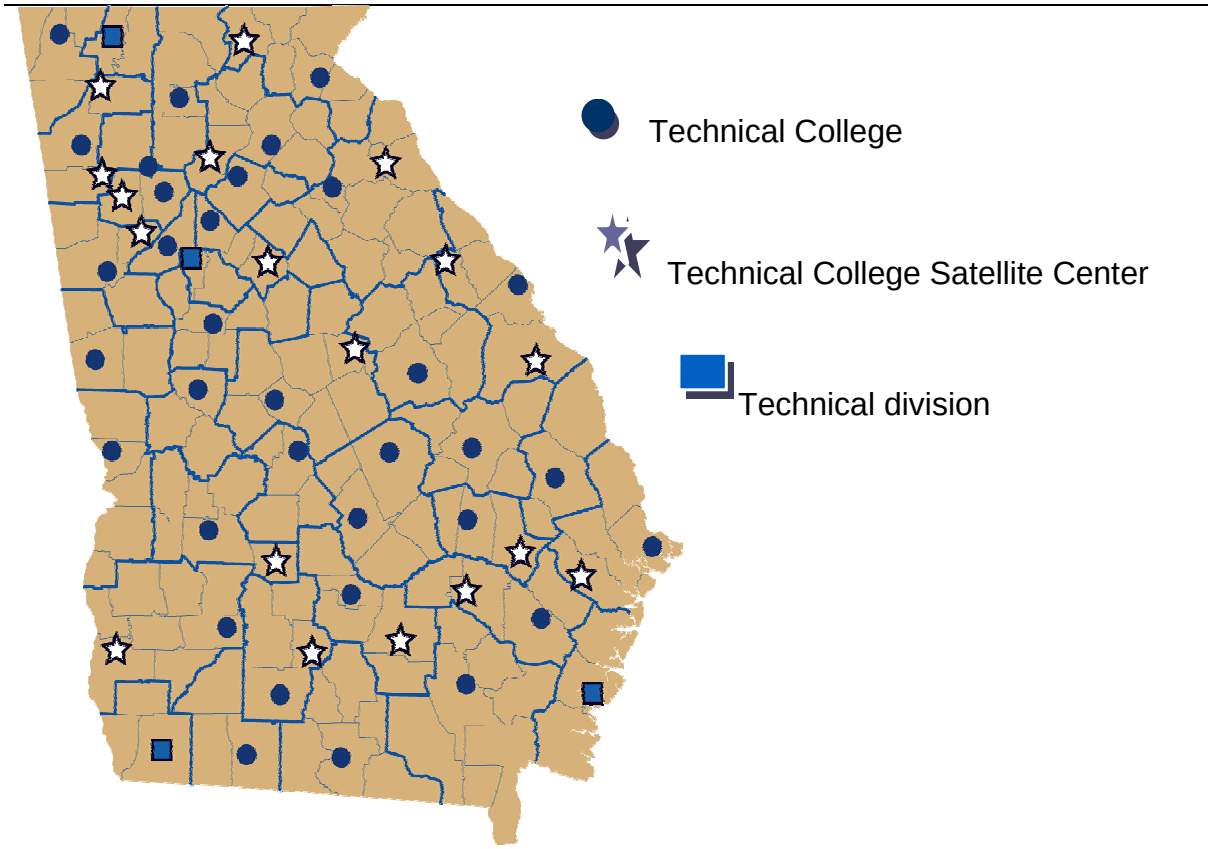

Figure 5. Technical College Education in Georgia, 2003. From Georgia Department of Technical and Adult Education. (DTAE, 2003). Available at http://www.dtae.org/teched/colleges/

educational outlets for students to work on a Technical College education or degree in the state of Georgia. (This includes: 34 Technical Colleges, 18 satellite divisions and 4 technical divisions).

Socio-Cultural Contextual Learning

> . . . that series of inventions by which man (sic) from age to age has made his environment is a different kind of evolution—not biological, but cultural evolution. (J. Bronkowski, 1973, p. 53)

> It is important to meet and talk to the people first. We at the M S Swaminathan Research Foundation (Centre for Research on Sustainable Agricultural and Rural Development) are working with many village communities in southern India and have some experience in the use of ICT in development. Our experience tells us that bottom-up processes starting from an appreciation of the people and their context, followed by a survey of their needs and their familiarity with technologies can lead to successful programmes of poverty alleviation. We did not use flyers and phone calls but our staff and volunteers spends a lot of time meeting and talking to the people in the villages before we set up our knowledge centres. (S. Arunachalam, personal communication, September 15, 2003)

Socio-cultural contextual learning with technology and the rural geography is described in this section of the literature along with the relationship to the urban/rural split and the relationship to persistent poverty. The socio-cultural context of the rural landscape is an integral component of this investigation. Historically, researchers, sociologists and computer scientists have considered the social impact of technology since the advent of the Information Age (e.g., Bell, 1973; Jacobsen & Roucek, 1959; McLuhan, 1964; Norman, 1993). Williams and Edge (1996) provide an overview of how studies focusing on the social shaping of technology (SST) emerged in the 1980s as a critique to proponents of technological determinism. Pratt and Palloff (1999) note that it is not the technology but the learning process which should be the primary focus of education. Mack (2001) concurs and points out that for many individuals ICTs are shrouded in mystery. “Uncloaking this mystery means explaining the nature of computers and what they

can accomplish in layperson's language *and* making it relevant to daily experience" (p.32).

Most research has continued to focus on content or the technology and not the individual. Brown and Duguid (2000) argue in their book, *The Social Life of Information*, that if researchers examine the information too closely they run the risk of overlooking the social context and why the information is or is not important in the first place. "By taking more account of people and a little less of information" (p. 19) would be the preferred means to determining the utility of technology in their lives.

Turkle (1983) used an ethnographic methodology in conducting interviews over the course of six years with over 200 kids in an urban context who were learning with computers. Her goal was to "study computer cultures by living within them, participating when possible in their lives and rituals and by interviewing people who could help me understand things form the inside" (p. 20). She chronicles the representations and meanings which people give to computer technologies. Her firm belief is that technologies "evoke rather than determine thinking" (p. 21-22). She also notes that adults are less open to change via computer technologies than children and are more "protective with the familiar" (p. 165). Castells (1999) concurs with Turkle (1983) about the multidimensional nature of technologies and that the subsequent change in the lives of individuals in not technologically determined.

Bright, Evans and Marmet (2000) working at the Center for Advancement of Rural Communities in South Dakota, provide some of the perceptions of rural individuals to computer technology. "Rural economic development requires rural

citizens to envision a larger community. This requirement conflicts with traditional values of self-sufficiency and independence" (p. 225). "Rural people are difficult to group together. Despite the homogenizing influence of television and other electronic media in producing a nearly uniform suburban culture across the nation, small communities in sparsely populated areas have retained distinct cultural traditions and identities" (p. 227). Many individuals living in rural low-income communities are excluded from the economic, social and cultural mainstream. This rare study into the rural context concludes:

> New human linkages of vitality and hopefulness are certainly in the rhetoric of digital advocates. In promoting, engaged, and interactive "live" environment in rural communities, we have experienced that rural people of diverse backgrounds and characteristics will come together to consider the alternative futures and the impact which technology could play, both positively and negatively. The perennial concern in discussions has been whether the Internet, the Web, Microsoft, or "info-tech-babble" will mean anything. (p. 228)

There are some who believe that the level of complexity is more than mere economic or technological access to computers and the Internet. Miller states: "To view the rural crisis solely in economic terms grossly oversimplifies the complex nature of community" (1991, p. 43). A summary of this rural educational research initiative states: "A visible national shift to service-producing activities creating a need for changes in the existing work force and new information technologies holds promise for new economic activity and to help remote communities overcome their isolation" (Miller, 1991, p. ii).

Research by Collins and Dewees (2000) examines a rural school (P-12) environment and addresses the issues of how race, social class and uneven

economic development. They conclude with an admonition for policymakers to implement more computer technology to resolve some of the Digital Divide barriers. According to Loader (1998) “Little attention has been given to a consideration of the consequences of uneven technological diffusion for social inequality” (p. 4). What is the relationship between poverty and technology and how can we gain insight from within the social context of the problem?

Theoretical Framework: Social Informatics

> My metaphor is that of the world as seen through the time sensitive eyes of the giant Sequoias in the US with age measured in centuries, as opposed to that of the Mayfly whose life span is measured in hours. A human's life seems almost infinite and stable to the latter and rather volatile to the former. A social system such as a town might almost appear the same. (Tom Abeles, personal communication, July 26, 2004)

The theoretical framework for this research involves the individual using ICT within the context of the environment to learn more about those actually using the technology. The Gestalt learning theorists of the early twentieth century believed that the insight derived from an individual’s perceptions are highly instrumental to understanding their learning ability. “The human mind is not simply a passive exchange-terminal system where the stimuli arrive and the appropriate response leaves. Rather, the thinking person interprets sensations and gives meaning to the events that impinge upon his consciousness” (Grippin & Peters, 1984, p. 76, as cited in Merriam & Caffarella, 1999, p. 253).

There are those (e.g., Kenway, 2001; Kling, 2000, 2001; Kvasny, 2002; Norman, 1993; Turkle, 1983) who advocate a more human-centered view of

technology and people. Postman (1993) argues that technology systems are ecological and there are dynamic cause and effect relationships. New ventures such as the Internet would affect the political, economic and social systems within any community. Likewise, Borgmann (1984) notes that technologies influence the way we think and act and our worldview.

As the demand for technological skills increases in the years ahead it is important to not only reach out to marginalized communities and thrust a computer screen in the face of a student, but to determine from the learner what components of the technology and content work and which need reconsideration. In support of a better understanding of the relationship between humans and technologies is a theme for Donald Norman's work (1993). Norman states:

> In the past, technology had to worry about fitting people's bodies; today it must fit people's minds. This means that the old approaches will no longer work. The same analytical methods that work so well for mechanical things do not apply to people. Today much of science and engineering takes the machine-centered view of the design of machines and, for that matter, the understanding of people. As a result, the technology that is intended to aid human cognition and enjoyment more often interferes and confuses than aids and clarifies. (p. 9)

In 1996 this genre of research that embodies the human-side of technology was labeled *social informatics*. Social informatics is defined as "the interdisciplinary study of the design, uses, and consequences of information technologies that takes into account their interaction with institutional and cultural contexts" (Kling, 1999).

Also, “Social informatics has been a subject of systematic analytical and critical research for the last 25 years” (Kling, 2001, p. 1). Social informatics can have many potential benefits. For example, having this insight of a “student-and learning-centered approach to research would likely influence educational practice by increasing faculty sensitivity to the individual learner" (Diaz, 2000, Implications, para 3). The crucial component and perspective that is missing from the discussion comes from the learner.

The main theme of social informatics is that computer technologies are influenced by social elements and relationships and this has implications for work, education and other interactions. Exploring the learner’s perspective is a complex issue and yet it is critical for effective instructional design, learning, and overall learner satisfaction. “If we are only concerned with input-output figures, a system may give the impression of efficiency. However, if we take into account the human side of technology we can discover what participants are experiencing (Fromm, 1968, p.35). McInnes (1997) points out that there are still barriers that prevent people from using technology and those who do “use technology, see it as a powerful tool which now constitutes an important role in their lives”(p. 3). She concludes that computer technologies are changing in a positive way to meet the needs of individuals and this results with a change in their perceptions.

Social informatics (SI) also examines the human relationship to technology. It is further defined as:

> The body of research and study that examines social aspects of computerization—including the roles of information technology in social and organization change and the ways that the social organization of

information technologies are influenced by social forces and special practices. (Kling, 2001, p. 1)

The field of social informatics also refers to “the networking name for the interdisciplinary study of the design, uses, and consequences of information technologies that takes into account their interaction with institutional and cultural contexts” (Kling, 2001, p. 2).

Kenway (2001) furthers Kling’s conceptualizations by noting that most ICT research focuses on the technologies as tools there is a very little concern about the social and cultural contexts and the relationship with computer technologies. “Given the implications of converging technologies for reshaping the lives of those in the so-called developed world educators the world over have a responsibility to produce a genteel citizenry which is well and critically informed about such technology’s social and cultural implications” (p. 149). Similarly, Kling (2000) argues: “Unfortunately, much of the writing about the social changes that these new information and communication technologies (ICT) will or could catalyze has relied on oversimplified conceptions of the relationship between technologies and social change” (p. 217).

In an essay entitled *Seeing Education Through the Eyes of Students*, (Caporrimo, 2000) cites the importance of this human centered approach to gain the students’ perspective on ICT. “To see education through the eyes of students is a daunting task, one that challenges us to think beyond our own perspectives and our personal preferences for research style” (p. 5).

In the area of social informatics the importance of the physical presence of computers takes a second seat now as the human factor plays a more important

role. Kling, former director of the Center for Social Informatics at Indiana University, explains:

> [The] big problem with the "Digital Divide" framing is that it tends to connote "digital solutions," i.e., computers and telecommunications, without engaging the important set of complementary resources and complex interventions to support social inclusion, of which informational technology applications may be enabling elements, but are certainly insufficient when simply added to the status quo mix of resources and relationships. (as cited in Warschauer, 2002, p. 6)

Deeply rooted in the study of social informatics is the construct of social constructivism and the belief individuals create their own realities and interpretations of the social forces they are experiencing. This is countered by technological determinism and the belief that technology is the major factor in our lives. The next section shows the relevance of social constructivism as a framework for learning more about the human side of technology.

Social Constructionism

> Information is the name for the content of what is exchanged with the outer world as we adjust to it, and make our adjustment felt upon it. The process of receiving and using information is the process of our adjusting to the contingencies of the outer environment, and of our living effectively within that environment. (N. Weiner, 1950*)*
>
> We can define ourselves through the converging communication technologies of the telephone and the Internet. (J. D. Bolter & R. Gruisin, 2000, p. 232)

Social constructionism is an addendum to the theory of constructionism. The social setting or context is an evolving construction being influenced by social, cultural, economic, educational and political forces (Shaw, 1996). Social constructionism is a component of the social informatics framework of this study and has been instrumental in studying the "development of knowledge that is relevant to the lives of members of marginalized groups" (Hardina, 2002, p. 58). Brandt (2000) states:

> Although the 20th century began with a fairly myopic view of teaching as the presentation of knowledge, it concluded with a panoramic perspective on instruction that addressed such diverse aspects of learning as the importance of affect, the role of attitudes and beliefs, the importance of metacognition and prior knowledge. (p. 90)

Hughes (1987), influenced by social constructivism, believes in a more holistic conception of technology and how it is affected by science and social forces. Hughes's logical argument is that since technological systems are social constructions made by humans the components and outcomes are "socially constructed artifacts" (p.52). Castells (2001) agrees by arguing that "institutions, companies, and society at large, transform technology, any technology, by appropriating it, by modifying it, by experimenting with it. This is the fundamental lesson from the social history of technology" (p. 4).

There are those (e.g., Garson, 1995; Loader, 1998; Mandel, 1972; Tenner, 1996, 2000) who question the outcomes of so-called technological progress and the post-industrial assumption that technology can effectively address social problems. Saco (2002) in *Cybering Democracy: Public Space and the Internet*, notes that the

philosophical debates around the Internet and technology “has tended to fall into two broad camps.” The dystopian position argues that ICTs are changing our world by alienating people and increasingly creating social problems requiring people to “restructure our daily lives in antidemocratic and asocial ways” (pp. xv-xvi). The other strand of consciousness is the utopian view that cites greater access to information/knowledge and democracy as liberating forces between ICT. But, first, I will discuss the arguments from those who are critical of technology. The next two sections of this literature review examine the philosophical debate between the two main viewpoints surrounding ICTs.

The Dystopian Techno-Critical View

> When we had the telephone revolution, we didn't have Teddy Roosevelt or Woodrow Wilson calling for a telephone on every single desk of every single student. In the early days of television, we didn't have Kennedy, who was truly the first President to understand the medium, calling for a TV on every desk or one in every classroom. And yet, with regard to the computer, we've somehow developed this bizarre "silver bullet" mentality, that there are single-shot solutions to educational quality, and that the computer, well-programmed or well-networked, is a solution to the problem - that education is a problem to be solved. Well, that's complete nonsense. (Schrage, 2000, p. 31)

The roots of the 19th and 20th century dissent about technology and its effect on society can be traced to the Frankfurt School of Critical Theory. For many citizens, and especially minorities, the addition of technology into their regular routine can have negative connotations. Mack (2001) argues that the

> “aura of mistrust” (p. 23) in science and technology found among blacks is a derivative of Tuskegee experiments and the more recent conspiracy of AIDS being .” . . created by the government to intentionally infect black people” (p. 23) Snow (1959) in his lecture, *Two Cultures and the Scientific Revolution,* provides the case of the British Luddites and how they destroyed the machines in the factories ushered in by the Industrial Revolution. Technology was forced upon these workers and they reacted in a counter-revolutionary manner by attempting to destroy the technology. It is debatable whether the British Luddites destroyed the machines because it took their jobs or whether the Luddites were solely anti-technology for the sake of anti-technology. However, the word *luddite* has evolved into an adjective and is defined as: “One who opposes technical or technological change” (American Heritage Dictionary, 2003). Monke (2001) writes about breaking down the digital walls for greater inclusion but also notes how philosophers from Plato through Postman (1993) have noted the “double-edged character of new technologies” (p. 21). Technologies have consequences. Postman concludes that technologies have a cause-and-effect relationship which is experienced through any network.

The cyber-critical view of technology is popularized by French sociologist Jean Baudrillard (1983) and American writer Edward Tenner (*Why Things Bite Back: Technology and the Revenge of Unintended Consequences*, 1996). Likewise, the critical approach to the role of technology and education is proposed by Steiner, Krank, MacLaren, and Bahruth (2000). Their research also examines the social justice issue and how the focus today is more on creating “cybercitizens within a teledemocracy” (p. 16). They point out how the techno-elite have “secured a

privileged position that is functionally advantageous to the socially reproductive logic of entrepreneurial capitalism" (p. 16).

Despite Mitchell's (1999) optimistic argument that computer technology can have democratizing or equalizing effects economically, the reality is that computers tend to be owned by the middle and upper classes who have little interest "in using technology to create a democratic revolution" (Garson, 1995, p. 2). Burnham (1983) in *The Rise of the Computer State*, envisions a high-tech computerized city of the future for technocratic elite while the impoverished are those who are computer deficient and, therefore, missed the Tofflerian power shift.

Technology can be viewed as an instrument of social capital that the dominant classes have adopted and integrated to maintain power. Loader (1998) is also critical of technological systems and/or networks along with the mythological 'leveling effect'. He notes:

> Social divisions and distinctions have remained largely untouched by the manifestation of a whole range of computer-based technologies, and the Internet will be no different. It owes its existence to the desire of info-rich actors to talk and share information and knowledge with other info-rich actors, and whatever their altruistic motives may or may not be, neither will have the power to extend membership of the club. Contrary to current Internet folklore, the users do not own the 'means.' (p. 23)

In a report on low-income communities conducted by the Benton Foundation (Goslee, 1998) the new opportunities of ICT are actually "aggravating the poverty and isolation that plague some rural areas" (p. 1). There promises to be a

restructuring of communities in the near future (to include ICTs) and an evolution into what Castells describes as global informational economies (Castells, 1996). This restructuring has dire consequences. According to Putnam (2000) one of the negative consequences of the increasing influence of technology is the creation of a psychological disengagement and a decline in social capital, defined as "the networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (p. 67). Selwyn, Gorard, and Williams (2001) question whether computer technology will bring about more opportunity or reproduce more inequity and exclusion. They conclude "there is considerable evidence to suggest that merely providing additional access to IT (information technology) in existing sites will not necessarily overcome the traditional institutional, situational, and motivational barriers to learning" (p. 270).

In some rural communities in the world, the Internet and its associated computer technologies are viewed not as a rural economic development solution and pipeline to global markets, but as a time-wasting mechanism that frustrates the user. Gumucio-Dagron (2002) describes this frustration, from an international perspective, by noting how computers have to be replaced ever five years and, before that, the software has to be upgraded. He asks: "How sophisticated should computers that are placed at new telecentres be, especially in rural areas with very little history and experience handling ICTs?" (Appropriate Technology, Problems, para 4).

How do rural citizens within the United States make sense of the infusion of this system and paradigm shift into their lives? Wolf, author of *An American Mosaic*

(1999) gives a distrustful view of progress and technology and provides an insider's perspective from rural America.

> We who live in rural America see our importance from a different perspective. We see rural society (what is left of it) as a testament to the success and humanity of small-scale institutions, neighborly relations, and self-reliance. From our perspective, our existence needs no justification, and the more intelligent members of the urban mass (be they political bosses or newspaper editors) should realize that by destroying rural America, and rural societies anywhere, that the humaneness of human societies disappears. The urban can never completely overcome and absorb all of the rural, but should that day ever come, that would be the day when humanity would almost virtually cease to exist. With genetic engineering of plants and animals proceeding at an alarming pace, even intruding upon the human being, the total triumph of the artificial is not unimaginable. (p. 3)

Similarly, the perception of ICTs making a difference in the lives of rural communities has not been a reality. Odasz (2002) comments on the flop of the Internet in rural areas:

> Because installation of the Internet didn't automatically produce visible economic benefits, many feel this disproved the potential of the Internet. At the same time, early adapters in most rural communities are already demonstrating E-commerce successes, but their

innovations are often ignored by those who shun technology. (2002, p. 4)

Odasz sums up this sentiment by arguing: “The recent drop in technology stocks and the Dot-Coms is due in part to the fact that people have not embraced the empowering potential of the Internet as quickly as was hoped” (p. 5).

ICTs have caused many individuals, who are otherwise adopters of technology, to become cautious and hesitant before adopting new technologies. Ehrmann (2000) argues that there is a great deal of hype about computer technologies and that every time a new medium for education comes along (television, satellite, video disc, etc.) there are those who erroneously believe a revolution is about to happen. Erhmann states:

> But the revolution doesn't happen. By the time another major new technology appears a few years later the earlier predictions have been forgotten or shrugged off. If anyone wonders what went wrong, they are told that the old technology was obviously too slow or primitive. (p. 40)

Others (Kenway, 2001; Rudd, 1999) argue that we are missing important aspects when examining the implications of the diffusion of ICTs. They emphasize such technologies as tools for learning or as a means of enhancement. In particular, they claim it is more important to ask “What are the quality of life and social justice issues which arise?” and “What sort of polity will new technologies help bring into effect?” (Kenway, 2001, p. 149).

There are those who believe that technology is actually broadening the gap both educationally and economically between those who have access to computers

and those who do not. Norris (2001) concludes that an analysis of the social inequalities associated with computer usage shows “broader patterns of social stratification” (p. 92). Research on motivation and technology have shown that simply giving a computer to everyone, as Newt Gingrich suggested by “giving every poor person a laptop” (Resnick, 1997), does not address important social and pedagogical issues.

In regard to learning with technology, Selwyn, Gorard and Williams (2001) conclude that there is “considerable evidence to suggest that merely providing additional access to information technology (in existing educational sites) will *not* necessarily overcome the traditional, situational, and motivational barriers to learning” (p. 258). Access to technology, in other words, cannot presume that citizens will train themselves to high levels of proficiency in computer’s or education.

The cyber-critical/dystopian point suggests that new opportunities would serve only to reproduce and reinforce the hegemony of those already in power. Technology has also been blamed for many of society’s systemic problems. Computer technologies are viewed as a means by which people loose their privacy, jobs, their participation in democratic government and even their own personal dignity. “Technological progress is unavoidably a prime cause of unemployment and technologists have no panacea for avoiding it, but there is a special technological reason for central governments to shoulder the burden of vocational training and retraining” (Rudd, 1999, p. 332). What responses have been documented from actual rural Americans regarding their perceptions of such computer technologies and Internet usage?

The Pew Internet Project (Lenhart, 2000) tracked the overall access to the Internet as being between 57 percent and 61 percent of the total population. This report found many individuals perceive the Internet as a “dangerous thing, too expensive and confusing” (p. 3) to be a part of their life. In a more recent study, Lenhart (2003) examined how 42% of Americans do not use the Internet and grouped these individuals into three categories: *Net-evaders*, *Net Dropouts,* and the *Truly Disconnected*. However, the Internet is only a portion of what computer technologies are about and more research is needed to examine the larger role of the diffusion of technologies to marginalized areas.

The Utopian, Techno-Opportunistic View

The pro-technology argument revolves around greater participation and democratization through the free exchange of information and ideas from a wide array of cultures and opinions. The roots of this cyber-opportunistic view of technology are found in Marx’s *Das Capital*. Marx believed that technology and innovations occur as a result of the collective action of many. “Technology reveals the active relation of man to nature, the direct process of the production of his life, and thereby it also lays bare the process of the production of the social relations of life” (Marx, 1977, p. 493). More recently, Negroponte (1995) states: “Digital technology can be a natural force drawing people into greater world harmony” (p. 230). Similarly, Mitchell (1999) notes: “Digital technology should have a powerful equalizing effect by delivering services and opportunities to those who would be excluded by location or lack of mobility” (p. 162). The key word is *should* [Italics added].

However, in order to empower individuals, technology and the relevant information received through the Internet, many argue that ICTs are needed to address problems such as poverty and promote community building. This logic concurs with another optimistic assumption that computer technology will be the panacea for the current educational woes. Various reports (Benton Foundation, 1997; Glennan & Melmed, 1996) promote the philosophy that technology will "make learning more flexible, bring costs down, make learning more accessible and affordable, offer reliable information, and allow people to learn at their own pace" (Selwyn, Gorard, and Williams, 2001, p. 5).

Research has also shown that computer technology has been viewed by educators as having enormous potential for all levels of education (Harasim, Hiltz, Teles, & Turoff, 1995). Likewise, Gillani and Relan (1997) and Palloff and Pratt in online web-based learning (1999, 2001), Vaughn, (2000), Bonk and Dennan (2001) and Gorard, Selwyn, & Williams,(2000) have made contributions promoting adult learning with technology. There is a growing amount of literature on the subject of how to effectively use technology as a supplement in the physical classroom (e.g., Brandt, 2000; Collins & Dewees, 2000;). Overall, the advent of ICTs and its inception in the adult education arena has assisted many learners in about various technologies, as well as, learning with technology to achieve another desired goal such as a GED or Microsoft certification.

The Jeffersonian view of democracy is built on access to information and the ensuring of an informed public. Salzman (1994) argues that technology is socially shaped and is part of a larger network of computers, people, and non-technical factors. There is no doubt that a division exists between those who can

communicate their ideas and those who have little or no opportunity to dialogue or no dialogue at all. However, this has always been the shape of social relations. From this social justice perspective, the inequality is viewed as a result of inequitable distribution of resources and decision-making authority. In terms of technology, everything we know and do depends on knowledge and information (Freire, 1970). From this viewpoint it can be argued that in order to be a community in a good society, it is incumbent that all citizens have the opportunity to experience the benefits of lifelong learning with and about technology. This concurs with the concept of the *idealization of a public sphere* and free and open access for all that has been proposed by Habermas in his book, *Communication and the Evolution of Society* (1976). "The ideal conditions for free, full participation in reflective discourse", as defined by Habermas, "are also the ideal conditions for adult learning" (cited in Mezirow, 1991, p. 7). However, in many rural communities this claim is invalidated because of the inequity in the distribution of computer technology. "We are tied to our own fate and responsibility. We cannot reverse ourselves to a pre-technological culture . . . the dilemma of technology is the dilemma of contemporary humanity" (p. 114).

There are those (Castells, 2001; Warschauer, 2003) who argue that technology empowers the disenfranchised or *localized poor* who are victims of corporate greed. Digital opportunities are providing new forms of communication that can facilitate democracy and reduce barriers to participation and increase the levels of information; an informed public is a central tenet for a democratic nation. Campbell (1995) notes that some futurists, like Alfred Bork, view technology as producing "a golden age of decentralized communities where power and prosperity

diffuse from cities out into the countryside" (p. 2). This will lead to tapping a national resource that has been neglected as more people become empowered via ICTs.

In order to understand empowerment and other consequences of ICT, Hanson (2000) argues for a reconceptualization of accessibility and concludes that technologies are not deployed in a vacuum "or materially neutral cyberspace" (p. 15). Technology can increase access and help "dismantle information segregation but it will do this most effectively if embedded in webs of grounded, often place-based social relations that themselves bridge social and information cleavages" (p. 277). Glasmeier (2002) responds that what is "important for us is that 'wrong place' is often defined by and inextricably linked to geography" (p. 157). She continues to note that there are many factors that are inherent to persistent poverty (e.g., spatial interaction, distance decay) and admonishes academics to "recognize the deeply human side of uneven development" (p. 158).

In conclusion, nobody can assume that technology will be the panacea of our troubles. Info-enthusiasts, cyberoptimists, or proponents of technology would have us believe that ICT will bring about the end of poverty, social ills, bureaucracies, etc. (Brown & Duguid, 2000) but this is not realistic or foreseeable. Technology does have a place but as we transition into the Information Age change, we are also redefining our social character and relationship with technologies . . . and with each other.

Physical Access to ICTs

The literature provides many different demographic variables related to physical access of computer technology. "Differences in access to computer and

communications technology exist by household income, educational attainment, race ethnicity, age, and gender, with the greatest inequities occurring for those with the lowest income and the fewest educational opportunities" (Anderson et al. 1995, as cited in Mark, Cornebise and Wahl, 1997, p. 4). However, 'accessibility' is a changing definition due to our increasingly technologically oriented world.

> It might appear that technological access is the primary roadblock to expanded Internet use. Technological access refers to the physical availability of suitable equipment, including computers of adequate speed and equipped with appropriate software for a given activity. Scenarios of ordinary people using the Internet often assume that computer support is easy to organize, and that access to information and services is not problematic. (Kling, 1999)

The U.S. Department of Commerce has been conducting successive studies on the disparities associated with the Digital Divide since 1993. Their definition of access is evolving to include other divides. Physical or technological access to computer technology has been shown to be narrowing (U.S. Department of Commerce, 2000) from increased use of computers at home, in libraries, and community technology centers. However, there still remains a substantial gap in technological or digital literacy and the definition of access. For example, an argument has been made (Coyle, 1995) that anyone with access to a library can have access to computers and the Internet. After all, the public library system has been an advocate to help bridge the access gap to the Digital Divide (Bertot & McClure, 2000). However, Kvasny (2002), in a study of urban use of computer technology centers (CTCs) and public libraries, found that individuals need help

with doing the very basic functions of using a computer and the library is not the proper place for the librarian to become an instructor.

In statistical reports on physical access such as the 2002 report by U.S. Department of Commerce and the NTIA, entitled *A Nation Online: How Americans are Expanding their Use of the Internet,* it was stated: "Between December 1998 and September 2001, Internet use by individuals in the lowest-income households (those earning less than $15,000 per year) increased at a 25 percent annual growth rate" (p. 1). Over that same period, growth in Internet use among people living in rural households has been at an average annual rate of 24 percent, and the percentage of Internet users in rural areas (53 percent) is now almost even with the national average (54 percent). Statistically, "In September 2001, 143 million Americans or about 54 percent of the population were using the Internet—an increase of 26 million in 13 months. In September 2001, 174 million people (or 66 percent of the population) in the United States used computers" (p. 1). However, this complex study only examined Internet use and it is evident in the research that other issues (Digital Divides) with computer technologies exist. The numbers are not telling the entire story. Figure 6 is a bar graph that shows the relationship between income and technology use in rural households. It can be interpreted as showing that a household with a higher income is more likely to own a computer and have Internet access.

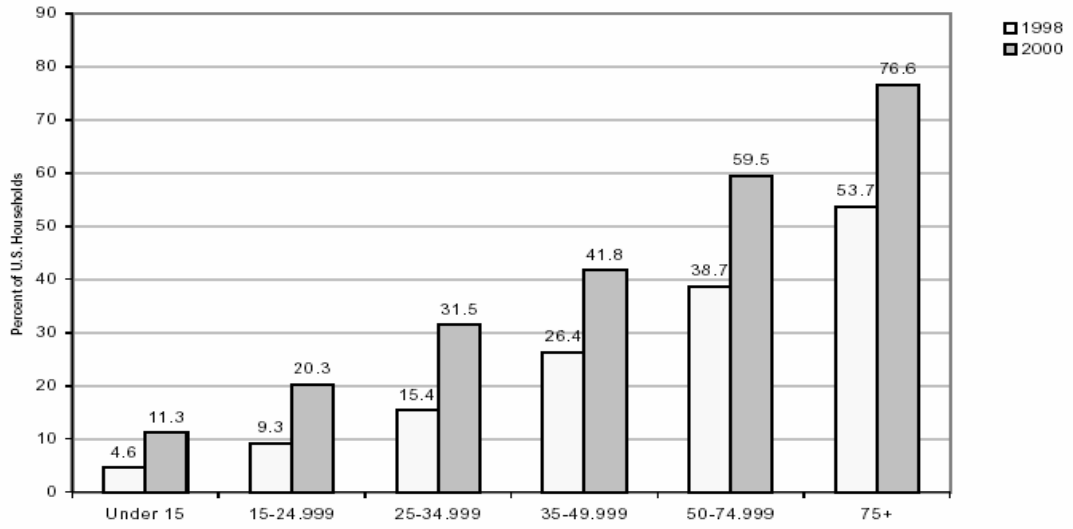

Figure 6. Internet Access in Rural Households (1998-2000). From "A Nation Online: How Americans are Expanding their use of the Internet" (2002). U.S. Department of Commerce, Retrieved December 10, 2002, from www.ntia.doc.gov/ntiahome/dn/nationonline_020502.htm

Martin (2003) examines the aforementioned statistical data (*A Nation Online: How Americans are Expanding their Use of the Internet*, 2001) and arrives at a different conclusion than the U.S. Department of Commerce. This study found that the Digital Divide is actually *increasing* [italics added] and there is a growing disparity between rich and poor household and their levels of computer and Internet use.

Technology can potentially make access to education equal and help close the gap in academic success that has prevented some groups from effectively competing in the Information Age (Pittman, 2003, cited in Solomon, Allen, & Resta, 2003, p. 49). The next section will show the relationship of geography as how it is connected to ICTs in both urban and rural America.

The Importance of Geography

> *Bottom-lining*: [Slang] When phone and cable companies consider picking areas for trials and early deployment of interactive services, they look for areas full of upper-and middle-class households with enough money to pay for these services and generally ignore areas with lower incomes. (Branwyn, 1997, p. 34)

Geography is a key component of the Digital Divide. There is a relationship between technology and whether the individual lives in an urban or rural location. The U.S. Census Bureau defines "urban" for the 2000 census as comprising all territory, population, and housing units in places of 2,500 or more (U.S. Census, 1990). Lenhart (2000) concluded: "Where a person lives is also a factor in whether he (sic) is online or not. Residents of rural America are less likely than urban or suburban residents to have Internet access" (p. 24). But how is *rural* defined? Hill and Moore (2000) note that the definition of what 'rural' encompasses is in a state of change, but that the term is related to "country living, low population densities, isolation and remoteness, agricultural economies, and communities in which people know and help each other" (Hill & Moore, 2000, p. 346). Hobbs (1994, cited in Hill and Moore, 2000, p. 346) draws the distinction between urban populations which have a population greater than 50,000 and notes that rural is the residual population.

The Economic Research Service of the United States Department of Agriculture (USDA, 2000), which focuses on factors relating to the socioeconomics of the rural infrastructure, reports that rural America comprises 2,305 counties, contains 83 percent of the nation's land, and is home to 20 percent (55 million) of its people. An updated report by the U.S. Department of Agriculture (2002)

examined rural economics and concluded that rural workers earn 20 percent less on average than urban workers and are less likely to have college degrees or to receive advanced formal training. Many rural workers still face local labor markets that offer few opportunities to advance beyond entry-level, low-paying jobs. Hill and Moore (2000) argue for the importance of further research and investment in rural areas.

Overall, the rural landscape is rapidly changing in this post-industrial society to a more participatory type of community that has greater access to computer technologies. A 2002 report by the National Center for Small Communities concluded:

> If information technology is to create jobs and generate income through rural communications, rural people must have ready access to computers and the Internet; yet large numbers of citizens still do not. In fact, the individuals who would most benefit from distance learning, technology skill development, and other online tools are least likely to have computers and the Internet available at home or at work, and to know how to employ information technology effectively. (Stark, 2002, p. 25)

Richardson (2000) pointed out that for rural communities “getting connected is a means for sharing the wide range of communication options available to urbanites” (p. 16). This research continues with a list of meanings of what computer technologies represent to *urban* [italics added] individuals. These include:

> A means for making better and more informed decisions; accessing the services (health, education, information, etc.) which enable urban people to improve their lives; for staying in contact with friends and

families; for facilitating the transfer of funds and resources; for communication that is less arduous; and a means for linking rural business and agricultural endeavors to the trade, transportation and commerce systems of urban areas and to the global marketplace. (p. 16)

Just as in the urban areas, the culture of the rural area cannot be separated from its level of technology. “In many industrialized countries it is no longer possible to conduct many of the most basic transactions of daily life without using the power of computers” (Feather, 2000, p. 9).

In *Information, Place and Cyberspace: Issues in Accessibility* (Janelle & Hodge, 2000), the impact of ICT is a product of long-term societal processes. This includes the human desire to grow beyond the local constraints of a rural community and how geographical distance is becoming less of a significant barrier of human interaction.

Technology is not a release from the burden of location, but rather a potential tool to respond to the challenge and opportunities of geographically and economically marginalized communities. “In this context there is an opportunity to be productive and economically vital, and particularly by being part of larger distributed networks where “place” is a “resource” not a burden” (Guerstein, 1999 as cited in Baker, 2000, p. 137). The conclusion is that technology is a means whereby the geographic isolation of rural areas can potentially be overcome. But to what extent can this gap be addressed when there are so many underlying issues?

As the physical aspects of the Digital Divide diminish, there are more divides that become evident in the literature. A review of the pertinent literature in the next section demonstrates that new technologies provide new challenges.

The Divide is More Than Digital

Research on rural areas has shown three major systemic educational challenges or divides: 1) rural isolation, 2) financial limitations related to small populations with low incomes, and 3) the need for specialized courses for small numbers of students (Vaughan et al., 1989, as cited in Beckner & Barker, 1994). There has been little critical engagement with the impact of the technological changes in rural communities. Warschauer (2003) calls for a reexamination of the Digital Divide to include a "broad array of factors and resources" (p. 6) that go beyond the issue of access or connectivity. There are varying degrees of access and not just a "bipolar societal split" (p. 6) separating the haves and the have-nots. Warschauer uses the example of the college professor with a high-speed connection, the student who uses a cyber café, and the rural Indonesian who has no phone but gets information from colleagues who print it for her as evidence of the variance in ICT access in society.

Hartley and Bendixen (2001) examine the learner characteristics of adults and technology and specifically the use of self-regulating skills and epistemological beliefs. They conclude that further studies of adults in these new technologically-oriented learning environments should include "motivation, self-efficacy, ability, physical challenges and learning disabilities" (p. 25). They reiterate the importance of understanding the human side of technology because these new tools, that enhance learning, are employed at what expense to the learner? Israel (et al.,

2001) maintain that if rural areas are to effectively participate in or information society, an educated and skilled pool of workers will be an absolute requirement. Rural students are challenged by poverty in and are in desperate need of opportunity.

This aforementioned 'opportunity' for those living in rural impoverished regions from the previous section is defined more clearly as having four major components: (1) expanding the quality of human capital resources; (2) building an entrepreneurial spirit that supports internal economic development opportunities; (3) enhancing the digital capacity of rural places so that individuals can be players in a an increasingly technology-dependent economy; and (4) promoting broad-based involvement of local individuals in the civic life of their communities (Beaulieu, 2002, p. 1). But how can these opportunities be transformed into realities?

Research shows that technologies are often developed in response to the agendas and realities of powerful institutions and their representatives. There is a relationship between power, politics and technology (Boland, 1979; Kvasny, 2002; Kling & Iacono, 1989; Orlikowski, 1991). Rural households lag behind urban, central cities and the number of households in the United States that have high bandwidth. Norris (2001) points out that research on diffusion theory "suggests that the adoption of successful new technologies often reinforces economic advantages" (p. 71).

Diffusion of Innovations

Diffusion is defined as "the process by which an innovation is communicated through certain channels over time among members of a social system (Rogers,

1983, p. 4). An innovation is defined by Rogers as an “idea, practice, or object that is perceived as new by an individual” (p. 11) and that the “newness” in an innovation is not only knowledge about the innovation but can be expressed in terms of the individual’s decision to adopt. Rogers states:

> There is generally an implication that a technological innovation has at least some degree of benefit or advantage for its potential adopters. But this advantage is not always very clear-cut or spectacular, or at least not in the eyes of the intended adopters. They can seldom be very certain that an innovation represents a superior alternative to the previous practice that it might replace. (p. 13)

Diffusion of Innovation theory (DoI) purports to describe the patterns of adoption and assist in predicting whether and how a new invention will be successful. It is expressed in Rogers (1983) book *Diffusion of Innovations.* The theory has potential application for the integration of ICTs in all geographical areas and has been used as the theoretical basis for a number of research projects. DoI Theory is concerned with the manner in which a new technological idea, artifact, or technique, or a new use of an old one, migrates from creation to use. According to DoI theory, technological innovation is communicated through particular channels, over time, and among the members of a social system.

The stages (Rogers, 1983) through which an individual passes (or does not pass) and a brief description are provided below:

STAGE 1: knowledge (exposure to its existence and understanding of its functions);

STAGE 2: persuasion (the forming of a favorable attitude);

STAGE 3: decision (commitment to its adoption);

STAGE 4: implementation (putting it to use); and

STAGE 5: confirmation (reinforcement based on positive outcomes from it).

The spread or diffusion of technology is transforming our world from industrial to informational and has many implications and opportunities in education. “Technology has contributed to, if not caused, the shift to an information society, which is creating dramatic changes in the workforce . . . Adult education both reflects and responds to the forces prevalent in the sociocultural context” (Merriam & Caffarella, 1999, p. 23). That shift to an information society and the associated complexity are evident in computer-assisted instruction as it is providing some, but not all, adults with a new and exciting avenue to learn. It is critical that we gain a better understanding of how different learners (i.e., rural and marginalized populations) could potentially benefit from the use of computer technologies. Hartley and Bendixen (2001) state that educational researchers and designers in the Internet Age “should not lose sight of the learner . . . With the appearance of new and exciting instructional tools, it is often the capabilities of these tools that draw our attention at the expense of the learner” (p. 25). Along the same line, Cohill, (2002) argues that the human aspect has been neglected as policymakers seek to put a computer in every classroom and connect these rural areas to the Internet. But, does the DoI theory adequately address the social issues of the Digital Divide?

In order to better demonstrate the global significance of the diffusion of ICT for rural Americans living in the persistent poverty zones, the next three sections provide perspectives from the international, national and regional perspectives.

International ICT Initiatives

> Most important of all, information has become global and has become king of the global economy. In earlier history, wealth was measured in land, in gold, in oil, in machines. Today, the principal measure of our wealth is information: its quality, its quantity, and the speed with which we acquire it and adapt to it. (President Clinton's speech at The American University, February 26, 1993, as cited in Schiller, 1996, p. 105)

Although this research is situated in rural communities in the southern United States, it is important to note that other countries are working diligently to supply the necessary techno-structure for their citizens and address the issue of universality and connectivity. According to the International Fund for Agricultural Development (2001), approximately "70 percent of the world's extreme poor live in rural areas" (p. 127). Castells (2001) found that the spread of technology throughout the world is uneven and the diffusion of technology is "creating a deeper Digital Divide" (p. 262) that includes a knowledge/learning gap and a complex technological divide.

Currently, there are many ICT initiatives in the less technologically developed Third World countries designed to help individuals become better prepared for the Information Age and global competition via technology. However, there is so much disparity and work to be completed. In a world where "1.2 billion people live on less than one dollar per day" (Arias, 2001), it is easy to argue that there are other needs that must first be met before technology is integrated. As international economic competition shifts to knowledge technology markets, developing nations without adequate technologies face the possibility of becoming by-passed.

Computer technologies can potentially spur economic growth by increasing the number of business-to-business and business-to-consumer applications. This leads to reduced prices and larger selection. In 2001, Twenty-seven percent of the United States' $750 billion global information technology market comes from only 20 of the world's largest developing countries. The United States alone accounts for 90 percent of commercial Web sites and three-fourths of all e-commerce (Arias, 2001). Figure 7 shows a world map that has the Internet bandwidth across international borders. The map includes interregional Internet routes with at least 2.5 gigabytes per second (Gbps) of aggregate capacity. From this figure we can see that developing nations currently have limited or no high bandwidth access.

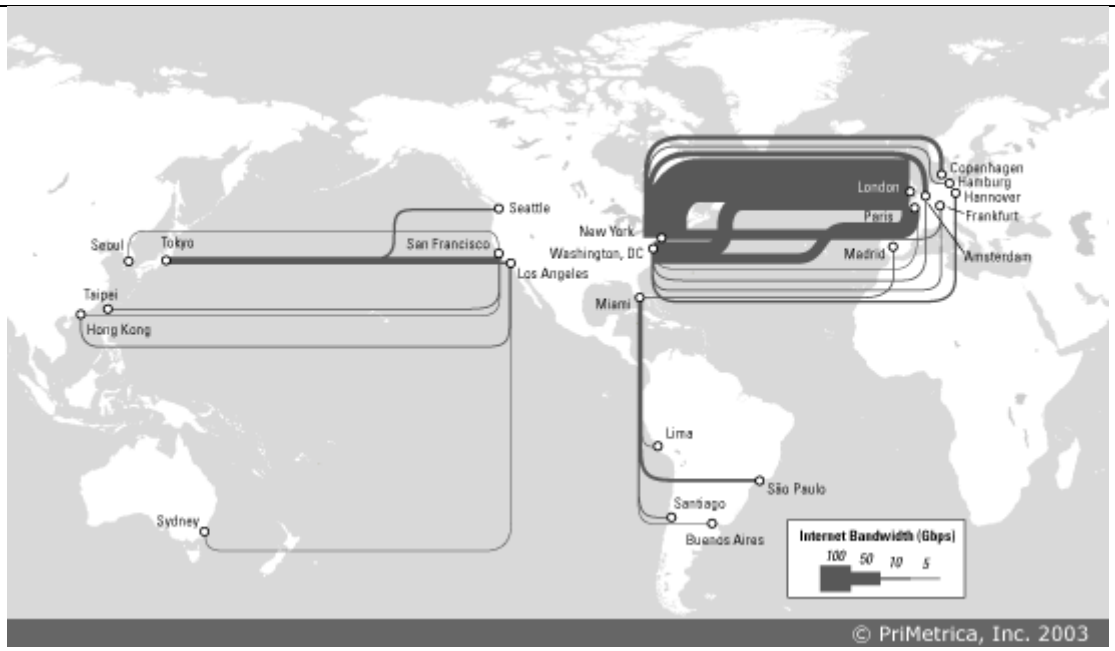

Figure 7: World Bandwidth: Source: TeleGeography Research Group - PriMetrica, Inc. © 2003. Used with permission

The United Nations is also supporting efforts to bring ICT to developing nations. United Nations Secretary General Kofi Annan recently commented in a speech before business leaders: “The United Nations is committed to doing its part, and has established an Information and Communication Technologies Task Force where industry leaders and experts can discuss with government representatives and others how best to bridge the Digital Divide” (Annan, 2003, para 6).

The Information Society Index (ISI) uses tracking data from 55 countries, measuring them according to their ability to access and absorb information and information technology. This recent study analyzed the ability of these countries to implement and utilize information technology for the advancement of technological, economic, and social goals. Based on a comprehensive index of statistics covering computer and Internet usage, e-commerce, telecommunications infrastructure, broadband and wireless subscribers, education levels, press freedom and government corruption, the study provides an indispensable benchmarking index for national governments and a guide for readiness with technology (IDC, 2003).

Table 1 shows the top 10 countries in the world in terms of technology use in 2003 and 2002. This ranking is determined from Internet use and from tracking individual activity. It is important to note that all top 10 countries are industrialized first and new world nations and that 95.6 percent of Internet hosts were in these countries. Africa makes up only 0.25 percent (Steinberg, 2003). Gerster and Zimmermann (2003) released a report on the potential of Internet and communication technologies worldwide and the reduction of poverty in case studies of Third World countries. They found that technology has the potential “to be used in changing the living standards of poor people and communities” (p. 9).

Table 1.

Top 10 IT Countries

Rank	2003	2002
1	Sweden	Sweden
2	Denmark	Norway
3	Netherlands	Switzerland
4	Norway	United States
5	Finland	Denmark
6	New Zealand	Netherlands
7	Switzerland	United Kingdom
8	United States	Finland
9	Austria	Australia
10	Canada	Taiwan

Development communication specialist and filmmaker Alphonso Gumucio-Dagron wrote the pragmatic *Take Five: A Handful of Essentials for ICTs in Development* (n.d.) (Translated from Spanish). He writes about how technology is spreading in many Third World countries. His work in over 50 countries is critical and insightful because of the approach to understanding the perspective of the individual and change with technology.

> A bit of historical perspective could help to avoid the same old mistakes and better understand the deep roots of poverty: the real causes of underdevelopment are social injustice, exploitation of poor countries by rich

> countries as well as the poor within each country by the rich upper classes that control government, financial institutions, services and the productive sector. Knowledge alone will not change the situation. (ICTs Field of Dreams, para 4)

A case in point of how computer technologies are used for education and training in rural locations outside the United States is *Skills net.* This Australian program is providing access computer technology in rural and remote communities. Their specific agenda includes the following services:

> Networking between projects and other associations, marketing and promoting the Skills.net brand, developing the Skills.net movement, providing collective representation, developing and delivering training services, advising on grant applications, brokering sponsorship, promoting local programs, representing to the government, and promoting national and international linkages. (Skills.net, 1999)

In order to effectively respond to the educational and training needs of rural people in the Outback, Australians have also designed telecenters to provide public access to computers (Crellin & Graham, 1996). These centers provide distance learning to adults in ICT skills and a range of other courses, and the authors conclude that these centers have a valid purpose and need.

Overall, the purpose of rural development is to improve the standard of living in the rural communities. Wang (2002), whose study looked at rural development in China and the relationship with ICT, stated: “Experience indicates that the introduction of sufficient ICT services in rural areas stimulates social and economic development to achieve the goal of an improved standard of living” (p. 29). There

has been a causal link between computer technologies and international economic growth.

Another means of bridging the international Digital Divide has been the introduction of wireless networks and mobile computing. Wireless Application Protocol (WAP), which brings the Internet to wireless mobile phones, could lessen the disparity in access to digital information technology because of costly PC systems. As of June 2001, every new digital mobile phone incorporated WAP. According to the Japanese Ministry of Posts and Telecommunications, roughly 10 million Japanese users accessed the Internet using mobile communications devices in May 2000. The International Data Corporation (IDC) estimates millions of mobile Internet subscribers will exist in the future. With the development of color displays and input devices, the tiny devices can come close to PC functionality. Mobile phone systems may prove valuable in bridging the Digital Divide because they can rapidly spread to rural and non-urban areas (World Bank, 2001).

Kirby (1996) provides an overview of the evolution of geographical areas and how modernization via technology occurred on most all of the European continent and in every American locale before the Southern regions in the United States. He notes: “There was much that was unhealthy and unhappy about the old rural life, [In the United States] as well as much that was personable and humane” (p. xvi). Kirby defines change as “a term used synonymously in Western culture with progress and modernization” (p. 118).

The literature on the ICT in rural America is discussed in greater detail in the next section along with current and historical data on what has been defined as the *Persistent Poverty or Black Belt* region.

ICTs in Rural and Urban America

> Have we not reached the time when we are justified in expecting that every rural school, however small, shall be a place of genuine education of high quality? (Fannie Dunn, 1931, p. 423)

Although digital illiteracy and information poverty is a global phenomenon, it is especially evident in many rural areas in America. “A Digital Divide continues to leave rural people behind suburbanites and city dwellers in Internet access, but rural folks are making savvy use of the connections they have, according to research being made public today” (Guy, 2004). This recently completed study supports the findings from the Pew Internet and American Life Project (2004). “If you care about adoption of the Internet in rural areas, it is clear there is work still to be done,” said Lee Rainie, Director of the Pew Internet & American Life Project. The report goes on to state:

> Especially worrisome is the gap in Internet use between African-American rural residents and their white neighbors. Fewer than a third (31 percent) of rural African Americans go online, compared with 44 percent of rural whites. The Pew researchers believe the disparity can be traced to the fact that 70 percent of rural African Americans live in households with incomes of less than $30,000 a year, compared with 44 percent of rural whites (p. 9).

Wolford and Hollifield (1997) have assessed the impact of telecommunication technologies and have found that this diffusion comes at a particularly critical moment in the shift history of these rural communities. This research states that as a result of diffusion of technologies “rural communities across the U.S. have started making major infrastructure investments, wooing service providers and launching

pilot projects in the hope that local electronic access will translate into improved social and economic stability" (p. 2). Historically, the Rural Electrification Act of 1936 was designed to bring electric power and telephone services to rural communities. This was the beginning of electronic technologies in rural areas and it had a tremendous effect on the modernization of rural America. However, there are many rural areas associated with poverty and lack of access to quality education services.

A 1986 joint Washington State and University of Idaho survey of educational service providers for rural adults found distinct discrepancies of access in a rural/urban comparison. The study concluded:

> The single overriding area of agreement between educational providers and rural adult learners concerns the question of access to educational opportunities. Overwhelmingly, both groups feel that, when compared with their urban counterparts, the rural adult learner does not have equal access to educational programs. (McDaniel, p. 15)

In 1991 the United States Office of Technology Assessment (OTA) published *Rural America at the Crossroads: Networking for the Future*. This study found, that in order to keep rural areas from experiencing further decline, the necessary technological infrastructure needs to be implemented. Nearly 14 years later there are still many barriers to addressing the problem of digital inequity. In 1993, contrary to stereotypes of the inner city, more rural residents lived in poverty (17.2%) than metropolitan area residents (14.6%). The working poor are also more prevalent in rural areas, where 22% of poor households had a full-time worker; another 39% worked part-time or part-year. Though the majority of poor rural

adults have work, rural unemployment and involuntary part-time employment are nonetheless higher than the metropolitan rates. “It is not my intention to gloss over urban poverty, but it has received much more extensive media attention than rural poverty” (NRDP 1995, p. 1-3; Seguino, 1996, p. 1-3).

In a recent paper by the Pew Internet & American Life Project (Lenhart, 2000) states:

> A vibrant grass roots movement has taken hold in a number of American cities, as citizen activists are working to bring Internet access to segments of the community that have not been exposed to the information revolution. Some of those carrying out these initiatives collaborate with city governments; others form partnerships with the private sector. All of them experience high demand; activists running community technology centers are uniformly struck by the volume of additional foot traffic that comes about once word spreads about the availability of the Internet in the neighborhood. (p. 1)

Byers (1996) cites the technological barriers inherent in these rural communities (physical, technological, regulatory and economic) and argues for the expansion of telecommunications initiatives to expand the system so that all can benefit in the Information Age. Similarly, Ramirez (2001) offers a model for rural and remote ICT use. He concludes:

> Rural and remote ICT initiatives need a local learning space to flourish . . . failure to flourish will be evident in uneconomic service access (only available to powerful institutions in the community) that widens income and

information accessibility gaps and reduces opportunities for broad citizen participation. (p. 328)

Figure 8 shows the persistently impoverished counties within the United States using Census data from 1980-2000

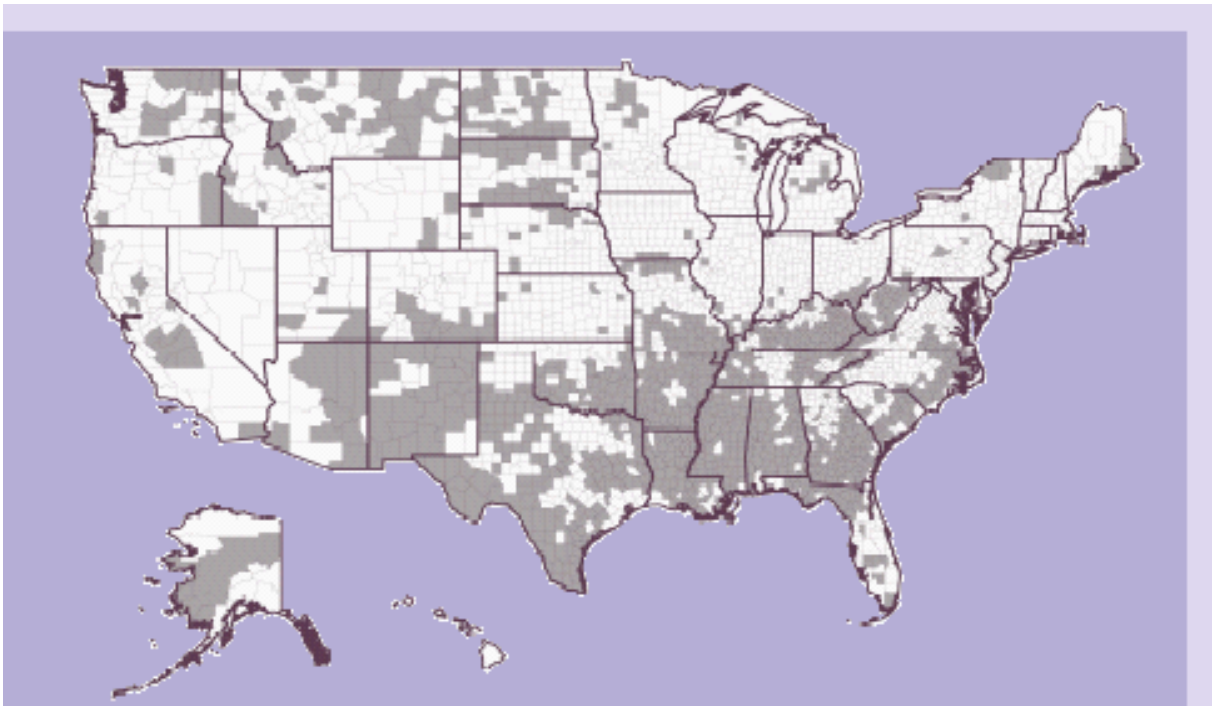

Figure 8. Persistent Poverty Regions in the United States from 1980-2000. From "Dismantling Persistent *7. Persistent Poverty Regions in the United States from 1980-2000* From "Dismantling Persistent Poverty in Georgia: Breaking the Cycle." Carl Vinson Institute of Government, 2003 Retrieved May 5, 2003 from http://www.cviog.uga.edu/poverty/april/Adapted with permission of the author.

In 2002, a similar report by the National Center for Small Communities entitled *Technology and Grit at the Grassroots: Information Technology, Community Engagement, and Jobs in Distressed Rural Communities*, concluded:

> If information technology is to create jobs and generate income rural communications, rural people must have ready access to computers and the Internet; yet large numbers of citizens still do not. In fact, the individuals who would most benefit from distance learning, technology skill

development, and other online tools are least likely to have computers and the Internet available at home or at work, and to know how to employ information technology effectively. (Stark, 2002, p. 25)

Table 2 provides a comparison of demographics from persistent poverty counties and all counties. It shows a higher concentration of unemployed minorities with low educational levels as the prevailing characteristic of the population in the persistent poverty region in Georgia.

Table 2.

Comparison of U.S. Counties (2002)

	Persistent Poverty Counties	All Counties
Percent of Population Under 18	28.1%	25.7%
Percent Minority Population	51.5%	30.8%
Percent with H.S. Diploma or Higher	66.4%	80.4%
Unemployment rate	9.3	5.8
Mean Per Capita Income	$13,051	$17,484

From "*Persistent Poverty and Place: How do Persistent Poverty and Poverty Dynamics vary across the Rural-Urban Continuum*. (2002) Miller, K.K., Crandall, M.S., & Weber, B.A. PowerPoint presentation by the Rural Policy Research Institute using U.S. Bureau of the Census and Economic Research Service (USDA) 2000 data. Retrieved September 15, 2003, from http:// www.rprconline.org/resources/ PersistentPovertyPresentation.ppt. Used with permission

Warschauer, in his recent book, *Reconceptualizing the Digital Divide,* (2002) provides an update on a response to the Bush Administration's contention that the

Digital Divide is no longer a reality by offering a different view of this concept for social inclusion of technology. He points out the importance of technology and how already marginalized communities will have even less opportunity to access information and knowledge unless crucial steps are made that address the human side of technology (p. 5). Table 3 shows the latest 2003 statistics on the most wired cities (i.e. urban and metropolitan communities).

Table 3.

Top Wired Cities in the United States (2003)

Top Wired Cities, Ranked by Percent Growth (U.S.)			
Local Market	Audience June 2002	AUDIENCE JUNE 2003	Growth
Atlanta	1,777,000	2,118,000	19%
Los Angeles	5,888,000	6,740,000	14%
Washington DC	2,325,000	2,640,000	14%
Chicago	3,258,000	3,525,000	8%
Seattle	2,075,000	2,177,000	5%
Dallas	2,290,000	2,400,000	5%
New York	7,566,000	7,900,000	0.44%
Boston	2,697,000	2,805,000	4%
Philadelphia	2,942,000	3,009,000	2%
San Francisco	3,042,000	3,061,000	1%

From “Nielsen/NetRatings” (2003). Adapted with permission of the author.

It is ironic to note that the ‘top wired’ city in America (Atlanta) is surrounded by a huge region of persistent poverty. The name of this depressed persistent poverty region in the Southern United States is called the *Black Belt* because the majority of the population has historically been non-white. The term ‘Black Belt’ was a phrase first coined by Booker T. Washington in his book *Up From Slavery* (1901) to describe the rich, black soil of central Alabama. Washington writes:

> I have often been asked to define the term "Black Belt." So far as I can learn, the term was first used to designate a part of the country which was distinguished by the colour of the soil. The part of the country possessing this thick, dark, and naturally rich soil was, of course, the part of the South where the slaves were most profitable, and consequently they were taken there in the largest numbers. Later, and especially since the war, the term seems to be used wholly in a political sense - that is, to designate the counties where the Black people outnumber the White. (p. 108)

The next section examines the issues of computer technology and this marginalized rural region known as the Black Belt.

ICTs and the Rural South: The Black Belt

> Mules was getting scarce then . . . tractors was in style, you know, and a mule just can’t cover the ground a tractor can . . . so the ones that stayed in farmin . . . they commenced to buying tractors so they could work more land and make a bigger crop to meet their expenses. (Ned Cobb, commenting on the late 1940s, in Kirby, 1987, p. 334)

Rural matters because rural is the ground, the community, the way of thinking, that links humanity to nature—and not just links but insists on that linkage. (Kent Meyers, *Witness of Combines,* 1998*)*

The south as a region is behind the other regions of the United States in terms of computer technology and it is ahead (in the pejorative sense) of other regions in poverty. A relationship between computer usage and income and education was found to exist. Eighty-seven percent of related adults living in family households with incomes of $75,000 or more had computers, compared with twenty eight percent of adults with incomes less than of $25,000 (U.S. Census Bureau, 2001). Figure 9 shows the percentage of computer ownership by region in the United States for the years 1998 and 2000. Ownership of computers was the lowest in the Southern United States.

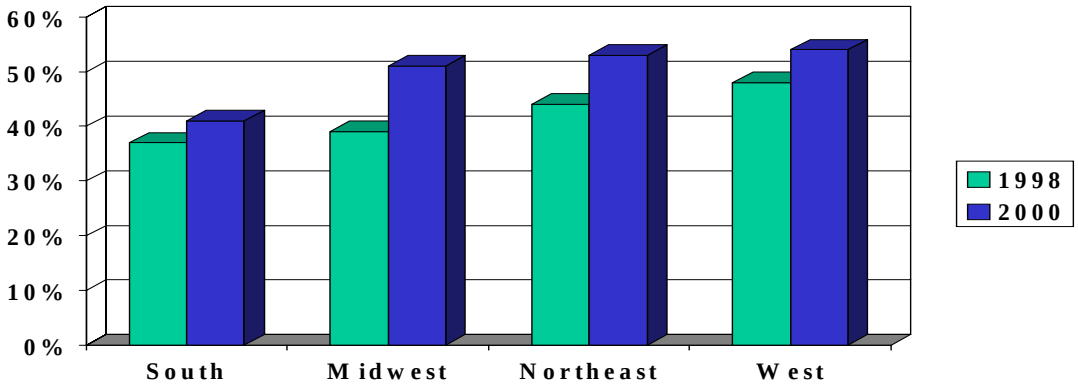

Figure 9. Percentage of Household Computers by Region in the United States From "Falling through the Net: A Survey of "Have Nots" in Rural and Urban America" Department of Commerce/NTIA, (1999). Retrieved January 15, 2002, from: http://www.digitaldivide.gov/reports.htm.

Census data from 2000 shows that the rural regions lag behind the central cities and urban environments in terms of high speed bandwidth.

The 2001 U.S. Department of Commerce report profiled the use of computer technologies in rural communities and focused on the "benefits and impediments of IT use" (p. 1). The participants in this study included "city and county government leaders, primary, secondary and post-secondary school representatives, public library, public safety and health care officials, economic developers, major employers/industries, small employers/industries, volunteers, non-profit agencies and telecommunications service providers" (p. 1). However, *no* [italics added] current or prospective students, who were directly affected by the implementation of computer technologies, were interviewed in this research. The key finding of this study was that "low demand is the main challenge in obtaining advanced telecommunications services" (p. 1). This raises the question of whether the issue is about access or low demand of computer technology by adults. Is the issue about self-efficacy or resistance to change or lack of self-motivation on the part of the rural learner? Investigations exploring the human side of technology are needed to understand the motivations and impediments to learning with technology. Is the issue the 'haves' versus the 'have-nots' or the 'haves' versus the 'want-nots'? The U.S. Department of Commerce /NTIA (1999, 2000, 2001, 2002) studies tell us how computing practices differ with respect to various social groups but these studies do not tell us *why* [italics added] there are discrepancies and growing social inequality.

A 2002 report by the Georgia Infrastructure Development Project states: "The economies of these rural areas are not nearly as vibrant as that of the metropolitan areas, and we are running the risk of a permanently divided economy" (p. 1). A 2003 economic analysis of the state of Georgia's persistent poverty counties concluded that while manufacturing and agriculture were the two main

systems of production the persistently impoverished counties “are less efficient in the use of some factors of production (Tuck & McKissick, p. 16). This report documents the disparity in the Black Belt region and calls for a means to decrease the poverty and create wealth through the production of goods and services within the community.

Due to a concentration of technologies in urban areas the problem of access has been exacerbated in rural areas (Butzen & Liston, 2003). This sentiment is echoed in *Forgotten Places* by Lyson and Falk (1993). This work examines the uneven improvement and persistent poverty in areas throughout the United States like the Black Belt, the Mississippi Delta and Appalachia. It is significant to note that the Black Belt has “been more excluded from developments in the nation” than other regions (p. 53). The next section examines the state of Georgia which is at the geographical center of the Black Belt region.

The Black Belt in Rural Georgia

Georgia is known as the “Empire State of the South” due to its size as the largest state east of the Mississippi River. In a historical analysis entitled, *Oconee River: Tales to Tell* (1995), Walters notes that the state’s nickname took on new meaning due to the “rapid progress” (p. 215) prior to the Civil War.

Georgia led the lower south in railroad mileage and the entire south in textile manufacturing. It was the third largest producer of cotton in the nation, and led the cotton belt in the production of corn, wheat, oats, and rye. In the state of Georgia the piedmont region is an area that is geographically located between the coastal plain to the south and the mountains to the north. The piedmont’s definition is within its name—*pied* (foot) and *mont* (mount or hill). It once was an area of great

prosperity. However, the prosperity of the piedmont region was not to be a lasting phenomenon. Walters (1996) writes that the “Piedmont became the most important agricultural region in Georgia for the first half of the nineteenth century, leading all sections” (p. 7).

> Only in the later-half of the twentieth century has the economic pendulum once again swung this Oconee heartland region into prominence and prosperity based on its environmental resources—the river, forests, wild life and grasslands. And with prosperity, the people enjoyed a cultural renaissance. (p. 4)

In 1903 W.E.B. DuBois wrote about the struggles in the Black Belt in his famous book *The Souls of Black Folk*. He chronicles the history and context of a region caught up in the throes of post-slavery and what it means to be Black at the beginning of the twentieth century in an age of industrial progress. In 1936, sociologist Arthur Raper published *Preface to Peasantry: A Tale of Two Black Belt Counties*. This study conducted from 1929-1936 examined rural Greene and Macon counties in Georgia over a period of seven years and provides great ethnographic detail about the historical antecedents of the Black Belt region and how the area was once prosperous but had fallen into despair, illiteracy, and poverty. These two counties are demographically representative of the Black Belt and they are located in the geographical center of this region. The antiquated plantation system, which saw a majority of the population working for the privileged few white families became abandoned but not until the area, had been exploited. [Note: According to University of Georgia demographer, Doug Bachtel, the 1930 Census data is the earliest “decennial census that can be used to delineate the Black Belt” (Bachtel,

2002, para 3). Figure 10 shows the geographical extent of the Black Belt region and how it stretches from Virginia to Eastern Texas in the 1930s. Wimberley and Morris (1997) provide an examination of the history of the Black Belt, the quality of life (or lack thereof), and offer public policy suggestions including the conclusion: "A key

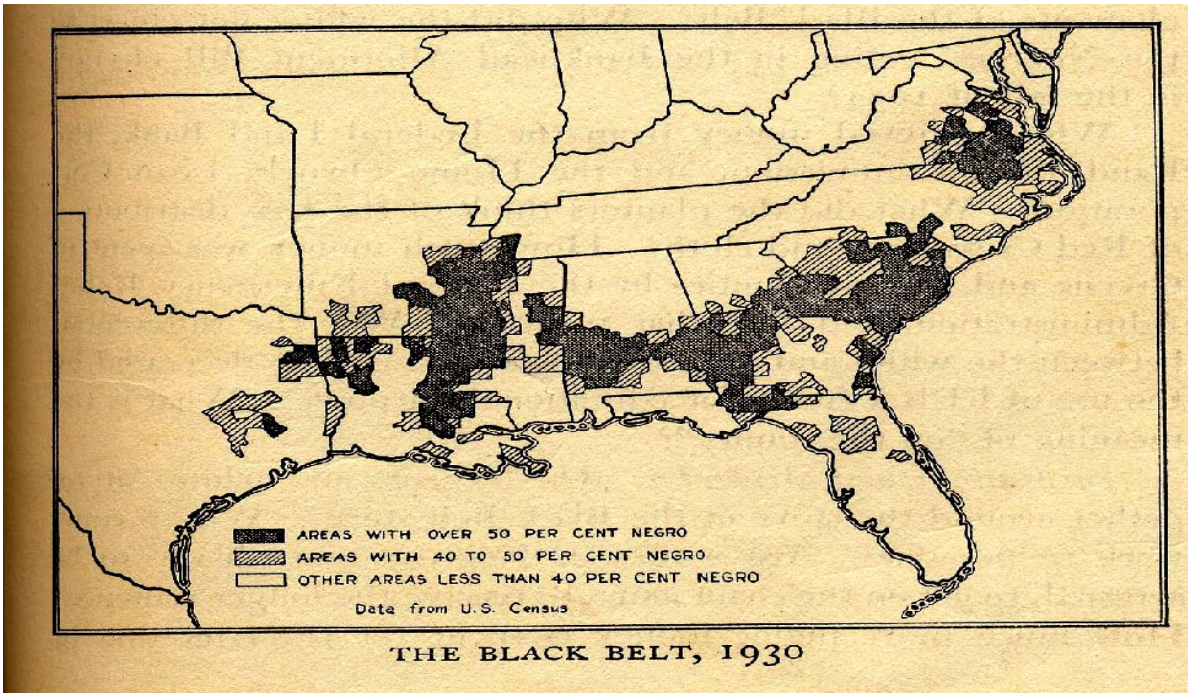

Figure 10. The Black Belt from the 1930 U.S. Census. From "Preface to Peasantry: A Tale of Two Black Belt Counties" (1936). University of North Carolina Press. Adapted with permission of the publisher.

factor in the human resource development for the South and the Black Belt is education for children and adults" (p. 35). This data in this study provides a picture of disproportionate inequity in education, employment, and poverty in the Black Belt.

According to the 2000 U.S. Census, DP-1 data, the total population in the Black Belt was 7,528,185. The specific counties in Georgia's Black Belt are shown alphabetically in Table 4.

Table 4.

Persistently Impoverished Counties in Georgia

Appling, Atkinson, Bacon, Baker, Baldwin, Ben Hill, Berrien, Bleckley, Brantley, Brooks, Bulloch, Burke, Calhoun, Candler, Charlton, Clarke*, Clay, Clinch, Coffee, Colquitt, Cook, Crawford, Crisp, Decatur, Dodge, Dooly, Dougherty*, Early, Echols, Emanuel, Evans, Glascock, Glynn, Grady, Greene, Hancock, Irwin, Jasper, Jeff Davis, Jefferson, Jenkins, Johnson, Lanier, Laurens, Liberty, Lincoln, Long, Lowndes, Macon, Marion, McDuffie*, McIntosh, Meriwether, Miller, Mitchell, Montgomery, Oglethorpe, Peach*,Pierce, Pulaski, Putnam, Quitman, Randolph, Schley, Screven, Seminole, Stewart, Sumter, Talbot, Taliaferro, Tattnall, Taylor, Telfair, Terrell, Thomas, Tift, Toombs, Treutlen, Troup, Turner, Twiggs*, Ware, Warren, Washington, Wayne, Webster, Wheeler, Wilcox, Wilkes, Wilkinson, Worth

**Metro county*. From "Dismantling persistent poverty in Georgia: Breaking the cycle" (2003) Carl Vinson Institute of Government. Adapted with permission from author.

There are only five metro counties in the persistently impoverished zone. The other 86 counties in the persistent poverty/Black Belt region are rural or nonmetro. Nonmetro counties have smaller populations than metro counties with populations generally exceeding 100,000 or more with central cities of 50,000 or more (Office of Management and Budget, 1993). Figure 11 is a graphical representation of the counties with poverty greater than 14.7% in Georgia in 1997.

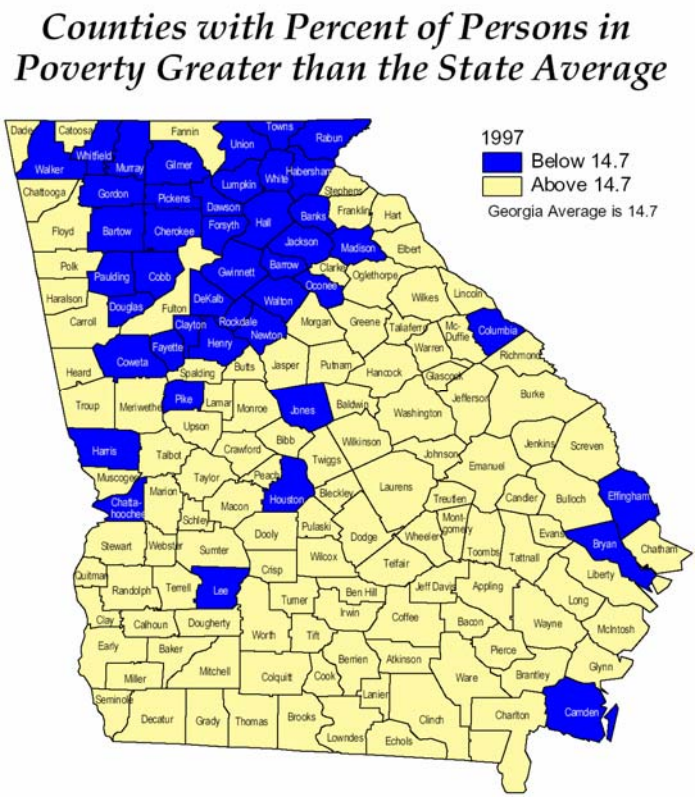

Figure 11: Georgia Counties with High Poverty. Source: U.S. Bureau of the Census, 1997. Compiled by the Georgia Department of Community Affairs, 2001.

The average quality of housing, medical care, and educational resources for rural people is also lower, and, important for this study, rural areas tend to be "repositories for the nation's least educated, least skilled workers" (Glasmeier and Conroy, 1994: 1; NRDP, 1995: 4-6). The problems of "deep rural" regions, remote from large population centers, tend to be hidden: they receive comparatively little media attention and have low public awareness (Vail & Hilliard, 1997). There is a large margin for potential growth and a generous supply of individuals to train and educate. Wimberley and Morris (1997) found that in comparison to other national populations the percentages who have not received a high school diploma, "Black southerners are especially overrepresented" (p. 15) in this category.

According to Calhoun, Reeder and Bagi (2000) the Black Belt region in the South has received above-average Federal funds. Metro areas in the Black Belt received twice as much funding as rural or nonmetro Black Belt areas. Specifically, these funds were "14% higher in the Black Belt ($5,954) per capita than in the United States as a whole ($5,218)" (p. 21). A May 4th 2003, editorial in the *Athens-Banner Herald* entitled 'Rural Georgia Needs to Attract State's Attention', quotes statistics that show how the persistently impoverished rural areas are facing a population shift that is making it difficult for these local governments to provide educational services and how "it becomes extremely difficult to reverse the process" (of poverty).

Figure 12 provides an updated (2003) visual of the areas within the state of Georgia that are persistently impoverished and in the Black Belt. [Note: The terms 'Black Belt' and 'Persistent Poverty Region' are used interchangeably when referring to the Southeastern United States geographic areas high in unemployment, drop-out rates, infant mortality rates and overall poverty (Bachtel, 2003, personal communication].

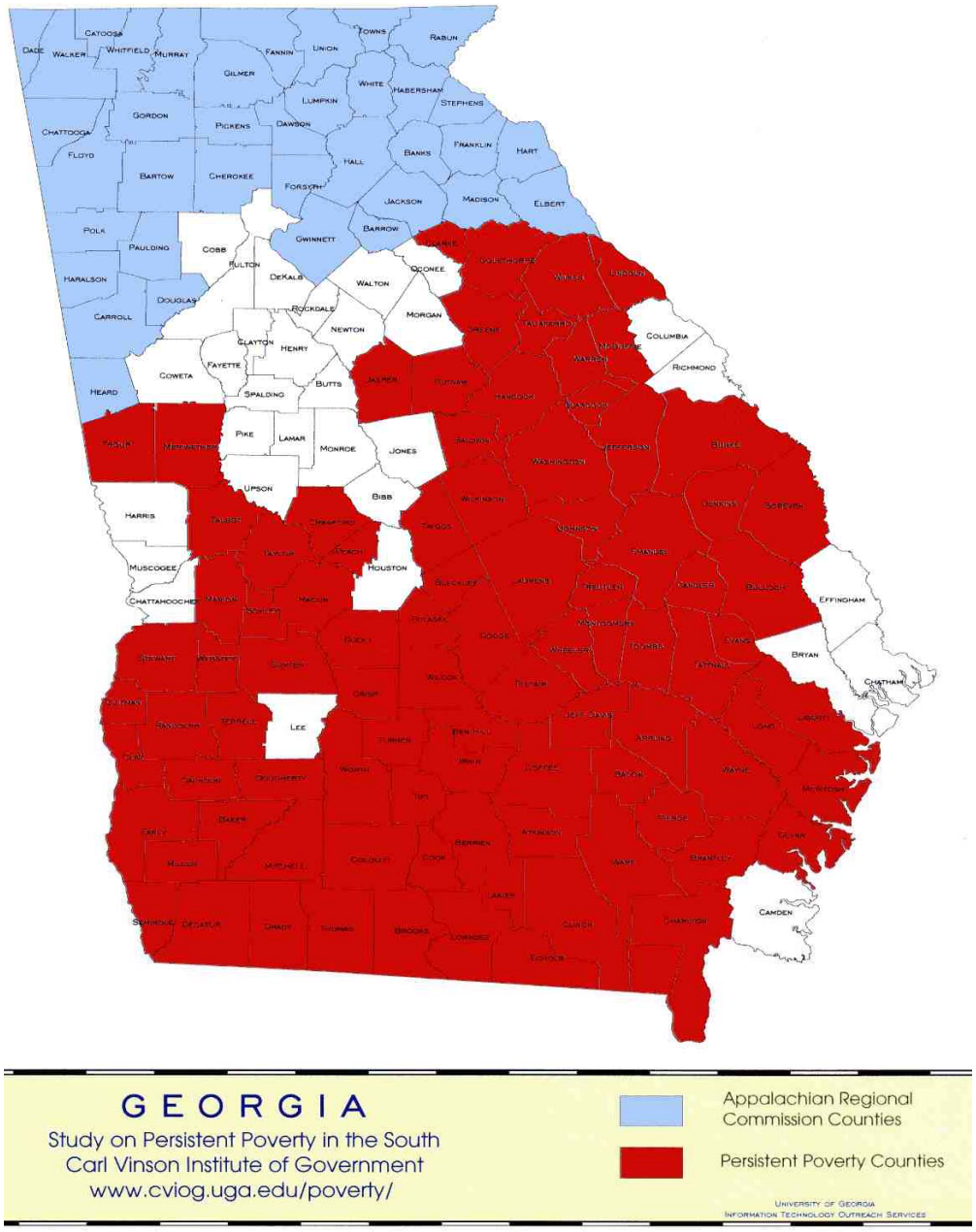

Figure 12. The Persistent Poverty Counties in Georgia (2003). From "Dismantling Persistent Poverty in Georgia: Breaking the Cycle" (2003). Carl Vinson Institute of Government. Adapted with permission of the author.

Table 5 provides the most recent statistics (2003) about physical poverty in Georgia's persistent poverty zone.

Table 5.

Georgia Poverty Statistics

1.8 Million Georgians or 22% of the state's population reside in the 91-county persistent poverty region. Urban areas make up 21% of the population in the poverty region. Therefore, the rural areas with persistent poverty make up 79% of the region.	From 1990-2000, the state of Georgia experienced a population growth of 26.4% or about 1.7 million more people. The 91-county persistent poverty region realized a much slower population growth rate of 12.6% or about 202,000 more people.
The total economic output for the 91-county Persistent Poverty region in Georgia is $74.7 billion or about 15.89% of Georgia's total economic output of $470 billion.	94% of Georgia's weak or distressed counties as classified by the Georgia Rural Development Council's Human Capital Vitality Index are located in the persistent poverty region. This index classifies the 159 counties in Georgia from vibrant, strong, average, weak, and distressed based on social condition indicators of juvenile arrests, high school dropouts, child mortality, and teen pregnancy.

Note. From "Dismantling Persistent Poverty in Georgia: Breaking the Cycle" (2003), Carl Vinson Institute of Government. Used with permission of author. [Note: More socioeconomic statistics and demographics for Greene County are provided in Appendix D.]

Cronin, McGovern, Miller, & Parker (1995) assess the disparity in telecommunications between rural, urban and semi-urban locations and they analyze the "interdependent relationship between economic activity and telecommunications infrastructure" (p. 545). While these type of studies have been

conducted on the international level (e.g. Saunder, Warford, & Wellenius/World Bank, 1983), it is Parker and Hudson's (1983) work on telecommunications policy confirms that relationship between the deployment of technology and the economic livelihood of a rural area in America.

Greene County, Georgia: A Rich History

> The Creeks and the Cherokees had heard how their kinsmen disliked to lose [sic] land in the north and in the south, but how they liked the new things the white men brought. They wanted "fire water" to drink, "fire sticks" to shoot with, glass beads and mirrors, the compass, iron hoes and axes, and scalping knives very much better than their stone tomahawks. And there was [sic] always white men who would give them these things to gain favors for themselves or to arm the Indians [sic] to fight against their foes. Red men who had worked with stone implements for a thousand years learned to use a rifle in a single afternoon. (Raper, 1943, p. 9)

In 1786 the Georgia Legislature passed an act that set aside the western section of Washington County. It was to be named Greene County after the Revolutionary hero Nathaniel Greene. On February 3, 1796, Greene County was founded. It was the 11th county to be formed in the state of Georgia and Greensboro (originally spelled Greenesborough)) was the incorporated county seat in 1803. The original courthouse was built and the "Gaol" (pronounced 'Jail') was constructed to house prisoners. Figure 13 is a photograph of the historical Gaol in downtown Greensboro, Georgia.

Figure 13. The Gaol. © 2004 G. Andrew Page.

Greene County is the 'first' of many things

. . . Look for it only in books, for it is a land that is gone with the wind.

(From the prologue to the motion picture, *Gone With the Wind)*

The county seat, Greensboro, was the first town in America to be burned (it was completely destroyed in 1787) and its inhabitants killed by native Creek Americans. "31 white settlers were killed and scalped, 20 were injured and 4 taken as prisoners by the Creek tribe" (Rice and Williams, 1973, p. 6).

Another first was the fact that Greene County had the first paper mill in the state of Georgia which was built in 1809 in the Scull Shoals area. The Georgia Railroad began in Greene County in 1833. At the time there were only 3 other railroads in the United States. It was also in Greene County that the first road westward from the thirteen original colonies began. This road was commissioned by President Thomas Jefferson.

What were the first associations of individuals using technology in Greene County? According to *A History of Greene County* (Rice & Williams, 1973) technology was used for agrarian means.

> The cotton gin made cotton the single most efficient cash-crop, and its farming spread through Greene County and the south like wildfire. Slavery, as a result, became entangled in the southern landscape; became an indispensable institution. The slave population increased to over 7,000 in Greene by 1840, almost double the amount of white residents. (p. 6.)

If we constructed a timeline of the history of technology in Greene County, you would see that initially the technology had auspicious beginnings. The original inhabitants of Greene County, the Creek nation, were described as eager to take the “guns,” etc. (Rice & Williams, p. 6-8). But then this new technology gave way to violence and Greensborough was burned down and the White settlers were scalped. Eventually, the town was rebuilt and renamed Greensboro. Agricultural technology, in the form of Eli Whitney’s cotton gin, assisted in the production and refinement of the area’s largest export: cotton. Cotton would not stay king partly because the pestilent boll weevil that would eradicate the crops and spread misery throughout the depraved county.

Dhillon and Howie (1986) found that many farmers in the south were left behind and “trapped in poverty” during an economic transition period from the 1920’s to the 1940’s as the agrarian work life became more centered around manufacturing (p. 27). Many farmers lacked the skills to adapt to this major paradigm shift and fell victim to this transition in their lives. Many workers would

come to the conclusion that a strong back no longer is sufficient to earn a living. Dhillon and Howie (1986) also argue that the persistent poverty in rural areas led to foreclosures, unemployment, agricultural land loss and an increase in the number of individuals receiving welfare payments.

The history of Greene County is an important part of any attempt to understand the future. Hillman (2004) writes about the African-American perspective and contributions made to this rural community. “Throughout the journey of African-American in Greene County, we have contributed to the growth and betterment of this community. We are standing on the shoulders of those who have gone before us” (p. 8).

Summary

The literature outlined in this review demonstrates the need to study the impact of ICTs in the lives of those in rural communities in the southern United States. Although theorists and social commentators argue about the positive and negative effects of the diffusion of technology, it is imperative to understand how the individual makes meaning of the Information Age. The associated values and beliefs of this marginalized population have been relegated to silence. An examination of the international, national and regional perspectives gives comparative evidence of the unequal diffusion of technology and disparity of persistent poverty when related to rural areas of the south.

The importance of geography as a key component of the Digital Divide shows the significance of the social context and the split between the rural and the urban. There has been a preoccupation with urban poverty (Wilson & Aponte, 1985 as cited in Tickamyer & Duncan, 1990, p. 69) and the rural areas have become

misrepresented with perpetuated stereotypes and generalizations that slow progress. Social informatics is a framework to better understand the human and social implications of ICTs and how this plays out in adult education. It is a suitable model to use in this study because it is a lens to help understand the predicament of low-income communities in the Information Age. Social informatics is a means by which we can update policies and design strategies to address the diffusion of ICT. It is necessary to examine the social context and the relevance of technology and information in the lives of those individuals who reside there.

The next chapter proposes a methodological design to answer the research questions.

CHAPTER 3

METHODOLOGY

The purpose of this study was to explore the experiences of rural adult learners as they used information and communication technologies. It is about a socio-cultural learning experience with technology. It is guided by the following questions that are related to computer technology, the psychology of the adult learner, and the rural culture.

1. What are the experiences of the rural adult learner with and from information and communication technologies?
2. What situational and dispositional factors influence or impede learning with and from computer technologies?

The design for this study was interpretive and the methodology qualitative. Merriam (1998) refers to this genre of research as basic or generic qualitative research because researchers “seek to discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved” (p. 11). Similarly, Patton (2002) refers to this type of research as a “pure qualitative strategy” (p. 250).

The nature of this research is about lived experience with computer technologies. It seeks to understand the meaning of ICTs in the life of the participants who live in marginalized rural communities. Included in this section are methodological and conceptual perspectives, guidelines for participant selection, roles for participants and researcher, discussion of ways for establishing rapport,

summaries of data sources and collection, data analysis, a pilot study overview, interview structure, reliability and validity, research ethics, and the subjectivities of the researcher.

This study attempts to understand human activities from within as opposed to positivist approaches that view behavior as being bound to scientific formulas of causation. It uses hermeneutics as a method of interpretation of social, historical and psychological worlds. It is about the broader, interpretive philosophical approach to understanding how people in rural areas make meaning from the use of computer technology. It is a study using the naturalistic inquiry approach to examine human interactions with technology. Blackburn notes:

> …whereas we can achieve access to natural phenomena it can only be gained by going beyond sense-perception to the method of the understanding meaning. The experience of social and cultural reality takes the form of the understanding of the signs, symbols, and language used by the participants in the social contexts that form the object of study. (1995, p. 89)

Qualitative researchers' study phenomena in their natural settings, attempting to make sense of, or interpret, these life events in terms of the meanings people bring to them. Qualitative research stresses the socially constructed nature of reality, the intimate relationship between the researcher and what is studied, and the situational constraints that shape inquiry (Denzin and Lincoln, 2000). This research is about an exploration of the human side of technology and the meaning made in the social context of a rural community.

The knowledge generated from this study helps bridge the gap between our collective understanding of how adults learn with computers in rural areas. This knowledge is grounded in the theoretical construct of humanism, which holds that "human beings are capable of making significant personal choices within the constraints imposed, by heredity, personal history, and environment" (Elias & Merriam, 1995, p. 118). This study brings to the forefront the experiences of rural adults as they learn from and about computer technology through multiple interviews over time. The central methodological goal is to create an atmosphere of trust and openness with the participants throughout the study.

Methods

It is my philosophical belief and methodological understanding that qualitative research methods is an appropriate research approach to capture the experiences of adults with computer technology. The use of a qualitative methodology has become a valid means by which we can learn about the individuals experience with technology (Ang, 1989). Any qualitative study is an interpretative and inductive analysis with an overall goal of greater understanding of the meaning and significance of human experience (Bogdan & Biklen, 1992; Creswell, 1998; Merriam, 1998; Patton 2002; van Manen, 1990). Creswell states:

> Qualitative research is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informants, and conducts the study in a natural setting. (1998, p. 15)

Creswell goes on to note that “knowledge is within the meanings people make it; it is derived through people talking about their meanings” (p. 19).

The quantitative information generated from a short survey (age, sex, race, years of formal education, self-rating of computer proficiency; see Appendix D) is not meant to form the basis for a statistical prediction or generalizability of a larger population but rather to highlight characteristics of the participants in the study.

Design of the Study

This study examines the benefits and side effects of computer technology in rural communities. It relies on the experiences of the adult students to provide insight and meaning. Holloway (1997) notes, “Qualitative research is a form of social inquiry that focuses on the way people interpret and make sense of their experiences and the world in which they live” (p. 3).

Lincoln and Guba (1985) proposed the implications of the qualitative or naturalistic paradigm for research by detailing fourteen characteristics of operational naturalistic inquiry. These include: (1) natural setting; (2) human instrument; (3) utilization of tacit (intuitive, felt) knowledge; (4) qualitative methods; (5) purposive or theoretical sampling; (6) inductive data analysis; (7) grounded theory; (8) emergent design; (9) negotiated outcomes; (10) case study reporting mode; (11) idiographic interpretation; (12) tentative application; (13) focus determined boundaries; and (14) special criteria for trustworthiness (p. 39-43). These characteristics are briefly described in the following section. As Lincoln and Guba (1985) state it is essential to carry out research in the natural setting or context of the entity (rural ICT program) for which the study is proposed because realities are wholes that cannot be understood in isolation from their context. The

primary data gathering instrument was the researcher because it would be virtually impossible to prepare, a priori, a nonhuman instrument for the variety of realities that would be encountered. In addition to knowledge expressed in language form, the tacit (intuitive, felt) knowledge is encouraged to be used because the nuance of multiple realities can be appreciated only in this way. Qualitative methods are required for this study because they are more adaptable to dealing with multiple realities and expose the nature of transaction between investigator and respondent. The principal goal of this study is to go to the natural setting of the adult learners and present their views and their interpretation of the reality with computer technologies. Norman (1993) advocates a human-centered view of technology and individuals.

> In the past, technology had to worry about fitting people's bodies; today it must fit people's minds. This means that the old approaches will no longer work. The same analytical methods that work so well for mechanical things do not apply to people. Today much of science and engineering takes the machine-centered view of the design of machines and, for that matter, the understanding of people. As a result, the technology that is intended to aid human cognition and enjoyment more often interferes and confuses than aids and clarifies. (p. 9)

The goal of this research is to closely examine the human aspect of technology and how it is affecting the lives of marginalized adults.

Participant Selection

Participant selection was based on purposeful sampling (Patton, 2003) seeking information-rich cases. "Purposive sampling is based on the assumption

that one wants to discover, understand, [and] gain insight" (Merriam, 1988, p. 48). The selection of participants included men and women from diverse backgrounds based and socioeconomic status (educational status, marital status, employment status etc.). I screened potential participants to ensure they were citizens in the rural community and are reflective of the demographics of the selected community. Those demographics include: gender, race, and socioeconomic status. The commonality of all participants is that they live in a rural. The individuals in the study were selected through personal contacts, and the director of the technology program who is serving as this project's gatekeeper. Purposive or theoretical sampling is preferred for research using naturalistic inquiry because the researcher may be able to increase the scope or range of information exposed as well as likelihood that the full array of multiple realities can be uncovered.

Naturalistic researchers prefer to have the guiding substantive theory emerge from (be grounded in) the data because no *a priori* theory could possibly encompass the multiple realities that are likely to be encountered. Meanings and interpretations are more likely negotiated with the participants or informants because it is their constructions of reality that the researcher seeks to reconstruct (Lincoln & Guba, 1985).

The study consisted of observations, document analysis and interviews. A specific criterion for the study is that the student participants are over 18 years of age, have attended school through the fifth grade, and are enrolled or have been enrolled in the technology program of study. These participants include graduates of the program and individuals who did not complete the certification process.

(Detailed information and descriptions about the participants in this study can be found in chapter 4).

Rationale for Selection

The study was presented to potential participants by initially meeting with individuals in Greene County. I presented the purpose of the dissertation, outlined the time involved for the observations and interviews, explain my personal interest in the topic, and invited them to take part in the research. However, so as not to affect the individual responses and the final outcome of the study, participants were not aware of any monetary gift until all of the data collection has been completed.

I met with each participant one-on-one to explain further their participation. Although it was not needed, one week was given for potential participants to think about their involvement.

The site for this research was Greene County, Georgia. Figure 14 shows the

Figure 14. Greene County, Georgia. From "Dismantling Persistent Poverty in Georgia: Breaking the Cycle" (2003). Carl Vinson Institute of Government. Adapted with permission of the author.

geographic location of Greene County within the state of Georgia. Demographics played a large role in determining the suitability of this location and diversity in the participant selection. In regard to rural diversity, Drabenstott and Smith (1995) note that rural areas are more heterogeneous than the stereotypical farmer. “When most people think of "rural" areas in America, they picture an agrarian landscape dotted with farms or forests. Historically, rural areas have been viewed as containing relatively homogeneous cultures and were assumed to depend on farming and natural resource extraction for their economic livelihood. In fact, rural America displays great cultural and economic diversity, and is the home to many different economic activities, including but not limited to farming, mining, manufacturing, and services. More information about the participants is available in Chapter 4.

Participant/Researcher Roles

There are specific roles and expectations from the researcher and the participants that were necessary to ensure a successful study. The first is the requirement of participation in the interviews that would involve a maximum of two 45-to-60 minute taped interviews. Following each interview I transcribed and analyzed the data and I used that analysis to construct the next interviews and consider other methodological decisions. I also wrote field notes to record events surrounding the interviews, my own reactions and the participants’ reactions, and to document my theoretical ideas, personal responses, and methodological issues. I shared the themes derived from the transcripts with each Table 6 shows demographics which were used in determining the suitability of the Greene County site selection.

Table 6.

Greene County Demographics

Between 1996 and 2000, Greene County's annual unemployment rate was higher than the state's rate, averaging 6.5% compared with the state's average of 4.2%. Nationally, the unemployment rate averaged 4.8%.
The county per capita personal income in 1999 was $20,292, as compared with $27,324 for Georgia and $28,546 for the United States.
Greene County's median household income in 1997 was $27,011. This amount was less than the state's median household income of $36,372 in 1997. Nationally, the median household income in 1999 was $37,005.
During 1997, 21.6% of the county's population lived below the poverty level, compared with Georgia's rate of 14.7% and the national rate of 13.3%. In addition, 32.4% of the children under the age of 18 lived below the poverty level in Greene County. Nationally, 19.9% of the population under the age of 18 years lived below the level of poverty.
In 2000, the mean weekly wage for all the employment sectors in the county was $440. This amount was less than the statewide mean of $622.

Note. From “County Profile”, (2003) Green County, Georgia Department of Community Affairs (DCA), Retrieved August 20, 2003, from http://www.dca.state.ga.us/

Participants were invited to share their feedback as part of the process of data triangulation. This synthesis of the interview allowed each participant to confirm my interpretation of their words. Data triangulation can increase research credibility by noting inconsistencies with the interpretation of the data (Denzin,

1978). Also, using investigator triangulation can help reveal different aspects of empirical reality and promote “strengthening confidence in whatever conclusions are drawn” (Patton 2002, 556). Rapport can be described as making a connection, developing a link, bonding, or forming a relationship with others. As I began to establish rapport with the participants, my life, along with my commitment to this research, was under evaluation from the participants.

Below, Table 7 details the responsibilities for the participants and the researcher.

Table 7.

Responsibilities

RESEARCHER RESPONSIBILITIES	PARTICIPANT RESPONSIBILITIES
Contact participants	Agree to participate
Conduct observations	Participation during interviews
Conduct interviews	Share photographs/artifacts
Take field notes/analyze documents	Read/Analyze (some) transcripts
Transcribe/Analyze interviews	
Share findings for member checks	
Write	

Extensive dialogue with the participants was necessary to ensure that I was not attempting to define and exploit their experiences. I respected the need to provide a place for participants to tell their own stories in their own words. I took great responsibility in being accountable for my actions in this research and used

frequent member checks along with evaluations of my involvement from outside experts (dissertation committee, university faculty) to enhance the trustworthiness of the findings.

The number of participants (n= 12) allowed quality time through multiple interviews that provided an opportunity to know the participants well. Patton (2002) notes that unlike quantitative inquiry there are “no rules for sample size” (p. 244) in naturalistic research. However, this issue was balanced with the need for accomplishing theoretical saturation. The selection of information-rich cases was aided by the Greene County Director who served as the gatekeeper. This individual was knowledgeable of the study’s purpose. However, the extent of our relationship depended upon the participants’ willingness to open their lives and allow me to share in their classroom activities. In addition to honesty and respect, Oakley (1981) states that researcher self-disclosure during interviews is good practice.

As a researcher developing relationships with my participants, it was important to do more than simply ask questions, but to work toward establishing a relationship in which the participants felt free and are encouraged to reveal their experiences (Polkinghorne, 1983). The difficulty in using qualitative methods is that respondents lead hectic, deeply segmented, and privacy-centered lives and are willing to give the investigator only limited time and attention. Time scarcity and concern for privacy stand as important impediments to the qualitative study of modern life (McCracken, 1988).

Data Collection

Data collection strategies included the gathering of descriptive data through observations of participants using computer technology and interviews that

examined the individual's attitudes toward learning with ICTs. The collection of empirical data for this study took place over a six-month period in Greene County and included interviews, observations, and document analysis.

In his seminal work, *The Presentation of Self in Everyday Life* (1959), Goffman writes about two distinctive methods of data collection.

> The expressiveness of the individual appears to involve two radically different kinds of sign activity: the expression that he (sic) gives, and the expression that he (sic) gives off. The first involves verbal symbols or their substitutes. The second involves a wide range of action that others can treat as symptomatic of the actor. (p. 2)

In other words, the two kinds of communication are those which are given (through interviews and surveys) and those that are given off (observations).

Data also included the participant interviews, my observational field notes, recorded throughout the data collection period, and documents (computer-related work, historical/educational accounts, photographs, etc.) that participants were willing to share. Documents "lend contextual richness and help to ground an inquiry. This grounding of real-world issues and day-to-day concerns is ultimately what the naturalistic inquiry is working toward" (Guba & Lincoln 1985 as cited in Merriam, 1988, p. 109). This data serves as a starting point for the interviews and was used to triangulate with the interview data.

During the 6 months I spent in Greene County I was able to enjoy the visual history from two driving tours of the county that accounted for approximately six hours. Both tours were led by two different and knowledgeable guides who were able to point out various significant historical landmarks. Digital photographs

provided a useful means of capturing the actual embodiment of the social, cultural and historical record of Greene County. The driving tours were also audiotaped and transcribed for future reference, analysis and clarification.

I was able to reflect on the overall process of data collection by writing each day in my research logbook. This allowed me to chronicle not only the experiences and interactions with the people but also helped me to become acutely aware of my internal subjectivities.

Semi-structured interviews that bring to the forefront the experiences of individuals who are learning about technology were used in this study. The structure for the interview is included the *Interview Guide* (See Appendix B). The interviews were in the form of a dialogue in which the interviewer actively takes part in the conversation. My main role was that of an active listener who responded when appropriate and support the conversation without dominating.

At the outset of each interview with the participant, I made an opening statement to set up the structure. The interview guide helped me keep the research questions in mind as I conducted the interview. The questions were open-ended (Bogdan & Biklen, 1982) to allow responses in the form of stories. The open-ended questions elicited stories centered on cultural concerns allowing freedom for the participants to discuss the impact of ICTs in their lives. Table 8 provides a summary of the fieldwork guidelines that were operationalized in this study.

Table 8.

Summary Guidelines of Fieldwork

1) Roles of the participant and the observer were clearly explained
2) Descriptive notes were taken
3) Gathered information from many viewpoints
4) Used triangulation
5) Use of quotations
6) Built trust and was open to feedback
7) I was reflective but attempted to separate description from subjectivity (Patton, 2002, p. 331)

The setting for the interviews is significant for a positive atmosphere and I tried to ensure a comfortable physical environment. For the interviews, the participants and I met in a relaxed setting. The timing of the interviews was arranged for the participant's convenience and availability. Reflective practices were a part of the interviewing and observations. I was involved in continuous reflection and provide encouragement to the participants to take time for reflection between the interviews in preparation for subsequent interviews.

Table 9 provides the cumulative total of the empirical data generated in this study.

Table 9.

Empirical Data

Empirical Evidence
65 Documents for analysis (fliers, brochures, news articles, reports)
86 pages of field notes in research logbook
68 Digital photos
42 hours of participant observation
16 participant interviews (Formal and informal)
1 focus group of twelve people

The methods used in this study were designed to compliment each other and provide more reliability to the findings. Table 10 lists the data collection and analysis methods.

Table 10.

Methods

DATA COLLECTION METHODS	Data Reduction	Data Analysis
Document Analysis Field Notes Formal Interviews Informal Interviews Participant Observations	Open-Coding /Axial coding Qualitative data analysis software	Constant comparative

Data Analysis

Nearly a century ago philosopher George Santayana stated: “The great difficulty in education is to get experience out of ideas” (1905, p. 1). The goal of data analysis is to get ideas from experiences. According to Patton (2002) data analysis begins with the research question or idea supported by the theoretical framework that guides the collection and analysis of the data (experience) as it develops. LeCompte (2000) notes: “The task of analysis, which makes interpretation possible, requires researchers first to determine how to organize their data and use it to construct an intact portrait of the original phenomenon under study and second, to tell readers what that portrait means” (p. 147). Bogdan and Biklen (1982) define qualitative data analysis as "working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others" (p. 145). The focus of this research are the experiences of individuals in rural areas with computer technology; social informatics is the theoretical framework, and interviewing, document analysis, and observation were the methodologies to answer these questions.

I employed the use of computer assisted qualitative data analysis software (CAQDAS) to help organize and manage the interview data. This software was also used to provide greater structure and organization of all data. Patton notes: “Qualitative software programs facilitate data storage, coding, retrieval, comparing, and linking—but human beings do the analysis” (2002, p. 442). The organization of

the interview transcripts, the fieldnotes from observations, and the numerous documents collected were digitized for quick retrieval and analysis.

The core of this qualitative analysis lies in the process of describing the themes, classifying, and seeing how concepts interconnect (Dey, 1993). Description is the basis for analysis, and then analysis lays the basis for further description. This opens the way for qualitative research to be more inductive and grounded. The entire data set included interviews, observations, photographs, documents, and any other artifacts that were relevant to the stories shared that have developed during the interviews. However, the main focus for analysis was the extensive transcripts from the interviews. The constant comparative method was a continuous part of the data analysis (Glaser, 1969). The constant comparative method was used to strengthen the theoretical saturation of the data. This method of analysis began with the analysis of the first interview and continued with each subsequent interview. I compared the data of each interview across all the participants. Constant comparison analysis informed decisions about the methods of the research by allowing me to look at the data collected throughout the process. I made decisions about how I needed to adjust future interviews based on the analysis.

Coding

In order to reduce the data into manageable themes I began using generative or open coding of the fieldnotes and interviews. I then divided these codes into two categories: motivators and inhibitors. This enabled me to organize data that was in response to the research question about the motivating and

inhibiting factors of technology. After all the data had been analyzed using open coding I then used axial coding to generate connections within the data.

Upon the completion of each interview I personally transcribed the data and imported it into qualitative data analysis software for coding. This allowed me to organize and analysis the interviews and to write memos about codes for each of the categories/codes/subcodes. This process enabled me to perform greater retrieval of various segments of data. The process of qualitative analysis was based on data “reduction and interpretation” (Marshall & Rossman, 1989, p. 114 in Creswell, 1994 p. 154). Tesch (1990, p. 97) called this process “decontextualization” and recontextualization.” The constant comparative method also involves a comparison of codes with codes and classifications that have already been made. I continually looked for possible themes during and after data collection. Data that had already been coded was reintegrated into the process of the comparison (Flick, 1998). Constant comparison also allowed historical connections to be made throughout the process.

During the selective coding process core categories were discovered. According to Strauss and Corbin (1990), the core category is the "central phenomenon around which all other categories are integrated" (p. 116). Specifically, the types of coding were: Open and axial. Open coding was used to break data apart or deconstruct the data into separate components while carefully looking for themes, metaphors, and analogies. Axial coding was used in making connections and beginning to reconstruct data into categories with concrete features and dimensions.

I was able to identify and interpret patterns in the interview data. Patton, (2002) describes pattern identification as a review of the various examples, followed by a hypothesis about the pattern that runs through the examples. Reexamining the examples to see if the pattern holds true for all of examples tests the tentative or preliminary pattern.

After patterns have been identified, I searched for a more basic 'pattern in the patterns'. I looked for themes in order to show a relationship with how different categories fit together. From this point a list was made of assertions about the data. It was important to analyze data from the very beginning, but also to be careful to keep the analysis tentative until final interpretations were drawn at the end of the analysis.

After extensive time looking for patterns and themes, I wrote the final description of the analysis. The analysis process included: 1) a search for patterns within the pattern, categorizing (Strauss & Corbin, 1998); 2) theme identification (Strauss & Corbin, 1998); 3) a description of what is known about the data (Patton, 2002); 4) identification of text that is not relevant to the purpose of the study; and 5) description of analysis, writing it up (Dey, 1993; Strauss & Corbin, 1997).

Quotes from the interview data were used as a means of conveying to the reader the stories and points of view of the participants (Erickson, 1986). The meaning of everyday life is contained in the particulars and to convey this to the reader I grounded the more abstract analytic concepts of the study in concrete particulars through rich description and narratives (Erickson, 1986). To capture the emic analysis of the data, in vivo coding was used. In vivo coding involves

"Identifying the categories and terms used by informants themselves" (Bernard & Ryan, 1998, p. 608 cited in Patton, 2002, p. 455).

Data management included several practical considerations. First, it was important to systematically organize the data. Patton (2002) notes the importance of designing a manageable classification scheme using shorthand notes, software, color-coding and labeling to promote organization of the data. A color-coding system was used to separate each individual's interview with a different color of paper. Also, I constructed an inventory all of the data collected in order to promote greater organization.

Pilot Study

A pilot study (Page, 2001) was conducted in order to gain insight about how people make meaning from using ICT. This study had a purposeful sample of one individual who was already proficient at using technology. The participant had the capability and ability to complete an online master's degree and the interviews provide insight into the sustaining motivational factors that led to the completion of an online Master's degree. This study was instrumental in helping me understand the motivational factors of working with ICT from the vantage point of an individual who could be classified as an early-adopter of technology. The social context of an urban, college educated, computer proficient and middle class student who is gainfully employed is in direct contrast to the individuals in this proposed study. This pilot study used a similar methodological design as this proposed study and it helped me see the importance of how the social context plays a role in learning.

Another similar study involving technology and the perceptions of adult students (Page, 2002) was conducted at a large urban technical college. This mixed

methodological evaluation of adult students using educational software found that adults liked the self-pacing, independent learning style and reinforcement from computer-assisted instruction (CAI). Having the flexibility to focus on specific concepts needed by each individual and taking an examination on the student's timetable were positive factors

Validity and Reliability

Despite the fact that humans are subject to inherent bias, there are means by which investigators can promote a high degree of validity. Although qualitative researchers use a different language to describe concerns about validity, they make every effort to ensure that a study is valid or trustworthy (Kvale, 1996). Wolcott (1990) states a precaution for the researcher of becoming "obsessed with finding the right or ultimate answer, the correct version, the truth" (p. 146). Furthermore, Wolcott (1990) also stresses the importance of "Understanding: the power to make experience intelligible by applying concepts and categories" (p. 146). I attempted to "understand" my study by using strategies from Wolcott (1990) to strengthen the validity. As previously noted, I used triangulation of multiple sources. Wolcott (1990) states that data sources can be limited and those informants do not always "get it right" (p. 20). Artifacts such as the documents gathered during data collection increase the reliability of the data analysis. I also shared the findings with the participants and asked for them to make clarification, elaboration, and verification of my interpretations. However, I included multiple participants, multiple interviews of the participants, observations, photographs, and those specific strategies are noted in Table 11.

Table 11.

Strengthening Validity and Reliability

Talk little, listen more (p. 127). I paid close attention to the stories of the participants. I did not assume that I knew what they mean, but asked for details.
Record accurately (p. 128). I recorded as accurately as possible during and after the interviews. I transcribed all information accurately.
Begin writing early (p. 128). I made a careful record of what I know and searched to identify gaps of what I do not know so that could see the progress.
Let readers 'see' for themselves (p. 129). I included primary data in the transcriptions and gave the readers access to the themes in the interview data.
Report fully (p. 130). I reported the data completely and carefully.
Be candid (p. 131). I acknowledged my subjectivities and shared my feelings when appropriate and relevant.
Seek feedback (p. 132). I confidentially shared my writing with informed readers (dissertation committee, colleagues) in order to receive multiple types of feedback.
*Try to achieve balance (*p. 133). I frequently would go back to the interview transcripts searching for "balance, fair[ness], completeness, sensitivity" to the words of the participants (p. 133).
Write accurately (p. 134). I tried to write coherently and consistently.

Note. From Wolcott, H. (1990). On seeking-and-rejecting-validity in qualitative research. In E. Eisner & A. Peshkin (Eds.), *Qualitative inquiry in education: The continuing debate* (pp. 121-152). New York: Teachers College Press.

Confirmability

Confirmability is defined by Lincoln and Guba (1985) as the degree to which the findings of the study are the outcome of the focus of the inquiry and not of the subjectivities of the researcher. In order to achieve a high level of confirmability each participant received a 1-page synopsis of their interview and were asked to perform a member check of this document. Participants would reflect on the interview and mail the form in a self-addressed stamped envelope that was provided. All participants returned the synopsis. There were no deletions or corrections from the interviewees to the synoptic interpretation of the interviews. One interviewee did provide additional information to the synopsis of their interview.

Ethics and Assumptions

Ethical concerns were taken into account throughout the study. Participants were informed of the purpose and activities of the research (i.e. burdens, work, risk), and great attention was given to protect the participants from risk (Erickson, 1986). I also informed the participants about their responsibilities as they related to this research (See Table 7: Responsibilities).

Precautions

The participants' identity was and will be kept confidential. Pseudonyms were used on all of the interview transcripts and any notes taken. All of the data will continue to be kept in a secure filing cabinet at my home. Access to the data will be available to the chair of my dissertation committee and the members of the

committee. All physical data was stored in a locked filing cabinet and all digital data was password protected.

I strongly agree with the sentiment expressed by Taylor and Bogdan (1984): “It is the researcher’s obligation to present a more or less honest rendering of how informants actually view themselves and their experiences” (p.98). These strategies assisted me in reporting a valid, objective, and accurate portrayal of the experiences of those learning with technology in rural areas.

This study was based on several tacit assumptions. I assumed that the social context plays a role in learning ICT. I also assumed that, being a rural individual with strong ties that I would have the charisma, chutzpah, or panache to gain entry, not only into the educational center, but into the lives of the participants. I succeeded.

Researcher Subjectivity

What brought me to the study of computer technologies and education in rural areas?

This section was designed to provide the reader with background knowledge of my personal experiences, choices, and subjectivities that led me to begin this process of research. Why is this necessary? It is necessary because I did not want to contaminate the ideas, thoughts, and perceptions of the participants in this study. The dynamics surrounding the researcher and the participant can affect “the character of the responses obtained” (Lee, 2000, p. 1).

It is my aspiration to provide the reader with an understanding of the logic behind the decision making process and how I arrived at this area of research interest.

When I completed my Bachelor's degree requirements at the University of Georgia in 1987 I was fortunate to be offered a job on Hilton Head Island, South Carolina. I thought that this location would be the perfect setting for beginning my professional life. I was wrong. The happiness and peace of mind which we all seek is not found in material possessions. It took me 7 months to realize that filling you life with fast cars, wine and cheese parties and making a huge salary does not bring happiness. I needed a change from this atmosphere of consumerism, capitalism and fake people. I needed a change of scenery from the landscaped, manicured lawns and golf courses, the million dollar condominiums, homes and enormous bank accounts. I became a teacher/social worker for the homeless multitudes in nearby Savannah, Georgia. This change in lifestyle, from one end of the spectrum to the other, has taught me much about myself and my appreciation for knowledge and education.

I have struggled with the issue of including subjectivities in research due to my background and transformative personal paradigm shift from quantification and rationality to a more holistic understanding of human nature. Natural science and quantitative research can tell me something about the physical nature of the adults learning with computer technology (e.g., the age, race, and gender). But, this quantification cannot tell me about the particular qualities of the experience that these adults have had and illuminate their conceptualizations of what it means to interact with computer technology. I have come to the realization that there are some things that cannot be relegated to the statistically significant genre of research. This research is about human lives and the impact of ICTs on their living

and is something that is worthy of in depth study and not mere statistical variability or inference.

During my years in the classroom I had the privilege of getting to know several students whose personal displays of courage have had an enormous impact on my life. As noted in the *Preface*, one individual, in particular, was physically confined to a wheelchair. Despite his quadriplegia, he was able to use technology to his advantage and express himself through words and art. This story has, and continues to have, an enormous impact on my philosophical approach to using technology.

As a reflective adult educator for over twelve years who has used computer technology to supplement learning in the classroom, I have personally witnessed the impact it has on the lives of students. While teaching mathematics to a group of urban adult education students I became aware of the issue of teaching to empower students. Because the adult education center did not have functional computers in the early 1990s, a teaching assistant and I would bring our own personal desktop computers to the school. They were heavy and required two round trips to the trunk of our respective vehicles. Fifty feet of phone wire and a 14.4 connection with a 12-inch VGA monitor defined our low-technology. I would place the chairs in a semi-circle format and the participants and I would focus on the monitor and the pictures as they became visible despite the low bandwidth. We also were able to use CU-SEE ME video camera technology and watch very choppy black and white pictures of Brazilian researchers at a Catholic University. While there was no sound, and we had no camera to transmit images, the students did enjoy the opportunity to experience the digital travel. This lesson was not explicitly

declared in the mandated State Curriculum Guide. We, as in a collective group, also did some careful Internet searching to locate supplemental math lessons and learning resources. We exposed these adults to the Internet and aroused their curiosity . . . a curiosity and wonder that they had rarely experienced in education. Several students generated their own content and this was made available to individuals in cyberspace through the website. One student commented that this technology made the world seem small and that she was going to purchase her own computer so that she could have this experience and exploration at her home. Eventually several other students purchased their own home computers and we were able to communicate electronically as well as converse about the common language of techno-babble. Several of these students continued their education in a computer-related field.

My overall experience with these marginalized, inner-city adult students was motivated by an intense desire to demonstrate and facilitate what I thought are relevant and applicable skills for adults to experience with computers. I also welcomed their feedback and guided them through lessons that were relative to their interests thus making the mathematics applicable. The educator's task, according to Brookfield (1983) is "to identify and then enhance the educational component in local community group activities" (p. 156).

As our world becomes more technological it becomes important to not forget what really matters in an experience aided by a machine. First and foremost, we are the educators and facilitators upon whose trust the student places. Technology is a means to a goal of high quality educational experiences for all. But, like many educators I subscribe to the philosophy that if you give a person a fish you feed

them for one day but if you teach them to how to fish they can learn to feed themselves. However, we must also make sure the students have access to the good streams and lakes and are aware of those with pollution. Computer technologies can potentially show students where the abundantly stocked streams and lakes are located. The use of ICTs, in my opinion, is a potential means to achieving the larger goal of empowering individuals and communities to promote economic and social justice. Former President Clinton states: ". . . that closing the Digital Divide is one of the most important things we could do that have the quickest results in alleviating the kind of poverty which is inexcusable. . . "(Lilleston, 2000).

Just as literacy skills are a prerequisite to learn for survival in the world and on a job, learning to access, interpret, evaluate and create with computer technology is a vital skill. Strengthening community-based education and literacy programs should therefore be a prominent element of a strategy for inclusiveness in lifelong learning. A community technology program is a key component to a healthy neighborhood that is meeting the needs of the people. It is easy to understand why the economic survival of rural communities will be dependent on the educated individuals and leadership to provide the necessary access to promote educational equity for all. I am sure there have been individuals who have been able to overcome the debilitating state of poverty in their lives. However, I believe there are even more individuals who have not been so fortunate.

Chapter Summary

This is a research design that is about people. It is a heuristic approach because it is concerned with meanings, not measurements; with essence, not

appearance; with quality, not quantity; with experience, not behavior (Douglass & Moustakas, 1985).

I was dedicated to finding the most accurate descriptions of reality with as clear an interpretation in order to maximize the reader's understanding with the words of the people and not some stuffy academic. It was my attempt at learning how to listen, to be flexible in my approach and to be sensitive to the data.

In *Interpretive Biography,* Denzin (1989) shares a reminder of our obligations to the people whose lives that we are researching.

> As we learn to do this, we must remember that our primary obligation is always to the people we study, not to our project or to a larger discipline. Each story that we hear and life that we study are given to us under a promise. That promise being that we protect those who have shared with us. And, in return, this sharing will allow us to write life documents that speak to the human dignity, the suffering, the hopes, the dreams, the lives gained, and the lives lost by the people we study. These documents will become testimonies to the ability of the human being to endure, to prevail, and to triumph over the structural forces that threaten at any moment to annihilate all of us. If we foster the illusion that we understand when we do not or that we have found meaningful, coherent lives where none exist, then we engage in a cultural practice that is just as repressive as the most repressive of political regimes. (p. 83)

The emphasis on qualitative research is on discovering the participant's thoughts. Fraenkel and Wallen (1993) argue:

> Qualitative researchers want to know what the participants in a study are thinking and why they think what they do. Assumptions, motives, reasons, goals, and values—all are of interest and likely to be the focus of the researcher's questions (p. 384).

I agree with these statements and I have attempted to present the lives of my research participants as real people with respect. This was a challenge to take seriously.

The next chapter provides detailed descriptions of the three types of participants in this study.

CHAPTER 4

PARTICIPANT PROFILES

> Greene County is a small patch of the whole earth. What has happened here records something of mankind's history. What happens here for now on will doubtless record even more of it. For here we have the world in miniature—the forest-covered hills and hollows were here. Then the men came…and here we are today, white men and black, landed and landless, with our interests and fears and hopes (Raper, 1943, p. 362).

The purpose of this study was to explore the experiences of rural adult learners as they used information and communication technologies. The following questions guided this study: What are the experiences of the underserved rural adult learner with and about information and communication technologies? What factors facilitate or impede these adult learners in learning with computer technologies?

This study is about people potentially shaping their own destiny with technology. What is the extent to which they confront this destiny? To answer these questions I interviewed and observed student participants (Jane, Dickey, Gennie, Mary, Sue, Pedro). I also interviewed two instructors (MO and MV) and the director of the educational center (Jackie). The student participants, as well as the instructors, were referred by the director of the center. To gain insight into the role of technology from the community and business perspective I interviewed Carey,

Sandra, and Becky. All of the participants were very helpful in answering my many questions and I am indebted to each of them for their time and thoughtfulness.

The student participants, like those individuals which Raper (1943, p. 362) describes “with their interests, fears and hopes”, once worked at the now closed manufacturing plants. They have led a life of demanding physical work. Their stories about the “go nowhere job” and the loss of one’s livelihood are tremendously strong and would resonate with anyone who has ever been employed. The student participants have come to realize the benefits of computer technologies and how it plays an integral role for their future. They are optimistic yet cautious as they proceed. However, they are not using the latest emerging computer technologies such as wireless technologies, palm pilots and stream based video. The students have not had the opportunity to form an opinion about these technologies and their potential benefit. They have not been exposed to learning ‘from’ constructivist technologies such as web-based distance learning (WBDL) or Computer Aided instruction (CAI). There is much untapped potential because the student participants are not knowledgeable of the possibilities available through the use of technology. They are experiencing how basic computer technologies are potentially useful for them and this knowledge is becoming deeper and is continually expanding. Their worldview is a critical factor in their use and continued use of computer technology. It is crucial that we better understand these factors that affect the quality of life in rural America.

Figure 15 shows the ‘Iron Horse’ of Greene County overlooking the rich farmland that Raper wrote about in *Preface to Peasantry (1936).* The participants in the study have experienced the transition from the agrarian to the service based

economy. Chapter 5 presents more detail about the local economy and the transitions in Greene County.

Figure 15: Rich soil in persistently impoverished Greene County. © 2004 G. Andrew Page

Demographics

Although this research has been improved through contacts with many individuals there were a total of 12 participants (8 female and 4 male) who were selected in a purposeful sampling of students, teachers, and community leaders. The average age of the student participants was 47. The research participants ranged in age from 31 to 70. All of the students participating in this study (with the exception of the one Hispanic student) are native to the Greene County area (see

Definitions, p. 30). They have lived and worked here and have families. The student participants were all currently enrolled at the time of this research or were recently enrolled in the Greene County Career Center. Several of the students are working towards a greater proficiency of the English language, a high school equivalency diploma or General Educational Development (GED) certificate while others are attending classes to obtain certification in various fields as early childhood, customer service, and drafting. According to the Director:

> The biggest part of our student population is adult literacy students. So, you got students as young as 17 and old as 70. No high school education. They have been out in the real world and are seeking employment. We have a lot of parolees here too. That's another story though. They come because they are made too. Some of them sleep in class. Walk around outside. But, our typical student does not have a high school diploma.

The views expressed by the participants were candid, insightful and they seemed at ease with my questioning. The second set of interviews provided the opportunity to probe on issues that the participant stated in the first interview. This also allowed me an understanding of the situational barriers from their perspective. Table 12 provides an overview of the participant demographics in this study.

Table 12:

Participant Profiles

Name	Race	Gender	Age	Enrolled	Educational	Computer

					level	Experience Self-rating 1-10
Jane (S)	Caucasian	Female	70	1-year	Post GED	2
Mary (S)	African American	Female	59	6 mons.	Working on GED	1
Gennie S)	African American	Female	56	8 mons.	Working on GED	1
Dickey(S)	Caucasian	Male	46	6 mons.	High school	1
Sue (S)	Caucasian	Female	61	5 mons.	GED/Early Child. Cert.	3
Pedro (S)	Hispanic	Male	31	9 mons	ESL	1
MO (I)	Hispanic	Female	53	n/a	Bachelors	7
Jackie (A & I)	Caucasian	Female	53	n/a	Bachelors	6
MV (I)	Caucasian	Female	55	n/a	Masters	6
Carey C)	Caucasian	Male	63	n/a	Bachelors	5
Becky (C)	Caucasian	Female	35	n/a	Bachelors	7
Sandra (C)	African American	Female	37	n/a	Bachelors	7

S=student participant; I = instructor; C = community contact; A=administrator

While the setting, quotes, and experiences are accurately reflected, the names used throughout are pseudonyms.

The Student Participants

Jane

A distinguished, business-like, white female of 70 years, Jane is also a determined individual who wants to know technology, but is at the same time cautious. Jane had worked for 52 years at a manufacturing plant most of which have been in a management position. She proves to be extremely knowledgeable of the tenets supporting the humanistic school of management and notes how she used these skills for every workers' advantage. She proudly acknowledges that she is a Christian and believes very strongly in the Protestant work ethic. Jane would never ask a fellow employee to do anything she would not do herself. I make note of the fact that she does NOT display any of the associated fatalism with working in factories. Jane is a survivor and the eternal optimist. Jane has a strong sense of pride about her that is captivating and her demeanor is one that commands respect. She is motivated by curiosity and a thirst for learning so that she can find employment. Her first recollection of computer technology is ingrained in her memory:

> We were starting to use computers in 1978 in the payroll department but that was the year I left. I was never interested in computers because I was very interested in people and sewing. And any technology that we could get our hand on we used in sewing as our machines changed.

Jane talks about the increase in automation and the technologies that became omnipresent at her former job. This is a significant event because it shows not only her thoughts but an eventual shift toward adoption after initial rejection of computer technology. She states:

> When computers started showing up at the workplace to do everything, I had absolutely NO interest in learning anything about the computer. I was interested in managing people and not computers. There was a person at the computer doing the payroll . . . I didn't care one thing about learning computers. In fact I didn't care about learning a computer until after they [factory] closed.

After becoming dislocated from the workforce, Jane was able to find a need for computer technology that was relevant for her. When asked about why she is learning computers now at this juncture in her life, Jane replied with the secret behind her motivation:

> Everywhere you go to apply for a job, they are going to ask you about your computer experience.

I asked Jane if she became interested in computer technologies because of work. She states:

> That's right. When I was here [career center] I really did the first thing on a computer.

I wanted to know more about this first impression that Jane had with computers and she gladly elaborated on this experience.

> You know working around it [computer] I had known how to turn it on, but I didn't know any of the LANGUAGE. There's things (sic) that people talk about, that as far as computers are concerned, that I still don't know what they are talking about. I took a short course here and the teacher gave me a list of computer words with an explanation. We used computers in the payroll office, then to make labels and that kind of thing…even though I was in

charge of getting that done, there was someone else that did it. [PAUSE] I told the teacher that I would like to learn maybe just a little bit about the computer. They had one of the teachers here who was good at teaching with the computer.

Jane has since purchased her own personal computer with the assistance of the staff at the educational center. She has enjoyed making cards and sending letters with the help of her personal computer. She continues to learn more about technology through using it in her life.

Dickey

I also enjoyed talking with Dickey and learning from him during our two interviews. He is 46 year old white male who, up until 2002, worked at a manufacturing plant that once produced jeans. This plant is now closed and according to him the jobs are “overseas.” He graduated from the local high school before the advent of computers and admits that he has very little experience with working at a computer. Dickey has lived in this rural community his entire life. A gregarious individual who enjoys playing the guitar and talking about music, (especially rock and roll and the blues), Dickey embodies the age old conflict of man against himself. The conflict in his life centers on chasing his dreams and taking a mere job just to make a precarious living. “Sometimes the decision about which path to take is made for you,” Dickey says. Dickey admits to having very little exposure to computer technology but is very interested in learning more. He seems unsure about which direction to pursue this interest. Eventually he would like to own his own personal computer but must take care of other needs first. This includes taking care of his mother and father. I shared with him a digitized portfolio

of my work and he was genuinely amazed at how I had consolidated 5 years of work onto a mini-CD. This motivated Dickey. He seemed very interested with the promise of technology and decided to reciprocate. Before our second interview, Dickey had compiled some of his own music, that he had written and performed, onto a CD and gave it with me for my listening pleasure. He was using technology as a means to express his love for playing the guitar. Dickey comments on the aforementioned conflict about chasing his dreams of playing the guitar as a career:

> I thought I could balance my love of playing music and work at the plant . . . you know? The biggest mistake I actually made was going to work at that plant. I stayed there so long . . . 26 years. Making pants, huh.

The tragedy of the lack of opportunity in Dickey's life is found in many of the other student participants-dreams that have gone unfulfilled accompanied by the anguish of hindsight. Their stories are one of frustration.

Gennie

Gennie's personality is very positive to me and she has a friendly disposition. She has lived in Greene County all her life and went to work at a local manufacturing plant for 30 years. Now the plant is closed. She has raised a daughter who works as an administrator at the local technical college and has a son who uses computer technology to produce the weekly church bulletin and newsletter. She is pursuing her GED and is highly motivated to complete this goal. She told me that her personal goal was to graduate and "work with computers". I asked her if she had a specific area of interest and she said, "No". On the day I interviewed her Gennie was also being interviewed by a reporter from a major television news broadcast. The reporter was doing a story on individuals who had

been directly affected by the plant closings and was relating it to the importance of the upcoming state primary elections for President of the United States. According to statistics from the Georgia Department of Labor, included in this television news report, 69,700 individuals have lost their job since 2001. Gennie was one of these.

Mary

Mary worked at a manufacturing plant that made jeans for 38 years. She dropped out of high school to go to work. She has no GED but is taking classes at the Career Center to achieve that goal. It is Mary who uses the phrase “go nowhere job” to describe her tenure at the now closed manufacturing plant. She recollects about the past and says, “It’s sad. I’ve spent 38 years on a sewing machine and that didn’t allow me to experience much more.” It gives a sense of fatalistic sadness that is expressed in her voice when her past work experiences are recalled. She is very new to the idea of learning with computers and admits that she is interested but cautious. For Mary, information received digitally is now an asset and she is able to see how the technology has utility in her life. She relates her first experiences with returning to school. “When I first came here, really I had my mind on getting in those books and seeing if I can get the GED.” Mary conceives learning to be associated with books and not with gaining knowledge via electronic technology. Her current and default conceptualization of information is that it is a derivative of textbooks, workbooks and teachers. I ask her about the first experience of using computer technology and if the instructors made her work on the computer. “No. They let us know that if we wanted to…we could. I started by doing a little typing. I wasn't very good” [laughs].

Mary now has a computer at home which her children use but admits that she would like to know enough about the technology to pay her bills and taxes. This, she says, would be learning that is interesting for her.

Pedro

Pedro is a 31 year old Hispanic store owner in Greensboro. It is evident that he has a strong entrepreneurial outlook on the world due to the fact that he manages his own business. He is a business owner of a small Hispanic grocery store located on the main thoroughfare in Greensboro. Pedro has a wide array of items from Mexico and is able to supply his patrons with products that they have become accustomed to using. He provides one of the most important needs for his community and the need it technological…a fax machine and the ability to wire money. Pedro tells me (with the aid of an interpreter) that for the Hispanic community, computer technology is not a perceived need. Even if they had a computer with access to the Internet, the ability to communicate would be only half completed. In other words, the people in Mexico do not have a computer to receive the email or instant message communication being sent. However, this is not to say that the Hispanic community does not use technology. Pedro informs me that "everyone" in his community has a cell phone. They use the less expensive cellular technology to communicate with their families. The cost of a personal computer is beyond the budget constraints of most of the Hispanic community. Because of the language barrier, most Hispanics in Greene County are extremely reluctant to pursue the computer services of the local library.

Sue

Sue was forced to drop out of school at the age of 16 to go to work in the cotton fields. She then went to work in a local sewing plant for 14.5 years beginning in 1958. When her job with the Chipman-Union plant ended (27.5 years) Sue attended an unemployment meeting and from there she enrolled at the Greene County Educational Center. She knew that without a diploma “I would not be able to get a job.” She frequently checked the job boards at the Department of Labor office (Referred to by her and other student participants as the “unemployment office”) but there were no jobs for anyone without experience or educational certification.

If we described the proficiency of students’ computer knowledge on a continuum, Sue is one of the most proficient student users of computer technology in the group of student participants that I interviewed. Sue is still not too knowledgeable about key aspects such as the Internet and creating her own content with technology. But, she has the motivation to learn. In addition to completing her GED requirements Sue has also taken a course to learn the Microsoft Office suite of computer programs. Sue also finds great utility in not only learning *with* technology but also about technology. An impediment for using technology from Sue’s perception is fear. Reflecting on the fear Sue states that it is more than a fear of failure. “It’s not so much a fear of failure as it was of tearing that computer up. Pushing the wrong button or something, or wiping it out.” I ask Sue to reflect on the closing of the factory and all the change in her life. Although I do not believe it is a zero-sum experience, I ask Sue if the change in your work life been a good or a bad thing.

> When I got my GED I gave a graduation speech, I said I was sorry that the factory closed down but I was really glad that I had the opportunity to further my education so I could possibly get a better job. I could never give up and I don't want to retire. I want to keep going.

Sue notes that she is “really glad that I made the choice” to attend the Greene County Educational Center. She wonders why “more people don’t take advantage of these educational services.”

The Instructors and the Director

MV

MV is an adult education instructor who enjoys teaching and is well respected by her students. MV has been teaching adult education for 5 years in Greene County. Trust is a major component of a successful relationship and the students feel at ease with her instruction. My observation of her facilitation of a cross-curriculum lesson that incorporated ICTs was uplifting, interesting and well-received by the students. MV was the navigator of the lesson and the student participants were enthralled. It takes a dedicated individual to maintain the passion for teaching adult education and it was and is evident in MV. I ask her about her overall experience with teaching and using technology in the classroom. MV replied:

> I think the reactions have run the gamut. It’s a little of both. Some students' are delighted to be exposed to it and want to get involved. Others just keep quiet and never say a word and hope you won't ask them. And I am referring to the older students…the younger ones are more familiar with using technology and they know what to do. Some of these younger students you

have to monitor because they will get off task and start working on other things. One time we had a problem when things were pretty unsupervised.

MV provides insight about the main factors that impede the progress of the student participants.

> The greatest resistance to computer use was evident probably in our DOL (Department of Labor) group from Chipman-Union. Many of those employees were reluctant students altogether because, I think, the majority had done the same rote factory jobs for 20 to 30 years. Their minds were not challenged all those years and the intellectual curiosity wasn't there. In other words, their framework was limited, they had poor self-esteem.

Jackie

The director of the Greene County Technical Education Center is a hard-working and caring individual who is willing to go the extra mile to make the most out of the educational experiences of the students. It would be acceptable for any director to become frustrated with the transition of a county from manufacturing to a more hospitality/customer service economy that uses computer technologies. However, this director sees a need and an opportunity to provide services that promote a positive agenda. Jackie is very knowledgeable about the local power system and politics and, despite the fact that she is not from this area, she has spent enough time (4 years) to learn how to accomplish such directives as adding technology as a critical component of the Center. Jackie was able to procure the necessary upgrades for the center and has worked diligently with the local high school and community leaders to make progress. Her background is in the field of business. She describes her educational background:

I graduated from high school in 1968, my dad was determined I was going to college but, I was bound and determined I wasn't, so we compromised. I went to business school because all I wanted to be was a secretary. I got a degree in Secretarial whatever from Crandall College which no longer exists, an executive secretarial degree in 1969. All I wanted to be was a secretary and I went right to work. As the years went on and my life started changing I decided I wanted to go to college. I was married at the time and my husband said well you should go to school and went to the bank and borrowed the money. My first quarter of college was at Waycross Junior College. But I realized that I would have the same problem with money, no money and I wanted to go to school, he made too much money so I was not eligible for grants. Things were going downhill so I finished the quarter at Waycross Junior College, left my husband, moved back to Vidalia and enrolled at Brewton Parker College. Got a Bachelor's degree in Psychology with a minor in Sociology and as we all know that and $1.25 will get you a cup of coffee.

In order to get more insight I asked Jackie several follow-up questions related to her educational background.

Have you taken any extra classes through the years?

Jackie: I am a certified Career Development facilitator and I took training at Kennesaw State University. I have several continuing education courses on how to deal with managing difficult customers and clients.

How many CEU's (continuing education units) do you have to have each year?

Jackie: There is no certain amount. Not with my job. When I was working with the New Connections program we had several classes. I am a Career Development facilitator and I get CEU's up on that but I can't remember all the workshops, seminars and how to deal with the multicultural population. But that's pretty much it. I do want to go back my master's in community counseling and I am looking in to that.

Andy: How would you define community counseling? Why community counseling?

Jackie: Because I really like career development and I like working with folks that need the help. I don't want to work as a guidance counselor at a high school but I think there are a lot of folks out there who need help.

Andy: Have you ever done any teaching with computers? Technology?

Jackie: No. I am technology challenged basically. But, I know how to get things done for positive results.

MO

MO is an ESL (English as a Second Language) instructor in Greene County and has been teaching part time for 5 years. Her teaching responsibilities are in the evenings and during the day she is employed by the local newspaper. She is well-respected and knowledgeable about the rural community she calls home. Her insight into how technology is affecting the lives of the Hispanic population demonstrates an understanding of the social, political and economic forces and their affect on the lives and livelihoods of many.

MO is very descriptive of times when she has been frustrated with using computer technologies. This is especially true the time she tried to upgrade her Internet connection from a local to a global service provider.

MO tells me that the Hispanic students in her classes have very little formal education. The average is 6 years. Most know little English. “The Greene County Hispanic population is “reasonably educated” and “reasonably uneducated” according to MO. There is a high degree of variance in education. The uneducated just don’t have the money. She tells me the story of the student who purchased a $300 laptop that was sent back to Mexico to his family so they could communicate. It cost $100 to send. In regard to the students learning with technology, MO feels the individuals within the Hispanic community understand the need for ICTs, but, cost is the barrier.

The Community Participants

Becky

The President of the Local Chamber of Commerce, Becky’s comments are representative of the white local business community. Greene County is growing and businesses are moving to the county. Becky writes a weekly column about Chamber of Commerce news in the local paper. She is married and has two children. She has been a part of this community her entire life and has worked in several businesses before her Chamber of Commerce position. She is passionately involved with the betterment of the local community through her involvement in local civic organizations. She is well aware of the agrarian to manufacturing to hospitality/service sector shift in the local economy. She has an optimistic outlook

on Greene County's future and the promotion of growth and the local economy without the pitfalls of urbanization.

Carey

Carey is the 63 year old editor and publisher of the local newspaper-The *Greene County Herald-Journal*. To describe him as knowledgeable about the local scene is an understatement. He knows the people, the problems, the history, and all that is good, bad and even in-between. It is evident that he is a subject matter expert (SME) on local matters. In addition to being the editor of the local paper for 30 years, as well as, a businessman, Carey has a well-respected reputation and considerable power in this community. His willingness to assist in this research has been invaluable. He obtained a White House Press Pass and access for me to be present on President Bush's arrival at the Greene County airport in Union Point, Georgia. Ironically, Carey's father was the editor of the *Greene County Herald Journal* and was very instrumental in helping Arthur Raper gain access and information while writing his dissertation (1931), *Preface to Peasantry* (1936) and *Tenants of the Almighty* (1943).

> They were all white framed homes. They all looked alike. Raper wrote about it in *Tenants of the Almighty*. Then in the early 1940's and 50's if you were a Yankee people in the South held it against you. Today it's not like that. Raper wrote other things in his book that people resented.

I asked Carey about why the local people resented Raper and his writings about Greene County. Was he perceived as a carpetbagger?

> Yes, that and his stand on integration. My father, who was editor of the paper (*Greene County Herald Journal*) at the time, and Raper were good

friends. He helped Raper with his book [Note: Carey Williams, Sr. is acknowledged in the Preface to "*Tenants of the Almighty*"]. He helped open some doors where he [Raper] could talk to people.

Carey shared with me about how Raper was able to convince President Franklin Delano Roosevelt to build 100 Works Progress Administration (WPA) homes in Greene County. Carey drove me to where these homes were built. Although all of our candid conversation was not on the record, I was able to capture invaluable insight from the perspective of one whose job is to know the news . . . even that which is deemed unfit to print.

Sandra

Sandra has been the librarian at the Greene County public library for almost 10 years. She is a proud book collector who has been able to locate some rare books including two copies of Raper's *Tenants of the Almighty* (1943). (She reports that copies of the book are selling for $500 on the website eBay.com). Because the library offers free access to 13 public computers with hi-bandwidth and wireless connectivity, Sandra has much interaction with technology through patrons needing assistance and one-on-one tutorials with computers and their peripherals. Sandra has been relegated to take on the role of instructor as she tutors patrons on how to use the computer and rudimentary tasks such as using a mouse. Recently, the library sponsored a free seminar on the basics of computers and the response was good. Twelve individuals (no one under the age of 30) participated. There are plans for more seminars to include such topics as: *How to Construct a Resumé*, *How to Use the Internet*, *Designing Spreadsheets*, and *Genealogy Searching and the Internet.* Sandra was very willing to help me in this research and provided good

insight into some of the problems encountered with technologies by the patrons at the library.

Summary

This chapter provides a description of the three groups of participants in this study along with their thoughts and experiences about using computer technologies. The students have similar stories about overcoming obstacles in their lives and dealing with the challenge of electronic learning. It is a challenge because for so many years these students had decisions made for them . . . now they are beginning to experience the liberating potential and capabilities of computers. The conversations that we had were memorable experiences that helped me understand the past and to delve into their thoughts of tomorrow.

The next chapter discusses the rural community of Greene County, the adult education opportunities, and the impact of computer technologies.

CHAPTER 5

GREENE COUNTY: THE COMMUNITIES, ADULT EDUCATION, AND COMPUTER TECHNOLOGY

> Traditions are not things to hold us back but should urge us to go forward. The frontier of today is just as great as it was then. To mention a few; education, better teachers and better paid teachers, road improving, providing better health programs and educational facilities, especially for superior students and unlimited space discoveries. (Rice & Williams, 1973, *History of Greene County, Georgia*, p. xix)

Overview

The literature review (Chapter 2) provided a brief outline of the rich history of Greene County. The goal for this chapter is to provide a current snapshot of the Greene County communities and the provision of adult educational services. First, I examine the role of technology in Greene County's history and compare it to the new changes and developments. I provide descriptive statistics about this rural region and how it has been impacted by technology and a changing workforce. Secondly, I highlight the Greene County Technical Education Center (GCTEC) and their technological services for local students. A summary provides an analysis of this data. Figure 16 is a photo of the downtown region of the centrally located

county seat of Greensboro, Georgia. It shows the main intersection in Greene County and the small businesses.

Figure 16. Downtown Greensboro, Georgia. © 2004 G. Andrew Page

Figure 17 shows the downtown of the city of Greensboro on the day that President George W. Bush's motorcade traveled through enroute to Reynold's Plantation at Lake Oconee to thank financial supporters. It was a momentous occasion in the history of Greene County. The crowd had already begun to gather hours before the President's motorcade passed through downtown Greensboro. One individual described the much anticipated event as seeing "the blur." It was an important day in Greene County. Traffic was congested for hours. Everyone's focus was on the President of the United States. It was a major event for this community. There were flags of all sizes, banners handing from buildings, homemade banners

in the front yards of those who lived along the motorcade route, helicopters in the air, and enough policemen and state patrol officers to have at least one stationed every one-fourth mile from the airport in Union Point to the Ritz-Carlton resort twelve miles away.

Figure 17: Downtown Greensboro: Bush's Second Visit. Georgia. © 2004 G. Andrew Page

Demographic Data

The 2003 population of 15,690 Greene County represents a steady growth rate that was 3.5 percent between April 2000 and July 2001. A 2008 forecast for 17,832 represents a 2.7 percent increase. The growth of new homes has increased 22.2 percent since 1990. Racial demographics show that White persons made up 53 percent, Black or African-Americans were at 44.4 percent, Hispanics at 2.9 percent, Asians .2 percent, and persons reporting "other" 1.5 percent (U.S. Census, 2002).

Geographically, Greene County is 75 miles east of Atlanta, 70 miles west of Augusta, and 60 miles north of Macon. A spokesperson for the Greene County Chamber of Commerce points out that, geographically, Greene County is at central point on the map from these urban centers.

United States Bureau of the Census data from the last 5 years (1999-2003) provides further demographic information. This data, compiled by the Georgia Department of Community Affairs (DCA, 2004), is entitled: *Individual Community Profiles for Greene County*. Because these factors are related to the purpose of this research, the demographics for 'percent of people of all ages in poverty', the 'unemployment rate' and 'adults with at least a high school diploma' were chosen. Figure 18 is a graph showing the compilation of this 5-year data using the federal

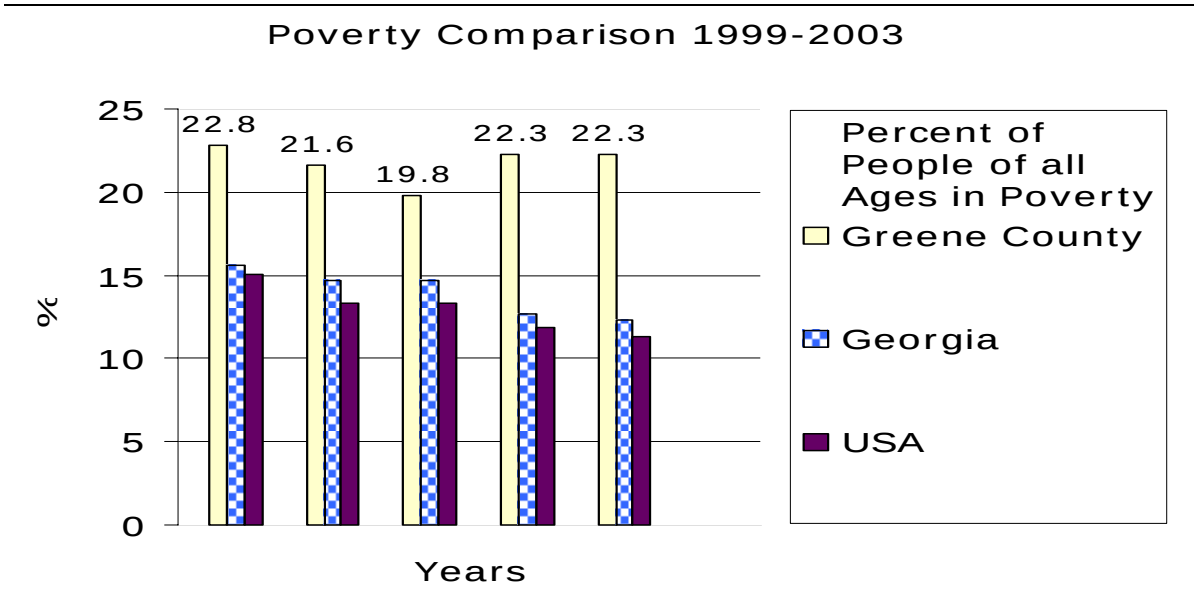

Figure 18. Comparison of Poverty 1999-2003. Source: U.S. Bureau of the Census, 1999-2003. Compiled by the Georgia Department of Community Affairs. http://www.dca.org

government's 48-item set of indicators as a measure of physical poverty (see Chapter 1, *Definitions*). Greene County's average percent of people of all ages living

in poverty from 1999-2003 was 21.76 percent of the population. The state of Georgia's average of people living in poverty from 1999-2003 was 14 percent. The percent of people of all ages living in poverty from 1999-2003 for the United States was 12.98.

Altogether, 1.8 million Georgians, or 22 percent of the state's population, reside in the 91-county persistent poverty region [See chapter 2 for more about persistent poverty]. Urban areas make up 21 percent of the population in the poverty region. Therefore, the rural areas with persistent poverty make up 79 percent of the poverty region in Georgia (CVIOG, 2003). Physical poverty is easily found in Greene County and many other rural locales (NDRP, 1995; Stark, 2002). Also, persistent poverty has been at the epicenter of many other systemic problems such as poor health conditions, unemployment, high dropout rates, high infant mortality rates and more. A visitor does not have to go far in the Northern section of Greene County to see poverty. I personally observed this poverty and talked with individuals in Greene County who were dislocated and displaced.

Figure 19/20 are two photos of the historic Greene County courthouse, built in the early 1800's. These photos are included to represent the strong association of the present with the importance of historical context.

Figure 19/20. Greene County Courthouse and Confederate Memorial. © 2004 G. Andrew Page.

The Lorenz Curve and the Gini Coefficient

A commonly used statistical application for measuring distributional income inequality across a population is the Lorenz curve (Lorenz, 1905). This is achieved by dividing the population into five sections (quintiles). On an X-Y graph the horizontal x-axis measures the cumulative proportion of income possessed from the lowest to highest. The vertical y-axis measures the total or cumulative proportion of the population. Given a sample of *n* ordered individuals with x_i the size of individual *i,* and $x_1^{'} < x_2^{'} ... < x_n^{'}$, then the sample Lorenz Curve is the polygon joining the points , where *h* = 0, 1, 2, ...*n*, $L_0 = 0$ and $L_h = \sum_{i=1}^{h} x_1^{'}$

The Gini coefficient (also referred to as the Gini ratio) is a measurement of the Lorenz curveness or a measure of relative inequality within a population (Gini, 1912). This statistical measure is best interpreted by comparing the Gini ratio of one population to another. Figure 21 is a graph of the Gini coefficient and the Lorenz Curve. The Gini coefficient measures the area between the 45-degree line of

the Lorenz curve. The area between the 45 degree line and the Lorenz curve becomes increases. The values of the Gini coefficient run from 0 (perfect equality) to 1(inequality). Gini coefficients are helpful when examining data over time and have been used by economists as a reliable measure of income disparity. The

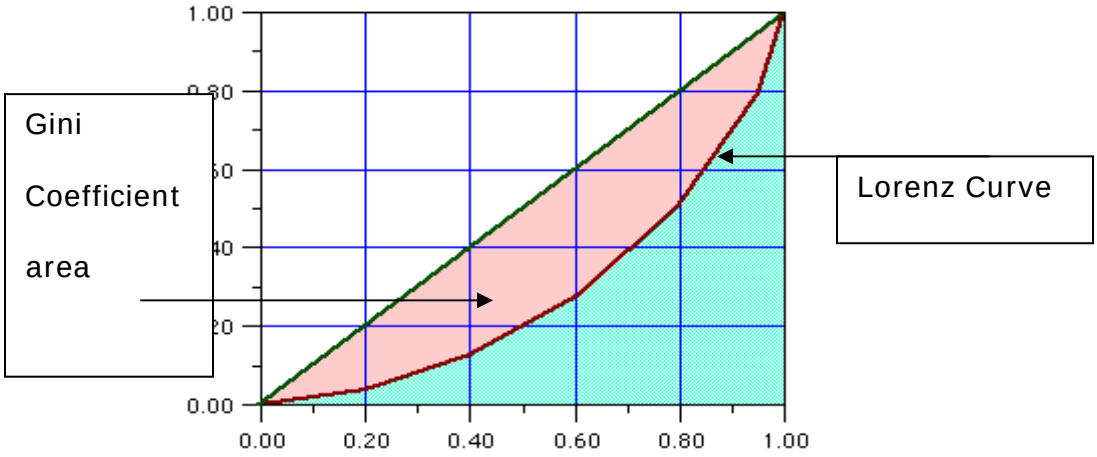

Figure 21. Lorenz Curve and the Gini Coefficient.

Gini coefficient for the United States over a four decade period is displayed in Table 13. It shows how the levels of income disparity, between the rich and the poor have risen in the United States from .394 in the 1970s to .456 in 1994.

Table 13.

Gini Coefficients in the United States

YEARS	1970	1980	1990	1994
GINI COEFFICIENTS	0.394	0.403	0.428	0.456

From "*Poverty, Income See Slight Changes; Child Poverty Rate Unchanged*." Census Bureau reports (2003). U.S. Bureau of the Census.

The latest release from the U.S. Census Bureau (2003) is based on estimates from 2001, 2002 and *2003 Current Population Survey's Annual Social and Economic Data Supplement*. The conclusion of these reports states:

> Using money income only, income inequality -- the gap between rich and poor -- showed no change when measured by the Gini index or household quintile shares. However, using the four alternative income definitions, income inequality declined over the 2001-2002 period. The Gini index declined and the share of aggregate household income increased for households in the middle 60 percent of the income spectrum and declined for the highest 20 percent. (2003, Last para: Income inequality)

The Gini coefficient for the state of Georgia increased 2 percent from 1990-2000 to .4581. Clay County in rural Southwest Georgia has the highest Gini coefficient .6049 and Greene County has the 2nd highest Gini Coefficient of .5830 in the state of Georgia. What are the implications for a rural county with a high Gini coefficient? Could computer technologies and the requisite infrastructure decrease this disparity?

Transitioning Economy

The Greene County job market experienced a noticeable shift from a manufacturing to a service-based economy. One of the major factors attributed to this change is the closing of several manufacturing plants. Figure 22 shows a comparison of the cumulative unemployment rates (1999-2003) for Greene County, the state of Georgia, and the United States. The average unemployment for Greene County, the state of Georgia and the United States during this same 5-year period

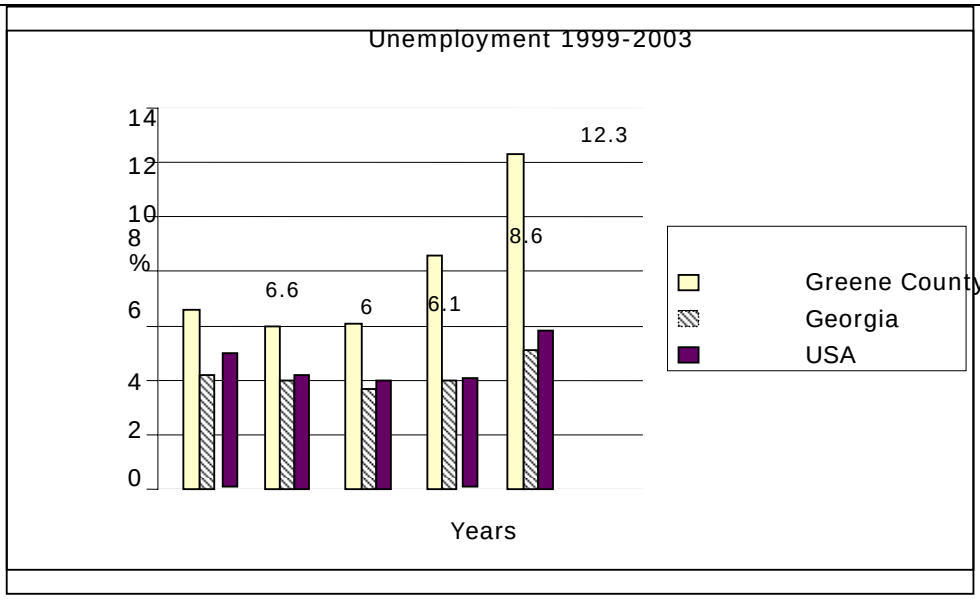

Figure 22: Unemployment 1999-2003. Source: U.S. Bureau of the Census, 1999-2003. Compiled by the Georgia Department of Community Affairs. http://www.dca.org

was 7.92 percent, 4.2 percent and 4.7 percent, respectively. Table 14 shows the specific numbers of individuals employed between the farm, manufacturing, and service economies in Greene County. There was also a 3.7 percent increase in unemployment claims from 2002 (8.6 percent) to 2003 (12.3 percent) in Greene County. Between 1999 and 2003 the number of individuals employed in Greene County in the agrarian sector declined. Although the Greene County apparel manufacturing plants continued to produce until 2002, they could not keep up with the undercutting of the wages by international competition and the inevitable downsizing of the workforce due to the cost of labor. The workers began hearing rumors of layoffs as their wages and work week were reduced. Globalization has

Table: 14

Greene County Employment by Sector

Greene County: Employment 1999-2003

Category	1999	2000	2001	2002	2003
Farming	417	407	399	392	387
Manufacturing	1,894	1,930	1,959	1,983	2,004
Services	1,225	1,273	1,318	1,361	1,402

Source: U.S. Bureau of the Census. Data compiled by the Georgia Department of Community Affairs, 2001. http://www.dca.state.ga.us/

caused many challenges for rural locations throughout the United States (Glasmeier & Conroy 1994; Glasmeier, 2002). The effects of globalization, the North American Free Trade Agreement (NAFTA), and the General Agreements of Tariffs and Trade (GATT) treaty became evident in rural Greene County.

The closing of the manufacturing plants in Greene County has required workers to deal with change and transition. This change has been met with a surprisingly positive outlook by several students. Jane reflects:

> Things happen for the common good. The recession we are in is a good thing because people in this day and time see jobs differently. I used to think a GED was nothing. But, now that I know what it involves I have a different opinion. People realize the need for education.

Figure 23 is a photo of part of the Chipman-Union plant in Union Point, Georgia that once manufactured socks and other apparel. Six of the student participants worked at this plant. The company filed for bankruptcy in 2001. 700 unionized workers were displaced. It had been manufacturing textiles since 1896.

*Figure 23: Closed manufacturing plant in Union Point, Georgia.*1896-2001. © 2004 G. Andrew Page

Student participant Dickey comments on the closing of the manufacturing plants:

> I worked less hours and took a reduction in my pay just to keep my job making pants. Eventually I and everyone else was let go because the plant closed. They shipped all the jobs overseas . . . they can pay someone in a third world country a cheaper wage to do the same job.

You've got to have a sense of humor to get through things. The company could pay cheaper salaries and produce their product. I don't think it is as good a quality though.

In the last few years (2000-2004) Greene County has been experiencing a modernizing economy that is undergoing an incremental transition from a manufacturing to a service-oriented market. What are the perceptions of a knowledgeable community member/historian about the recent changes in education and economy in Greene County? Several local individuals told me informally that I should go and talk with the editor of the local newspaper as he is considered to be very knowledgeable about the local state of affairs and the history of this rural area. To get insight into this question, I asked the long-time editor (30 years) of the *Greene County Herald-Journal* his opinion on the current outlook and the recent changes [closing manufacturing plants, development of Lake Oconee, new technical school] in Greene County.

Andy: It seems like Greene County is right on edge of a break through of some major changes that are going to be taking place.

Carey: Greene County is going to grow . . . but it's going to grow with older people because of the school system. Oconee County, which is an adjoining county, has a population of 30,000 because of the public education. We do NOT (his emphasis) have that good a school system in Greene County and that's why growth and people who don't have children in school will do good for the lake. People down here just want to be left alone . . . black and white get alone well. Of course, you've still got your rednecks and people Jesus Christ couldn't get along with. There are poor, hard-working people here. It's

not bad here. When you think of the South you think of Mississippi and killing those students . . . it's not like that down here.

The Communities of Greene County

The communities of Greene County certainly rejoice in the Lord for the support of our local churches for their vision and commitment toward education. (Mammies Lee Hillman, 2004, p. 25)

Greene County has been referred to as the “Hidden History Gem of Georgia” (Greene County Chamber of Commerce, 2003) with the many historical sites and museums that preserve the 231 years of recorded history beginning with the arrival of the white settlers from Europe. There are archaeological sites that predate both the indigenous Creek nation and the European settlers in what was the northern community of Scull Shoals (Rice & Williams, 1973). Figure 24 is a

Figure 24. Nineteenth century home in Northern Greene County. © 2004 G. Andrew Page

photo of one of the majestic nineteenth century homes of Greene County.

Currently, there are eight national historic districts designed to preserve the history of Greene County. In contrast with the old historical section of the county, are the new commercial and residential developments around Lake Oconee. Five-star restaurants and resorts, championship golf courses, and a vacation atmosphere pervade this southeastern region of the county. Altogether, there are five established communities located in Greene County. The county seat, Greensboro, was selected in 1997 as one of the first five Better Home Town Communities in Georgia (Chamber of Commerce, 2003, p. i).

Figure 25 is a map of Greene County, the cities and the major roads and highways. Greensboro, population 3,238, hosts the Greene County Technical

Figure 25. Map of Greene County Municipalities. Source: http://www.ourgeorgiahistory.com/chronpop/65

Education Center (GCTEC) which is a branch of Athens Technical College (ATC).

Union Point, where the Georgia Railroad began in 1834, has a population of 1733. The city of White Plains has a population of 283. Woodville, which has several sites on the National Register of Historic Places, has a population of 400. Siloam also has sites on the National Register of Historic Places and a population of 331. Altogether, there are 430 square miles in Greene County.

The Development of the Lake Oconee Community

> The lake has been a blessing here but it took 12-15 years for people to adjust. (Carey Williams, Jr. Editor, *Greene County Herald Journal, personal communication, 2004)*

Geography remains an important variable in the economic development of any community and rural areas are more susceptible to poverty (Glasmeier, 2002; Howley & Barker, 1997; Lyson & Falk, 2003; Malecki, 2003; Miller, 1991; Miller, Crandall & Webber, 2002; Parker & Hudson, 1983; Ramirez, 2001; Stark, 2002; Tickamyer & Duncan, 1990;) and especially Greene County. Because of the significance of geography, it is important to define the term *region*. “A region may be defined as any place that is bounded to some degree by barriers of perception” (Goffman, 1959, p. 106). Figure 26 is a photo of the entrance to the 5-star Ritz Carlton resort in the southern region of Greene County.

Figure 26. The Ritz-Carlton of Greene County. © 2004 G. Andrew Page

The development of Lake Oconee in 1979 (Georgia's second largest lake with 19,000 acres) by the Georgia Power Company, represented the beginning of a major change in the lifestyles of the Greene County residents. Located in the southern part of Greene County and bordering Putnam and Morgan counties, Lake Oconee has been a commercial success for residential real estate and the development of golf courses . Descriptive statistics for the Lake Oconee region "reflect an older and wealthier population base" and the population estimate from the Greene County Chamber of Commerce is 16,150 (Spring 2004 Greene County Chamber of Commerce newsletter, demographic data generated from Claritas Site Reports, http://www.claritas.com Note: Not all of Lake Oconee is in Greene County). According to a Greene County Chamber of Commerce press release (n.d), "Lake Oconee becomes one of the nation's premier, landmark destinations" . . . Greene County still retains the down home ease of Southern living, with an eye on responsible growth. Agri-business, tourism, and a pro-active business atmosphere, work together to make Greene grow" (p. 1). There are three gated golf residential

communities in region. The area also has eight “world class golf courses” (Chamber of Commerce). The lake community has access to polo, tennis, croquet, and a growing number of fine restaurants. The Ritz-Carlton Resort at Reynolds Plantation, which opened in 2001, has a 250-room golf spa and lodge. There had been initial resistance to the change brought about due to the creation of Lake Oconee. Research participant Sue questions the disparity between the northern and southern regions of Greene County. She states:

> Even though they are building out toward the lake and the rest of the county is not changing at all, I can't figure out why there is so little progress at this end of the county. A lot of people think the lake people have something to do with that.

However, the Director of the GCTEC notes that several students have found employment at the resorts on Lake Oconee.

When you contrast the wealth in the three private residential or regions with the northern half of the county, and use Goffman’s definition of *region,* it is easy to see that there are two distinct regions within one county. Like the ‘Ironhorse’ that was pictured in the *Preface*, there is a stark contrast between the modern developments in the lake region and the historical (other communities) regions. There is much irony.

I discussed the implications of this change in Greene County brought on by the development at Lake Oconee, the closing of the manufacturing plants and the advent of the Greene County Educational Center, with the long time editor of the local paper. He recalls the chain of events:

Carey: Jim Hunt and Ray McNeal (Greene County Commissioners) were instrumental in getting it (Greene County Technical Educational Center) here, which is good. The vote was 3-2 in favor. There was some resistance because people didn't want change. They are beginning to know that when hard times hit, the mill went broke, the sock mill closed that needed to change too. People had to make a living off Lake Oconee with landscaping, and working on golf courses. Now people have a good feeling toward the lake. I remember, hell, I own several of the lots which you could buy for $15-20,000 over 10 years ago. I'd sell them for $40,000 and think I was a genius (laughs). One piece of land, I paid $18,000 for and sold it for $75,000. I thought I was the smartest man in the world. I asked the real estate guy the other day about the worth of the lot I sold down by the lake. He said $500,000!

It is also important to know that there have been instances of contributions made by the citizens in the Lake Oconee area to those who live in the impoverished areas. While this may be interpreted as paternalistic by some it is, nonetheless, important to include. The editor of the local paper tells me that the new family life building at the Methodist church in Greensboro was made possible only through the donations and fund raising by citizens from Lake Oconee.

As the rural economy transitions towards a service-based economy there is also transition in the delivery of education. The next section is an overview of the adult educational services in Greene County with a focus on the GCTEC.

Adult Education in Greene County

There are four K-12 schools and one private school within Greene County. At one time Greene County was the site of a private university. In 1833 Mercer University was founded by Baptists and the school served as a seminary. In 1871 the school relocated to Macon, Georgia. It is now a major university. Figure 27 is a photo of the historical marker outside the original home of Mercer University.

Figure 27. Mercer University Historical Marker © 2004 G. Andrew Page

African-Americans also had separate schools in Greene County. A recent book, and part of the *Black America Series,* entitled *Greene County Georgia* (2004), was written about the many African-American contributions from the years 1800-2000. Author, historian, and Greene County citizen, Mamie Lee Hillman, provides a thorough photographic recollection of the people, their places of worship and their education, and captures and preserves these historical experiences. She writes:

> History touches our lives daily. It is important that we embrace it, reflect upon it, learn from it, and actively work not to repeat the atrocities from our past. This will build a greater future for our sons and daughters and the entire community. (p. 9)

However, there is much work to be done in order to overcome the lingering effects of slavery in Greene County. Although Hillman does not specifically mention poverty, she does write about the “struggle, the strain and the separatism” (p. 17) experienced by former slaves.

Hillman also writes about the beginnings of the formal education of African-Americans and provides numerous photos of the church schools that were established in 1872 through authorization by the Georgia legislature. She notes that “the majority of these schools were unfit for human use” (p. 25). However, this did not stop the educational efforts for African-Americans. “Nevertheless, the teachers used what was given to them, because they knew the value of educating the children. The churches and neighborhoods surrounding the schools supported them as much as they could” (Hillman, 2004, p. 25). Several of the photos used in this book are part of the Arthur Raper collection at the University of North Carolina and the Greene County African-American Museum Archives. There are numerous photos of one-room church schools in Greene County that were used by African-Americans for educational purposes. Hillman writes: “The trustees and teachers served tirelessly to continue beyond this great stepping stone for African Americans, for education was the road that led to betterment of their sons and daughters” (p. 25).

Although e-learning is a viable alternative to traveling large distances for education, the lack of close physical proximity to schools of secondary and higher

education has forced many prospective students in Greene County to travel a minimum of an hour one-way if they chose to pursue face-to-face lifelong learning. Current educational institutions in the area (but not in Greene County) include: Athens Technical College (Athens, Georgia main campus 33 miles) and 5,726 students; Georgia Military College (Milledgeville, Georgia 44 miles) with 3,300 students; Georgia College and State University (Milledgeville) with 5,513 students and the University of Georgia at Athens (33 miles) with 32,941 students (Georgia Department of Industry, Trade & Tourism, 2003 p. 1).

In addition to the need for upgrading the skills of the current workforce and community there, are many individuals in the state of Georgia, and Greene County, who are without a high school diploma. According to the Georgia Department of Community Affairs website, in 2003, 70.1 percent of the Greene County population had a high school diploma. The average in Georgia of adults with a high school diploma was 78.6 percent and the Average for the United States was 80.4 percent (DCA, 2003). [See Appendix D]

In order to address the problem of high drop-out rates, the lack of Adult Basic Educational (ABE) services, and noting the additional dilemma of the proximity to secondary educational services, Athens Technical College initiated the construction of a school in Greene County to address these and other needs such as employment.

The Greene County Technical Education Center (GCTEC)

In 1997 Greensboro, Georgia, in rural Greene County, became the site of a satellite branch of the Athens Technical College (ATC). ATC is part of the larger Georgia Department of Technical and Adult Education (DTAE). During the spring

quarter of 2004, the GCTEC provided academic and technical education to approximately 150 students. Athens Technical College also has satellite educational centers in Elberton, Georgia and Monroe Georgia. The offices of other state government services such as the Georgia Department of Human Resources (DHR) and the Georgia Department of Labor (DOL) are located at the educational center. This consolidation of public services is part of the philosophy of the Georgia *One-Stop* program.

The staff at the GCTEC are aware of the fears, frustrations, and negative stigma that many adults associate with returning to school. One of the means by which this problem is addressed, and one that promotes an inclusive lifelong learning environment, was to publish a brochure for prospective students entitled, *You're Invited…TO LEARN* These reasons for returning to school, offered by the GCTEC, are provided in Table 15. This brochure is designed to provide information and motivation for prospective students.

Table 15.

Reasons for Going Back to School

Learn new skills	Refresh forgotten skills
Prepare for the GED	Study for technical college entrance
Learn how to help your kids school	Gain self-confidence Enjoy learning
Make new friends	Prepare for a better job
Learn to use a computer	Develop new interests

Source: Greene County Technical Education Center, Greensboro, GA. Used with permission.

This publication acknowledges potential barriers for lifelong learning and provides answers to frequently asked questions to help students overcome this fear. Also provided in this brochure are 11 *Reasons for Going Back to School*.

Another document, *The Equity Network* (2003), published by the Georgia Department of Technical and Adult Education (DTAE), serves as 14-page guide for prospective and current students who are seeking training in a nontraditional occupation. The message emphasized in this booklet stresses the importance of women becoming skilled in areas that have historically been male-dominated. The writing, photos, and statistics support the change and transition to a less stereotypical workforce where all nurses are female and all mechanics, electricians, and plumbers are male. The use of average wage statistics for Georgia and the United States is provided at the bottom of each page that features a specific area of employment. For example, the page with information about electricians has a job description and details about the associated skills. The average wage for an electrician in Georgia for 2003 was $30,000 per year while the average wage for electricians in the United States was $39,840 per year.

The ages of the student population at the GCTEC range from 17-70, with an average age of 36. Approximately 60 percent of the population is male and 40% female. Eighty-five percent of the student population is African-American, three percent is white, and twelve percent are Hispanic.

After observing participants at the Greene County Technical Educational Center, it is easy to get the impression that more could be done to foster an atmosphere of progress. The students learn “from” the technologies and there is little or no learning “with” computers. The students are not using the computer

technologies to their fullest extent. One participant told me that they felt overwhelmed with the fast pace of change brought on by technology in Greene County: “I feel left behind because of technology.” Figure 28 is a photo of the Greene County Technical Education front entrance.

Figure 28. Greene County Technical Education Center. © 2004 G. Andrew Page

Preparing unskilled and dislocated individuals for employment despite the scarcity of jobs in a rural area is a daunting task. Table 16 is a list of services available for Greene County citizens at the Greene County Education Center for no charge. There is a great demand for skilled workers and an educated workforce

Georgia Department of Labor Services at the GCTEC

ITEM	DESCRIPTION
Local, state and national jobs	Over 170,000 job openings each year
Internet access	For researching occupations, job openings, i
Job search techniques/workshops	The latest information on job seeking strategies
Financial management workshops	Tips on stretching your income during unemployment
Resource library	The latest books, videos and computer software for job search information
Computers, printers and fax	For your use to develop and send resumes and cover letters
Georgia Career Information System access (GCIS)	Information on occupations, education and training, job search, etc.
Labor market information	Employment trends, job outlook, wage info
Training & education	Information and referral
Unemployment insurance	Assistance in filing for unemployment benefits
Testing	To assess clerical skills and job aptitudes

Source: Georgia Department of Labor, Michael L. Thurmond, Commissioner. DOL-1131A (R-2/01).

in Greene County. As noted earlier, the Georgia Department of Labor has an office at the GCTEC. The DOL provides a list of employment sources as well as no-cost broadband computer access during hours of operation. The philosophy here is: the best way to learn about a computer is to use a computer. However, what does a student do if they have never used a computer? The DOL representative states:

“These programs start you off with learning the basics of computer operations. From there you can move on to other programs if you choose.”

In order to meet the financial demand of higher education, prospective students, who have lived in Georgia for more than one-year, may be eligible for the HOPE (Helping Outstanding Pupils Educationally) Grant. The HOPE Grant provides free tuition and money for books to citizens of the state of Georgia.

Figure 29 is a photo of a classroom at the GCTEC and the layout of the computer technology. There are currently 13 computers available for students. During my observations there was no group instruction on how to

Figure 29. A classroom layout at the GCTEC. © 2004 G. Andrew Page.

use computers. The instructors told me that students preferred that instructors assist them individually when they used the computer. The director talks about the promising outlook for the Greene County Technical Educational Center and the perception of the Center from the community.

> You asked me the question about what would someone say about our educational center. I told you they would say that this is the place on the hill where you get your GED. I want it to be much more than that. I want it to be utilized. We are almost already out of room but what we are doing is important. I want to see more! There's a lot of room to grow! One of the things the Chamber of Commerce wants is an educated workforce. We are *NOT* [emphasis] educating our workforce like we need to be. And, we are moving toward that and I think that people are realizing more and more that they have to have that GED and then they have to move on for some additional training to make it in the workforce. And a lot in the workforce are realizing that they are going to have to continue to come back, so I believe that we are sitting on the edge of something big like a popcorn that is getting ready to pop.

In an attempt to better meet the needs of the Greene County community a document entitled, a *Survey of Your Educational Interests and Needs*, was developed and disseminated in each region within Greene County. This instrument is designed to generate feedback about the type of continuing education and academic courses being offered. This demand-side initiative is an important means by which citizens can voice their concerns and suggestions. Interested individuals are encouraged to complete the form and mail or phone in the information to the school. There is currently no web-based survey for feedback available.

ICTs in Greene County

> New technologies alter the structure of our interests: the things we think *about*. They alter the character of our symbols: the things we think with. And

they alter the nature of community: the *arena* in which thoughts develop. (Postman, 1993, p. 20)

The status of technology at the GCTEC during the past year has had a noticeable upgrade of newer technologies such as a local area network (LAN) and higher bandwidth connection to the Internet. The director comments about the progress made in upgrading their systems hardware:

> Up until about 2 months ago we were in the Dark Ages as far as computer technology was concerned. We had a 56K dial up line . . . now everything is networked with the main campus through DSL. We used to be down half the time and it felt like we were cut off from the outside world. Then we did get DSL and things have tremendously improved.

Studies (Berson, 1996; Wenglinsky, 1998) support the contention that ICTs assist students in demonstrating stronger critical thinking skills and problem solving. Lenhart (2004) found that in the United States fewer than a third (31 percent) of rural African-Americans go online, compared with 44 percent of rural whites. This recent study argues that the disparity can be traced to the fact that 70 percent of rural African-Americans live in households with incomes of less than $30,000 a year, compared with 44 percent of rural whites.

Swain and Pearson (2001) also found that there were significant differences in equity and access to technology in the United States based on “Categories such as income, race, gender, location or education” (p. 10). This disparity was also found to be common in Greene County. Swain and Pearson (2003) in a follow-up article state: “This is a significant problem (i.e., disparity) that reaches across all economic levels, but is especially serious at schools with lower economic status” (p.

330). In Greene County there is a blue collar Hispanic community with very little access to ICTs, a population that is very knew to using technology, and an affluent lake community that embraces technology. Again, socioeconomic status influences the Digital Divide (Lenhart, 2004).

The President of the Greene County Chamber of Commerce (Julia) believes that a barrier to the use of computer technology in Greene County is the generational gap. The younger generation has grown up with computers in the schools while the older generation has had to adapt to ICTs through other means. However, she also acknowledges that students must have a need for pursuing the technology because cost is a barrier.

Similarly, according to individuals within the Hispanic community, there is an understanding about the need for ICTs, but, the cost is the barrier. It is not common for Hispanics to communicate with their families in Mexico via the Internet because, even though there are computers at this end, it is very unlikely that there is a recipient computer to receive the message. Many times, I was told by the English as a Second Language (ESL) instructor that if a Hispanic individual had a computer that they probably do not have Internet access. According to my interview with a hispanic store owner (Pedro) in Greene County, almost every Mexican immigrant does have their own personal cell phone. Pedro sells discount phone cards and has a fax machine at his store. This networked capability allows him to provide the service of wiring money. The cell phone technology is used to communicate with family in Mexico. I am told that this technology is used due to its affordability.

An instructor, who teaches in the Adult Education program at the GCTEC, provides insight into the students' use of technology.

> Some students' are delighted to be exposed to it (Technology) and want to get involved. Others just keep quiet and never say a word and hope you won't ask them. And I am referring to the older students . . . the younger ones are more familiar with using technology and they know what to do. Some of these younger students you have to monitor because they will get off task and start working on other things. One time we had a problem when things were pretty unsupervised.

Another issue concerning technology in a rural context is the unpredictability of Internet Service Providers (ISPs). In rural America, connectivity is a major impediment to using ICTs (Dorr & Besser, 2002). Better service is perceived from larger corporate conglomerate instead of the local service provider. However, there is much frustration with Internet access plans and trying to decipher what is the best deal. For many rural students, the benefit does not outweigh the obstacles to using technology. The ESL instructor states: "If I, as a college educated person, and with much computer frustration experience, am having difficulty, then the students don't have a prayer!"

A student participant, Jane, has personally adjusted to the transformation from a job in a manufacturing plant to being employed in a customer service position. She mentions how the world has gotten smaller thanks to ICTs. The demand for new skills in a changing market is echoed in this dislocated worker's words:

> When computers started showing up at the workplace to do everything, I have absolutely NO interest in learning anything about the computer. We were starting to use computers in 1978 in the payroll department but that was the year I left. I was never interested in computers because I was very interested in people and sewing. And any technology that we could get our hands on we used in sewing as our machines changed. The first sewing machine was on a shaft as well the entire machine. We would sit at a long table and you would have machine, machine at one long table. The first job I had I made 5 cents an hour (laughs).

Another concern about ICTs and education involves the curriculum of the Greene County Career Center. Teachers must feel at ease with teaching using computers and should be supported with the latest technologies. When I observed the students in the educational center classroom, I witnessed the students' rudimentary and introductory knowledge of computers. There was very little critical engagement with the issues surrounding the diffusion of technologies to this rural area. The physical space in the classrooms included tables for students to work collaboratively on assignments but the computers faced the wall away from the teacher and the front of the classroom.

Meeting the Adult Educational Needs of Citizens

Plans for the future of the curriculum at GCTEC are being initiated by the schools director and the administration at the main campus of the technical school, approximately 33 miles away in Athens, Georgia. The additional curricular changes are based on marketing analyses and community input. They include: dual enrollment with the high schools and technical college, culinary training,

hotel/motel management, and a turf-grass management program. Also, there are plans for a diploma program in the vocational areas of cosmetology, automotive repair, early childhood education, and business-office technology.

There is hope and promise that these additional programs and classes will attract more students from the local community. The director comments on some of the obstacles which have challenged GCTEC during the past seven years of the school's existence.

> Enrollment varies. During winter quarter there was very little enrollment. During summer and spring session there is a little bigger response. We usually have from five to eight (students) in a class. We don't want to run a class with less, although I have done it. Somebody will find out that they need to learn something specific for their job and they'll run down here to get the computer training. Overall, it's kind of a cycle.

Because of this variability with demand of educational skills and the fluctuation in student enrollment at the GCTEC, it would be a pragmatic endeavor to determine what factors promote students learning with and from computer technologies.

There are plans to meet the demands of the workforce and the students at the GCTEC. The director notes:

> There will be certificate programs, which are short term or less than a year. We would even be happy with that. By the way, I did start a drafting class just last Tuesday night. We had 5 students. That took an act of Congress to get it started. It's slowly but surely coming around.

The use of computer technologies brought with it an increase in human capital in the form of greater marketability and productivity by the worker. There is a pervading feeling that from the participants that there is much work to be done in training and education in order to meet the changing needs of the students and the local economy.

Economics is the motivating factor for enhancing the skills of the rural populace in Georgia. Research (e.g., Bozeman, 2000a, 2000b; Feller, 1988, 1997; Malecki, 1991, 2003) has found that state funded technology and economic development programs (TEDs) are effective in meeting the goals of promoting more evenly distributed growth and development. These programs like the GCTEC are designed to assist the general population and especially the working or dislocated poor to main gains in scientific and technology oriented capital. However, using technology to find jobs and other relevant information is a Catch-22 situation. In rural areas there is a scarcity of local content (Dorr & Besser, 2002). Also, 80% of households in Georgia earning less than $15,000 per year do not own a computer and 86% do not use the Internet at home. The national average is 77% and 82%, respectively (U.S. Department of Labor, 2002).

The Internet and other computer-based network technologies are often seen as remedies for communities in decline (Bozeman, 2000). In theory, digital information networks could increase local activism and democratic participation in rural communities by giving people a greater opportunity to interact and mobilize their civic interests. Marginalized rural communities like Greene County can, perhaps, overcome the geographical isolation through ICTs. The worse case scenario would involve ICTs further isolating people from real and meaningful

interpersonal relations and disrupt what fragile social capital still exists in these fragile communities (Putnam, 1995; 2000). Learning with and from technology can be perceived as mere hype and has the potential to lead to disappointment, frustration, and negative effects. The best case scenario would be the inclusion of global information and educational networks that rejuvenate dwindling communities of place and connect the dislocated people to online places of support and vital information that is relevant to the livelihood of rural individuals. Kvasny (2002) notes that “Historically, well-educated middle and upper class urban Whites have initially adopted new technologies such as automobiles, telephones and VCRs” (p. 62).

Summary

The Greene County Technical Educational Center’s personnel are committed to meeting the demands of the students and the local community. It is not the assumption or the intention of the employees at the center to perpetuate the myth that all will be well if the dislocated and disenfranchised were to enroll and pull themselves up by their bootstraps. It is hard to pull yourself up by the bootstraps when many have no boots. There is a focus providing knowledge and facilitating the education of students with the skills to obtain and maintain a career. It is conceivable that building this education center seven years ago, prior to the increase of the unemployed within the county, has been a step in the direction of promoting the opportunity to increase the skill levels of the rural populace and satiate the demand of the business community. However, it would be naïve to not look at the larger picture including the state of persistent poverty within this county. Decades of despair can debilitate even the most forward of all thinkers. The

concept of a better tomorrow via education and technology is lacking for many and there is uncertainty about which path to chose.

Looking back at the history of Greene County and how the people were able to overcome and recover from the burning of Greensborough (original spelling) and the attacks from the Creek nation, the two plagues of the boll weevil that eradicated the cotton crop in the late 1890s and then again in the 1920s, the Depression of the 1930s, and the transition from an agrarian to manufacturing economy, suggests that there is something within the social fabric of this community that refuses to be unraveled and frayed. It is something that has been passed along from generation to generation. This is a romantic notion and an easy assessment of Greene County . . . but is it true? It would probably make people very happy and enthused to read these fine words of praise and nostalgia for the past. However, there are many problems with technology in rural areas: Hi-bandwidth is available only within a 2-mile radius within the city limits; there are deficiencies in the lack of local content on the Internet, the cost of computers, the lack of perceived need of ICTs, and the low levels of technological enculturation. When used correctly technology does have the power to empower. When technology is used incorrectly it divides and marginalizes not only individuals but entire communities.

The people I talked with in Greene County were cautiously optimistic about a brighter tomorrow. The closing of the manufacturing plants have forced the dislocated to make a living through other means. It would be easy to give up and give in, yet there is a sense of perseverance that pervades the disposition and personalities of those native to Greene County. The following poem was written in

the early 1940s, but, it is timely today given the expansion and development at Lake Oconee and the transition of the local economy.

A Brighter Day has Dawned

A brighter day has dawned
So bright that we can see
That God has sent a Moses
To lead his people free.
Every year so many people
Was wondering here and there
Till there came a leader
With ways and plans for human welfare.
Louisiana Dunn Thomas, resident of Greene County, Georgia (in Raper, 1943, p. 376-377)

This leader has yet to make an appearance in Greene County, but, it does convey a sense of optimism rather than deprivation, misery, and poverty. Greene County has the potential to overcome the debilitating effects of persistent poverty.

The demographics of Greene County presented in this chapter only tell us the extent by which predetermined variables relate to socioeconomics and education in Greene County. But, what is it like for rural individuals who experience the diffusion of ICTs in their lives, work and education? The numbers only tell part of the story - a piece of the picture . . . part of the puzzle.

The next chapter presents the interpretive findings related to the research questions on the experience with computer technologies, adult education and the

rural social context. I will present a continuum (HOT) building on the diffusion of innovations theory but based on social informatics.

CHAPTER 6

FINDINGS

> To continue to grow with the 21st Century, we in Greene County must change also. The trend for low wage manufacturing jobs to leave this country and move offshore is likely to continue over the next decade. This can be particularly devastating to small, rural communities that depend so heavily on that one big mill or plant. (*The Greene County Herald-Journal*, May 6, 2004, Chamber Chat, p. 4)

> Technology has its good and bad. Just like society. (Jane, student participant)

The purpose of this study was to explore the experiences of rural adult learners as they used information and communication technologies. The following questions guided the research: What are the experiences of the rural adult learner with and from information and communication technologies? What situational and dispositional factors influence or impede learning with and from computer technologies?

In this chapter I discuss the results from this rural research endeavor based on data collected from interviews, documents, and observations from the Greene County Technical Educational Center (GCTEC) and the local community.

This chapter is divided into three sections. First, I discuss the overall experience of what it is like for the rural adult learner to use computer technology.

In the second and third sections of this chapter there is a discussion factors that facilitate and impede students from learning with and from technology.

Rural Experiences with Computer Technologies

> The increasing rate of change, complexity, and geographic mobility that characterizes our society is undermining our sense of security and community and increasing the importance of adult capacity for adaptation and learning for an uncertain tomorrow. (Alan B. Knox, *Adult Development and Learning*, 1977, p. 80)

There was a noticeable change in the lives of the student participants when they began using computer technologies. Over the 6-month period I witnessed students who were able to learn new skills both from technology and with technology. For example, Dickey was able to search the Internet and successfully locate musical information and lyrics to several songs he sings. Due to her persistent and optimistic attitude to learn more about ICTS, Jane eventually became employed part-time. She noted that it was her familiarization with technology that made the difference. Mary continues to use computer technologies as an educational supplement in her quest to graduate with a GED. Sue has taken additional classes in computers at the main campus of Athens Technical College and, like all of the other student participants, continues to progress.

Information and communication technologies acquired deeper meaning after the students interacted with the technology because they were able to see some of the outcomes or derivatives or ICTs. The students initially experienced accomplishment and gradually their confidence to work with information and communication technologies (ICTs) increased. One individual was able to

communicate with others in an online medical support group, while others created content such as flyers for garage sales and make compact discs of music which they had written and played. Jane proudly commented:

> The experience of working with computers was good. In fact, I've got a sheet at home, which has my name and the date on it and it's the first thing I created on a computer.

The student participants were admittedly new to using computer technologies and, while all were familiar with the rudimentary concepts, (e.g., typing, using a mouse) they were not cognizant of more detailed applications associated with mastering technology such as computer programming. Technology has become an item to reckon with in their daily lives and personal struggles. The students admit that they felt a struggle to “catch up” and describe themselves as having a very low understanding of ICTs. Also, there is a pervading atmosphere of change with technology. Due to the situational variables such as cost and persistent poverty, ICTs have not been fully cultivated in the lives of many citizens in Greene County. All of the participants in this study were unaware of the various uses and applications of computers. One of the student participants (Sue) stated:

> I think a lot of the information of computers is already there. I just don't know how to get it. I like to see a person sit down at a computer and just go to work. This person is able to make the technology work for them and they can get things accomplished.

The social context of the rural community has a definite impact on the adoption of technologies by the students. The students are well aware of the million dollar homes and the 5-star resort in the Lake Oconee region of the county. The

students inherently compare their lifestyles to those who drive expensive cars and have disposable incomes. The Lake Oconee citizens are perceived as being technologically savvy and the students feel frustrated from the lack of equity and the huge disparity in lifestyles. The students felt as though they had been left behind in the rapid transformation of society into the Information Age. The development around the Lake Oconee region and the affluent lifestyles present a conflict with the native Greene County citizens. Many became frustrated with the situational and dispositional barriers inherent in the adoption of new technologies. Student participant Jane, who was able to buy a second hand computer, said: “I think everybody gets frustrated when they are trying to find their way around a computer. I don't know about others but this is a real frustration I feel. When I got my personal computer, the neighbor came over and helped set it up. He's young.”

Although the focus of this research is on the learning experiences of individuals with technology in a rural area, there is an association between the wealthy and the poor of this county. The disparity between the haves and the have-nots is one of the numerous ironies of Greene County. Sue, a student participant, comments on this irony and disparity brought on by persistent poverty:

> I think because the Lake people, it doesn't bother me personally, they live in BIG houses and have nice cars, and to a person who's not making very much on a low paying job, it just seems like they are struggling to have a modest living . . . it just seems from appearances, of course, what those people are like, I certainly don't, but they are humans like I am, it just seems like everything is so good out that way with the beautiful homes and everything.

Sue is aware of the opportunities with technology and is taking the initiative to include this item in her toolbox of qualifications. While she does not aspire to live at Lake Oconee, it would be nice to have some of the luxuries. It would have been easy for her to withdraw after being laid-off from the manufacturing plant but Sue has put forth the effort to adapt to the changes in her life.

Initial Categories

In the next two sections of this chapter I discuss these specific structural and dispositional factors from the data and how they are related to rural user's experiences with technology. Table 17 consolidates the factors from interviews, documents analysis, observations and field notes, into the initial categories.

Table 17

Categories

Facilitators	*Inhibitors*
Desire for inclusion	Persistent poverty and the cost of technology
Means to employment	Uncertainty about change
	Perceived need
	Fear of Using technology
	Relevance
	Inexperience with the possibilities of ICTs

Factors that Facilitate

Desire for Inclusion

All of the student participants in this study acknowledged the importance of education and learning via ICTs. The integration of technology as a part of the learning curriculum at the GCTEC is also becoming a part of their lifestyle. Jane comments:

> I don't think we ever need to stop learning . . . because I realized it as my mother aged that unless you use it . . . you lose it. Well, I want to be a part of what's going on for as long as I live. If a person keeps working their mind and doing things they can go places.

I asked Jane about those who do not adapt or, in her words, “keep working their mind”, and she replied:

> I told my sister that our mother just doesn't fit in this society anymore because there are so many things related to technology going on that she doesn’t even know. I don't have plans to be an expert but I want to fit. I believe that if I can learn anyone else can too.

The students acknowledged the importance of being able to “fit in” and be a part of something that has utility in their lives. This suggests a willingness to conform to what they deem as socially valuable. Dickey and Sue also compare themselves to other who have social capital through the use of ICTs. In their minds, the application of computer technology has inherent social capital. Sue states:

> I want to be a part of what's going on for as long as I live and this involves computers. It is important for people to keep working their mind and doing things like using computers.

There is a fascination with computer technology and people who can use computers to achieve a desired result. I asked another student to describe their experiences with technology. Dickey states:

> What kills me is people who can sit down at the computer in their houses and doing all sorts of things. They have the power to create stuff like web pages and art and get information about just about everything under the sun. I want to be able to be that person too . . . I am an artist and would like to explore the possibilities of the Net. [Laughs] Living in this county has not helped me I know because there is limited opportunity . . . maybe I can make the world come to me? [Laughs]

There is a sense of longing in Dickey's voice as he talks about the potential of ICTs. But what technological and educational opportunities are available for a rural student? There is a socioeconomic disconnect between the opportunities realistically available and those that are unreachable.

The director of the Greene County Technical Education Center (GCTEC) has been able to carefully assess the demand from students as well as employers through talking with prospective and current students and members of the community about educational opportunities. She shared with me the latest feedback that she had received from interested prospective and current students. Female students have expressed an interest in early childhood education, computers, and anything in the medical field. Feedback from some of the male

students showed an interest in electrical training classes at the GCTEC. The students want courses that are related to ICTs. They want to know how to fix computers and possibly open their own business in a technology related field.

The GCTEC administration knows that it is equally important to know where there is lack of interest when offering an educational curriculum to stakeholders. Jackie notes:

> We've offered some certified customer service classes down here. The students are not even interested in that and it has 30 hours of computer in it.

During my tours of Greene County I was informed about a business that hires locally trained workers (approximately 20) to develop blueprints and architectural renderings. This was offered as a means by which a local company has applied the use of ICTs to make a profit. When I inquired about the overall prospects of this business in the future I was told that there are plans to hire more qualified individuals to meet the demand. Due to computer technology the company is able to market their services to a wider array of national clientele and not have to endure the traffic, the high crime, the pollution, and other societal ills associated with urban environments. It is also important to note that this business is one of the few ICT-based companies in Greene County.

Means to Employment

Learning with and from computer technologies is perceived by the students as a means toward employment. Jane talks about her extrinsic motivation to learn about computers:

Ok, everywhere you go to apply for a job, they are going to ask you about your computer experience. So, I enrolled to learn more about computers so that in the future I could get a job.

Mary comments on her first experience with computers.

Mary: The teachers let us know that if we wanted to work on computers we could. At first, I started by doing a little typing. I wasn't very good [laughs].

Andy: Can you comment on this experience?

Mary: I had a sense of accomplishment. It made me wonder why, since computers are everywhere, why I hadn't learned how to use them before now. Even my children had them in their house. I thought I didn't have any use for those things. Now I do.

Although Mary's home personal computer was not the latest model it still was relatively functional and brought her social capital with her children.

Several student participants and members of the community referred to the GCTEC as the "place to go to get your unemployment check." This understanding of the mission of the GCTEC implies that you have to be without a job in order to attend and that the culture of people who attend are those unable to find employment. Education and formal learning are viewed as a mean to employment by the participants. There is very little education for the sake of learning philosophy on the minds of the student participants. The participants in this study were looking for jobs and not careers. The Center does have a state funded Department of Labor office within the building and unemployment benefits are available for qualified applicants. It is important that prospective students see that the center's value is

not found in the aforementioned monthly checks (short term), but in the skills and knowledge base (long term) for those enrolled.

The factors that facilitated the use of computer technologies for these rural participants included the acknowledgement of a need for inclusion and the upgrading of their skills so that they could increase their position in the evolving workforce. Gennie comments: “Eventually, I hope to return to work with the skills for a good job. By learning about computers and getting my GED I hope to one day be able to do this.”

The director points out that the students must find relevance for learning computer technologies in order for them to enroll.

> They don't really think about just coming and learning how to use a computer . . . it's when they need it for a job. They just don't feel the need. It's not that important in their lives. Learning to use a computer doesn't mean the difference between a promotion or getting a job.

One of the instructors (MV) comments on the relationship between students, technology and employment.

> The job prospects in this county don't look too good for former factory workers. The "carrot and stick" approach doesn't do much when there are few jobs. Lowe's is opening a store in Madison (25 miles away) and there's been a flurry of interest in filling out applications. The hard truth, however, is that most jobs now require a diploma or GED and some technology skills, and not everyone can do this, as we well know. Too much talent is being ignored because of a lack of a piece of paper. I feel for these dislocated workers!

The technological and local social change and the perception of progress, however, are not always conceived by students as being a positive matter. There are feelings of uncertainty towards change and fear of change and this perception was abundantly evident in the data from the student participants. The next section will examine this and other factors that impede these students from learning with and from technologies.

Factors that Impede

The student participants provided more reasons for *not* [italics added] using ICTs than they did for using them. These barriers have brought about hesitation on the part of the student participants to adopt ICTs. Altogether, there were six factors that consistently surfaced in the data as reasons that hinder the student participants from using ICTs. These inhibiting factors include: (1) Persistent poverty and the cost of the technology; (2) uncertainty about change; (3) perceived need (4) fear of using technology; (5) relevance, and (6) inexperience with the possibilities of ICTs. The next sections expand and explore on these barriers.

Persistent Poverty and the Cost of Technology

The cost of purchasing and maintaining a functional, personal computer is directly related to the issue of persistent poverty. This factor was perceived as a major impediment by the students. After examining the depth of persistent poverty in Greene County this situated factor is related to the social context. Despite the reduction in the price of computers over the past few years, the students perceived the cost to be beyond their financial means. Many of the students who did not own a computer expressed a desire to eventually own one in the future. However, the importance of satisfying more basic needs (e.g. clothing, food, shelter) were viewed

as necessities and technology was perceived as a luxury item. The following statement by Mary supports this contention. “I am struggling to make ends meet. I have no job unless you count being a student as a job. I wish I had the money to put down on a computer. But, I would feel guilty because the money should go towards the bills.” Another student (Dickey) added that they “don’t have the money to waste on a computer” because they must meet other needs like their rent and food.

The free access to computers at the public library has allowed many citizens to interact with ICTs. However, the library staff has had to adapt to the role of instructor/guide for those requiring assistance. This problem has led to the incorporation of free computer classes open to the public. According the head librarian, Sandra, there has been a tremendous response from the general public to learn the basics of computers in these free courses at the local library. The enrollment for the classes is at maximum capacity and those citizens who have enrolled have all been over the age of 30.

Uncertainty about Change

There is uncertainty about the potential benefits of computer technology and the associated change. The director recalls several students telling her their difficulties and inexperience with computerized phone technology. This was interpreted by the director as an example of initial resistance to technology. It was an issue that needed to be addressed by the instructors so that students would feel more comfortable with technology. Jackie states:

> The students would say, “I don't know how to use that thing" or "That man told me" and they don't understand that "that man" is a computer and not a

person. I mean we are talking some serious issues here. And then you would have them, you tell them they could go over to the computer, "OH, NO" I'm not touching the computer!

Using computer technologies is an obvious paradigm shift in the participants' lifestyles and a source of anxiety. During an informal conversation with two of the participants, I was asked by the students if I was familiar with the acronym "CAVE." I was not. This individual proceeded to tell me about bumper stickers they had seen in Greene County with this acronym. CAVE = "Citizens Against Virtually Everything." The participants explained to me that this bumper sticker was in response to the changes in Greene County (e.g., the development of the Lake Oconee resort community, the closing of the manufacturing plants, the transitioning of the local economy to more of service based demand) and how some people preferred the status quo of a slower-paced rural lifestyle. These adult students have managed to survive the change of the local economy from the agrarian to the manufacturing system and now are living in the somewhat post-manufacturing service-based system. I was curious if this resistance included the diffusion of computer technologies. Can you tell me about a time when you were resistant or didn't see the need for computer technologies? Mary replied:

"Yes! Yes! When I was working. Computers were not something that I thought was important at the time. I had a job and a family to care for and I thought all was fine until the plant closed. "

Mary acknowledges that computers have now become a part of her personal life and she currently uses the technology for education, communication, job searching, and entertainment. But at first, Mary was uncertain about this change in

her life. She did, however, become interested in computers as a means to becoming employed.

Dickey, reflects on this change and how computer technologies are becoming a part of his life:

> We (students) don't know what we need to get by . . . that's the way I look at it. I don't know how to fully use a computer yet. We in rural areas are scared of change. We are not quite sure how to get it. Education is very important. I want to keep learning more about computer technology! It's getting fascinating to me. The more I think about it the more I think that well, yeah, I got left behind, but there are endless possibilities.

The concept of change was a prominent theme that surfaced in the document and interview data. Why would rural individuals be afraid of change? Obviously, the change in the local economic system from manufacturing to service brought on numerous disorienting dilemmas for many families. Change is seen as a disruption of the status quotient and these alterations in lifestyle that native Greene County citizens have experienced has conditioned them to associate negative connotations to change. Change has not worked to their benefit. Change has worked to the benefit of those who live by Lake Oconee.

The following comments, by the Greene County President of the Chamber of Commerce, were published in the *Greene County Herald-Journal* on May 6, 2004, in a weekly newspaper column entitled, *Chamber Chat*. The words strongly resonate (triangulate) with the data from the interviews with the student participants in a timely manner.

> Change is factor that first causes hesitation and then acceptance in the life of the students. Of greater concern is the fact that for every manufacturing job lost in one of these key manufacturing plants, 2.3 other jobs disappear within the community. In the past few years, Greene County felt those losses as some of our most prominent industries closed their doors. Just like many small towns across America, our community has been decimated over the past few years by large manufacturing employers closing their facilities and laying off thousands of employees. The trend is clear as our State looks to gain over 18,000 service jobs and lose 1,300 manufacturing jobs in 2004 alone, bringing the net manufacturing job loss to over 100,000 in the last six years. Greene County, like many rural areas throughout the United States, finds itself now looking to replace these jobs with progressive, productive jobs that offer better financial security for its workers . . . We know technology is a key to growth, so industries that not only provide basic wages, but growth and product stability will be some of the types of jobs being sought. As we learn about these industries and understand their needs, we can also prepare our citizens to be productive workers. (p. 4*)*

But, what about the needs of the local citizens and how will these be addressed? Is this merely trickle-down economics? This editorial puts the corporate needs before the citizen by stating in the last sentence “As we learn about these industries and

understand their needs, we can also prepare our citizens to be productive workers." There are feelings of resentment from participants in the community that the human factor is being ignored for the sake of big business profit. There are also those citizens who are calling for responsible growth. The local Chamber of Commerce has advertised for a new Economic Development specialist to guide the county's business and help manage the transitioning economy. These changes in Greene County involve a reorganization of the daily routines and represent a barrier to continuing life as the local people once knew it. Figures 30 and 31 are two photographs from President George W. Bush's April 2, 2004 second visit to Greene County in 9 months. These photographs are included because the Bush administration has questioned the existence of a Digital Divide (Jackson, 2002;

Figure 30/31 : Presidential Visit: April 2, 2004. © 2004 G. Andrew Page

U.S. Department of Commerce, 2002) and the ramifications from technological change. Ironically, there is such an unmistakable Digital Divide in Greene County that is evident from the persistent poverty of the Black Belt. It is important to note that the second visit from the United States President George W. Bush to Greene

County also coincided with the data collection time frame. Because research is inherently political, it is a fact that the social fabric of this rural community has been changing dramatically and has been affected by the Lake Oconee community, the persistent poverty, the closing of the manufacturing plants, and the development of Lake Oconee, where President Bush and his campaign reelection committee held reelection fundraisers. The first visit by President George W. Bush, a campaign election fundraiser, netted close to $3 million dollars for President Bush's reelection campaign (Greene County *Herald –Journal*, June 26, 2003). These photos are also indicative of the political changes that have taken place in Greene County which, like most of Georgia, was once controlled by the Democratic Party. These photographs are evidence of the contradiction between bureaucratic perception in Washington, D.C. and the reality of the Digital Divide and persistent poverty in Greene County. It is a contradiction to see that Greene County voted for George W. Bush in the 2004 election yet his social and educational policies have not been in the best interest of the majority of the county. I asked the student participants what their reaction was to President Bush's second visit. The reply: "I hope he brings some jobs." "He isn't coming to see us." "Bush is coming to see the rich people who live by the Lake." In the 2004 Presidential election, fifty-nine percent of Greene County voters, or 4,069 individuals, supported incumbent President George W. Bush. Forty percent, or 2,774 individuals voted for Democratic challenger John Kerry and twenty-nine citizens (1 percent) voted for the Independent Badnarik (CNN.com, Election results).

The perception that transition and change will not be a positive experience is a common sentiment among the student participants. This is due to the perception

that this adjustment only benefits the privileged and wealthy who get access to see the President of the United States and who enjoy a comfortable lifestyle. There is a growing rift between the “haves” the “have mores” and the “have-nots” in Greene County.

There is no Aristotelian “Golden Mean” due to the insufficiencies in Greene County. There are certain affluent citizens who consume more than their fair share of the local resources at the plantations on Lake Oconee. There is a growing abundance of concentrated wealth among the minority Lake community and an increasing amount of disparity in the other regions of Greene County.

Perceived Need

> They (students) know that they need to know something but they’re not sure what they need to know. (Director of GCTEC)

After numerous formal and informal conversations with the student participants, I found that in order for ICTs to be adopted at even the most basic level in their lives computer technology must first be perceived as a need. This need is difficult to meet because there are other items on the rural inhabitants’ agenda that must first be met. This includes earning a paycheck so that they can provide for themselves and their families. I asked Sue about the reasons why rural individuals are reluctant to seek education and training with technology and how she determined her needs.

> I'm not real sure . . . The GED classes here are free. I wish I knew why more people didn't take advantage. If the factory had never shut down I would have never come here. My son kept telling me years before that, "Why don't you go out and get your GED?" I told him I was working. I'm not going to

need a GED. Not even thinking that years later all this would happen. Because I felt secure.

The student participants in Greene County have only recently found a need for computers in their lives and this is due, in large part, to the perception that computer knowledge is a necessity for employment. The impact of the local layoffs has had a tremendous impact on the community. The influence of the community expectation that those who were able to work would go to the manufacturing plants for employment is evident in my conversation with Gennie.

> I worked at the Chipman-Union manufacturing plant for 30 years . . . Since 1972. It's hard to get a job when you don't have skills. So I came here to the Center to learn more and get my GED. This will help me to do things I've always wanted to do. My family has encouraged me to go back to school. Specifically, my daughter has motivated me to continue my education.
>
> Andy: So is this your source of motivation?
>
> Gennie: Yes, we have a computer at home and my grandson uses it. I don't use it though.

One of the concerns about the human side of technology involves the motivational levels of individuals. Ambivalence toward technology is related to the perceived need of the item. A student participant (Dickey) noted that they would rather be participating in the “manly outdoor activities of rural life” (hunting, fishing, etc) than sitting in front of a computer.

The concept of perceived need is directly related to the circumstances of the local Greene county economy. Before the workers were laid off from the manufacturing plants, technology was not a perceived need. Now due to

circumstances these individuals are forced into learning how to gain employment. Gaining employment is hinged on the ability of the individual to use ICTs.

Fear of Using Technology

Up until the last six months information and communication technologies have played a somewhat unconstructive role in the lives of the local Greene County individuals that I interviewed. ICTS have not been used to their fullest potential. There are many new technologies that the students are not aware of and it was difficult for them to personally assess their digital literacy. Again, the statement made by the director of the GCTEC and confirmed by the students, strongly resonates: “They know that they need to know something, but they are not sure what they need to know.” All of the student participants had a job and were able to pay the bills and put bread on the table before the onset of computer technologies and automation. They were successful without technology at one time in their lives. At this point in their education the students have not experienced the benefits of ICTs and were weighing the stress and strain of the learning curve and financial investment before making any commitments. Mary’s external locus of control mindset is evident when she states: “I think I could do very well if someone would physically sit down and give me a few pointers. I am afraid that I might break something.”

This reactive nature was found to be a common theme exhibited by the student participants. In addition to not knowing what they need to know about ICTs, (uncertainty) they are having difficulty determining where they need to go. Jane expressed a similar sentiment:

I think a lot of it is already there I just don't know how to get to it. I like to see a person sit down at a computer and just go to work. For me this is exciting to watch.

Those that use technology to communicate their ideas may remember the first few times which they used email. There were possibly feelings, questions such as: Who can I write? Who will respond? This feeling of questioning the technology is very similar to the experience of the student participants.

I found that the adults in this study had and have *a priori* assumptions about the difficulty of working with computers and the Internet that induce a hesitant reaction. The students were pleased to find out that they can use a computer to produce a desired result by following a linear set of steps. Sue states:

Because I AM [emphatic] afraid of that Internet. But, I can go to Athens Tech and at the computer area, I'm NOT afraid to turn it on anymore . . . Computers don't scare me anymore. At first I was afraid to turn it on.

The notion of fear and technology was conceived *[Italics added] before Sue began working with computers and demonstrates an arguably inflated hypersensitivity to technology. The director of the GCTEC confirms this perception of fear as an impediment to the students' use of ICTs.*

A lot of them are older and they are just flat out scared. They are scared they are going to tear something up, scared they're going to lose something. But, they are scared.

The anxiety associated with the use of new technologies can affect an individual's self-efficacy. This was reflected in the students' perception of their ability to use the computer and to perform. Their self appraisals of what assisted

and impeded their learning with technologies assisted in the construction of the new framework. A specialist in the area of digital development in the state of Georgia offered these comments to me in an email.

> Fear of failure regarding learning about technology, or the use of technology? Both? Is it a "fear" or can this be boiled down to self-efficacy: "I'm not capable" and/or "it will do no good"? If they have an irrational or even inflated estimation of negative impacts of being incapable or of trying technology that could be an important finding (Laudeman, personal communication, January 12, 2004).

Relevance

Another barrier affecting the adoption of computer technologies by rural individuals is the amount of content that is topical about the local community. Specifically, the content that can be accessed through ICTs is currently irrelevant for most of these adults. The participants can play around, as any kid will do with a new toy and learn how to use the machine, but in terms of practical knowledge useful for their daily lives, very little is available. There is a need for quality local content that is relevant to the interests of the rural community. For example, this would include more information about educational opportunities, distance learning, information about local businesses and services. In order for technology to be perceived as a need it must first have utility and relevance.

Student participants were asked about their learning from ICTs and, while two had never created anything (i.e. content) with a computer, they were very interested in the possibility. Dickey states: “No. I haven't but I've been wanting

too. I am especially interested in sharing my music with others over the Internet. I just don't know how to go about doing that the right way."

Dickey's problem could be potentially solved if he knew more about how to market and network his talents through technology. When I suggested he should consider making his music available for uploading via peer-to-peer network software, he responded that this idea was interesting but he needed someone to show him the process.

There is a sense of dependence on the external and a reactive nature that these students exhibit. One of the participants was able to find hope amidst the pain of being laid off from her manufacturing job and being forced to go back to school to further her education. Jane states:

> Things happen for good. The recession we are in is a good thing because people in this day and time see jobs differently. I used to think a GED was nothing. But, now that I know what it involves and I have a different opinion. People now realize the need for education.

The student participants in this study do not want to be left behind in the Information Age. They are hesitant, cautious, and searching for direction. One of the instructors (MV) reflected on the integration and adoption of technology that she has witnessed in rural Greene County:

> We have tried to introduce everyone to the computer at some level, and I must say it was gratifying to find someone who "got it" and could work independently or even ask to use the computer. Currently, I have a student with cerebral palsy who has great difficulty writing. Using the computer to record his answers works well for him. But searching for info on the

> Internet is not something the students regularly do. The staff, however, will do it to enhance learning.

It is interesting to note that this instructor views technology as a means to enhance learning.

Inexperience with the Possibilities of ICTs

While talking with student participants, I noticed they were not aware of the potential power of computers to communicate, locate information, construct content, and more. However, I consistently found that the students were not experienced with the many uses of ICTs and the potential opportunities. They were not aware of the many possibilities of computers. Jane has purchased a computer but was hesitant about connecting to the Internet. “I don't have an Internet connection yet. I can't decide over which company to choose. Everybody is telling me what to use. I think I might use email and go to CNN.com but what else can I do”?

As evident by the preceding comment, the student participants were also not sure about the potential issues of digital empowerment that are associated with ICTs. However, once the students were able to overcome their initial fear of ICTs, they were willing to learn more about these possibilities and to build on the previous concepts. There was a linear progression or hierarchy of levels that the students were experiencing. For example, Sue was able to learn mathematics from a computer tutorial program and use this knowledge to input the formulas into a spreadsheet program to create a bar chart. The student appreciated the efficiency

and effectiveness of the spreadsheet program in allowing her to create a chart that represented data that she had collected.

Each student participant was asked to provide a self-appraisal of their experience with computer technology on a scale from 1-10 (see Table 12, p 137). The average student response was 1.5. The student participants in this study are at the knowledge or earliest stage. In order for these students to be able to move to the next stage there are certain preconditions that must be met. A listing of some of the common digital literacy outcomes includes: e.g., working with technology for personal enrichment or in a job; writing software, repairing, upgrading hardware by self; ability to critically assess technology are higher level skills. These skills include: creating content such as a word processing document or webpage, being critically reflective of content, and purchasing computer related software/hardware. The oversimplification of categorizing the use of ICTs into two domains (haves and have-nots) is an archaic means of looking at the human side of technology. DoI research supports a hierarchy of technology that describes the phases of computer technology integration and adoption.

Table 18 shows the framework from Rogers DoI theory (noted in chapter 2) and provides specific and current examples of the related competencies at each stage. It delineates the descriptive phases or stages through which the students would exist as they adopt technologies. As technology becomes more integrated the individual will either pass through or remain in a particular phase.

Consequently, in this study most of the students were in Phase 1 (knowledge) and Phase 2 (persuasion). The scaffolding of knowledge gained from integrating technology would theoretically, and potentially, lead to more of a

mastery of the machine so that students were participating in learning more with technology than just from technology. What is the utility of the HOT framework? It provides a continuum for individuals to see the scope of technology and to judge

Table 18.

Hierarchy of Technology (HOT, Page 2004)

LEVEL	Description
PHASE 1 (KNOWLEDGE)	Overcoming initial fear to learn about technology; accomplished through external and internal motivation.
PHASE 2 (PERSUASION)	Creating basic content such as typing, using a mouse, rudimentary, public access to, but no ownership of, a computer, printing information. Connecting to the Internet to find relevant information: Learning from technology.
PHASE 3 (DECISION)	Purchasing ICTs. Surfing the Internet, using email, using peripherals like a scanner, USB hard drive, digital camera, printers
PHASE 4 (IMPLEMENTATION)	Ability to use technology for efficiency. E.g., online banking, purchasing/selling items online; enrolling in a web-based online course.
PHASE 5 (CONFIRMATION)	Sharing knowledge about ICTs with others and critical reflection on content. E.g., communication on a listserv or a discussion group; feeling of an online network or community. Mastering a language e.g., hypertext, JAVA, Action script; knowledge/use of emerging technologies; learning with technology

where they are in the process of its integration and adoption. This framework will help individuals who are searching for jobs or are in need of retraining to assess their current technological skill base as they prepare. Also, having the insight into how a student feels about ICTs can assist and instructor or instructional designer in understanding their perspective and conceivably provide better subject content facilitation. Again, it is important to note that all of the student participants have shown a keen interest in expanding their knowledge of technology and lifelong learning with ICTs. They were all willing to learn more about ICTs both in and out of the classroom if given individual instruction. The following examples support this contention. During the course of the student interviews I offered some examples of how ICTs were being used for communication (i.e. chatting, blogs, discussion boards) and financial information such as online banking and paying bills. Gennie responded:

> Gennie: I have never done any of that. But there is time. It sounds like something that I would like to do and something that would benefit me. I have lived in the country all my life. Computers could help me keep in touch with friends and family who live far away. I am curious but also cautious."

Another student participant (Jane) states:

> You know working around it [computer] I didn't know how to turn it on, but I didn't know any of the LANGUAGE [Emphatically]. There are things that people talk about that, as far as computers are concerned, that I still don't know what they are talking about.

Jane also mentions that she wants "to be a part of what's going on for as long as I live. I plan on keeping with the learning and working my mind."

There is a symbiotic interconnectedness between the two distinct regions in Greene County. However, there needs to be more of a cooperative spirit to develop skills and foster positive growth. Unless the needs of the local native citizens are met, Greene County will live be a region of hegemonic reproduction that replays the plantation days of perpetual dependency, despair and conflict. The evolutionary journey of Greene County has been rife with conflict.

In order for ICTs to benefit the rural citizens of Greene County they must not only find utility in technology, they must also find how to create local content and build upon that knowledge in their lives. Greene County is evolving into an information/knowledge economy but unless this is realized by all, and available to all their will be continued misery and persistent poverty.

There is an ecological component of living that is absent from Greene County. This holistic philosophy does not discount economic progress but attempts to discover those technologies that will aid in responsible growth. There is a need for the effective use of technologies and a growing spirit of empowerment.

Because this research is about the impact of technology on the lives of students it is inherently about change. Change has political overtones. Change does not take place in a vacuum.

Through the enculturation of technology into their lives the students reaches acceptance. There are different levels of acceptance of technology. The next chapter discusses this finding and provides a list of recommendations for future research and a discussion of the findings.

CHAPTER 7

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In this chapter I present my conclusions in light of the research findings and the related literature. I discuss the importance of the social context with ICTs and offer a framework developed in conjunction with the social informatics theoretical framework for addressing the complex issues surrounding the Digital Divide. I conclude by offering recommendations for further research while addressing the theoretical implications of this research.

The purpose of this study was to explore the experiences of rural adult learners as they used information and communication technologies. This is a story about the relationship between people and their environments, not the people and computers. Twelve individuals, four men and eight women, all impacted by computer technologies in some manner, were interviewed in depth. Six individuals were student participants, three are adult educators, and three individuals are from the business community. The questions that directed this study were: What are the experiences of the rural adult learner with and about information and communication technologies? What factors influence or impede learning with and from computer technologies?

Understanding the implications surrounding the social context of rural and underserved areas is a worthy yet complicated amalgamation of development issues. Technology has the capability to transcend borders both the internationally and locally. However, this is impeded by numerous contextual factors.

The research literature on social informatics and the Digital Divide (Kling, 2000; Guerstein, 2003) suggests that there is more to the Digital Divide than physical access to computers. Other research about technology and the Digital Divide (e.g., Benton Foundation, 1998; Besser, 2001; Carl Vinson Institute of Government, 2003; Cohill, 2001; Cullen, 2001; Donnermeyer & Hollifield, 2003; Dorr & Besser, 2002; Guerstein, 2003; Kvasny, 2002;) supports the contention that this is a complex set of issues. The issues of poverty, uncertainty about change, the perceived need of ICTs in the lives of these citizens, the fear of using technology, the relevance and the inexperience with these technologies must be addressed in a holistic way. This research confirms that these factors are consistent with the theoretical lens of social informatics.

Rural students who had a positive perception of technology and had found a need for information and computer technologies in there lives were still confronted with contextual barriers. These barriers are part of the rural fabric of Greene County and include the cost of computers and the availability of high bandwidth access.

Conclusions

From these data, the following conclusions can be drawn related to adults learning with and about ICTs in rural regions. First, the advent of the Information Age has impacted the lives of rural individuals and they are aware of this change. They need more assistance and knowledge about how to take possession of resources. These conclusions are similar to those found by Cross and McCarten (1984, p. 37) who observed the students' fascination with the power of technology

and a genuine interest in learning more, However, this desire to learn is hampered by dispositional and situational barriers.

The second conclusion drawn from this study is that certain conditions facilitate the use of ICTs. The desire of the individual for inclusion into the workforce and the use of technology as a means to that end must be greater than the situational and dispositional barriers. These include: the potential employment and the desire for inclusion in the age of information and technology. These components and conditions are interrelated and inherently a part of the complexity of the socioeconomic system. But, in order for these conditions to exist, there are numerous contextual barriers that must be addressed and overcome.

For the local Greene County economy to become more economically sustainable it will need a workforce that is trained in computer technologies. There needs to be a climate that is conducive for change and transition into the Information Age. This can be accomplished by combining public and private interests. The GCTEC is a publicly funded school and needs to continue to build a strong partnership with the local Chamber of Commerce and others in the business community.

Research by the Pew Internet & American Life Project (Lenhart, 2004) has found that because of the geography and proximity to services such as education, medical information, and other services, rural individuals had the greatest need for ICTs in their lives. For example, due to the shortage of doctors in rural areas, the rural citizen could potentially access online health information to address an illness.

Another important conclusion is that the social context of a persistently impoverished area such as Greene County has an effect on the ability of the people

to use and adopt new computer technologies. On June 5, 2004, it was reported in the Athens, Georgia *Banner-Herald* newspaper that the Greene County hospital had made public the decision to close the doors of the county hospital. The reason given for this choice was due to the accumulation of almost $4 million dollars in hospital debt. The citizens now have the option of driving at least an hour to receive medical care (Banner-Herald, 2004, A1). How can individuals focus on their learning needs when the most basic of needs is being threatened?

The following quote was published as a letter to the editor of the Athens, Georgia newspaper, the *Banner-Herald*. Although the theme of the letter is about the possible closing of the local Greene County hospital, and not about computer technologies, the words are included because it addresses the social context and extent of the poverty in this unstable region. Due to the inability of the citizens to pay the medical bills the hospital could be potentially closed unless a private investor of group of investor purchases the property.

> Elderly from the nursing home behind the hospital have been sent to neighboring counties to live out the rest of their lives. What a shame. Most were born, raised families and probably thought they would be able to finish out their lives here. These people are the ones who sweated and got cotton in their lungs form the mill here, and worked in the sock mill and the sewing plants . . . They didn't get rich, didn't have fancy million-dollar homes on Lake Oconee, nor pay thousands a plate to dine with President Bush or donate millions to his campaign. But, by gosh, they helped build this town and thus deserve treatment.

The potential closing of the Greene County hospital would require that citizens travel a minimum of one hour for medical attention. According to the *Greene County Herald Journal*, “The closing leaves the county with $3.2 million in hospital debt that must be repaid over the next 17 years . . . the county will have to borrow money to make ends meet before property taxes are due later this year” (June 10, 2004, A1). For now, the hospital remains open.

This instability in an impoverished area, as evidence by the hospital debt and persistent poverty conditions, hampers the overall progress and the potential for a brighter future. How can individuals in this region address the higher level needs of education when the most basic needs of health and safety are at risk?

The efforts to interpret the impact of the computer on the lives of these rural participants helped me to better understand the relationship between the context and technology. The Hierarchy of Technology (HOT) framework will allow facilitators of education to understand that not all students are at the same levels of adopting technology. It is conceivable that as new digital literacies become commonplace that the five phases of HOT will need to be periodically updated to be more inclusive and descriptive of the psychological and skill stages of development.

Through understanding the factors of content, context, connectivity and capability we can better address the complexity of the Digital Divide. Practitioners can be better equipped with this knowledge in order to proactively facilitate digital literacy. Policy administrators and community leaders can better address the complex Digital Divide issues from this holistic approach. Michiels and Crowder (2001) found that “development is much more complex than planting the seeds of ICTs in poor rural areas or marginalized urban neighborhoods” (para 2).

The Importance of the Social Context

This research found that exploring the social factors surrounding the use of ICTs in rural areas can help in lessening the effects of the Digital Divide and the many issues of social justice such as inequality and disparity. In addition to providing a descriptive depiction of technology in the lives of rural students and their specific level of adoption, the findings from this study also build on the recent Digital Divide research of Dorr and Besser (2002). Door and Besser provide a thoughtful analysis in *Re-evaluating the Bridge! An Expanded Framework for Crossing the Digital Divide through Connectivity, Capability and Content (3C).* They suggest a 3C approach for bridging the Digital Divide in underprivileged communities: capability, content, and connectivity. *Capability* refers to the personal psychological factors such as resistance to change and fear of using technology. *Content*, in this framework, is defined as the creation of material that is directly related and topical to a given community. Connectivity refers to the technological infrastructure and such variables as bandwidth, number of Internet service providers, and WiFi.

However, this research has concluded that there is a fourth C that is an inherent component of the 4C framework argued by this study. It is the *social context* (italics added). Acknowledging and effectively addressing the social context is a vital factor for overcoming the Digital Divide. Socioeconomic status of various races and ethnicities influences the Digital Divide (Lenhart, 2004).

The culture of the community *is* a factor that affects the use of computer technologies. For example, it was not economically or practically feasible for the Hispanic community of Greene County to carry around computers due to the mobile

lifestyle. According to individuals within the Hispanic community that I interviewed, the cost and perceived functionality were major barriers. However, the members of this community did embrace the technology of the cellular phone because it allowed them to communicate with their families who lived outside the United States.

Another conclusion is that the social context and the distinct culture of a community affect how an individual perceives ICTs. The situated cognition of the rural individual is vastly different from that of the urban resident. There *is* a difference. There is an urban/rural split. The polarization between the Lake Oconee community and the other areas of Greene County is apparent. There is a large difference between those who live in regions that are persistently impoverished be it a Rust Belt, Black Belt, inner city, or Native American reservation. The next section describes and explains the importance of the four major themes that are central to effectively addressing the multiplicity of systemic problems of inherent to the Digital Divide.

Context

There is a difference between the rural and the urban. This study supports the research of Janelle and Hodge (2000), who found that the issue of geographical isolation is becoming less of a barrier as technology becomes more ubiquitous. However, this study did find that the rate of adoption of the students in rural areas is slow, cautious, and in some cases, hesitant.

Again, there is a highly visible polarization between socioeconomic classes in Greene County. The local native citizens live mostly in or near the small towns while the affluent live by Lake Oconee. This has affected the social context of the entire community.

Participation at the GCTEC could potentially benefit the participants and the community. In addition to satisfaction, the learners can explore new possibilities so that learners can accentuate their social capital and occupational opportunities. The participation involves a marketing and publication of the center's educational and vocational services. It includes proactiveness on the part of the individual within this context.

Capability

Capability refers to the psychological barriers and facilitators of using ICTs. The aforementioned dispositional barriers such as technology not being a perceived need, the fear of using technology, the uncertainty about change, the need for guidance, and the inexperience with the possibilities of ICTs, are examples of this theme. The student participants had much fear and anxiety about using technology in their lives. Questions which this theme addresses include: Were the students able to overcome the frustrations, inhibitions and acknowledge a need for lifelong learning with and from computers? What motivations promoted the use of computers technology?

Connectivity

Connectivity is about the issue of broadband connection, a VoIP (Voice over Internet Protocol or WiFi (wireless fidelity), the quality and speed of the connection, and where the student has access (e.g., home, school, friend, library). The category of *cost* is an example of a factor that impedes connectivity. Many of the students could not afford their own personal computer. Connectivity has long been the standard by which the level of the Digital Divide was measured by the United States Government (e.g., NTIA, 1999, 2001). However, the issue is arguably more

complex than just physical access to technology (e.g., Hanson, 2000; Selwyn, Gorard & Williams, 2001; Warschauer, 2003). The rural area of Greene County has limited connectivity in terms of hi-bandwidth and partial availability of cellular technology.

There is potential to provide information and educational services through technology and to plan for a proactive approach to meet the needs of the rural community. However, there is much trickle-down technology and the belief that access to computers leads to computer use. The overall relationship between access and usage is much more complex than previously envisioned by the quantification of computers, routers, servers, and wired households. Technology can lead to empowerment or further disenfranchisement between the haves and the have-nots. Haddon (2000) states, “ICTs enhance our abilities to fulfill active roles in society, or being without them constitutes a barrier to that end” (p. 389).

Content

Content is defined as the digital information that is created by the individual or is related to the individuals’ interests (Dorr & Besser, 2002; Lazarus & Lipper, 2000). It is a theme because of the importance of people using ICTs to either create their own content and materials and to highlight the need for content that is related to these individuals. The lack of local and relevant topical content has an affect on the use of ICTs. Before the students can move on to the higher level skill of editing their own content they must first be producers and not mere receptacles of information.

An example of the importance of content as it relates to the curriculum is provided in this response from the director of the GCTEC:

> Let me just tell you about what we currently offer. The only thing we offer is continuing education classes in computers. It's very basic computers. MS Word, Excel. And that's it at this point. We have offered Web Page design and how to search the Internet. But, we never had a class to make.

Figure 32 shows the four interrelated factors to be addressed for effectively addressing the Digital Divide. A brief explanation of each component is provided adjacent to each variable. The technical issues of capability, connectivity, and content are dependent on the central issue of context.

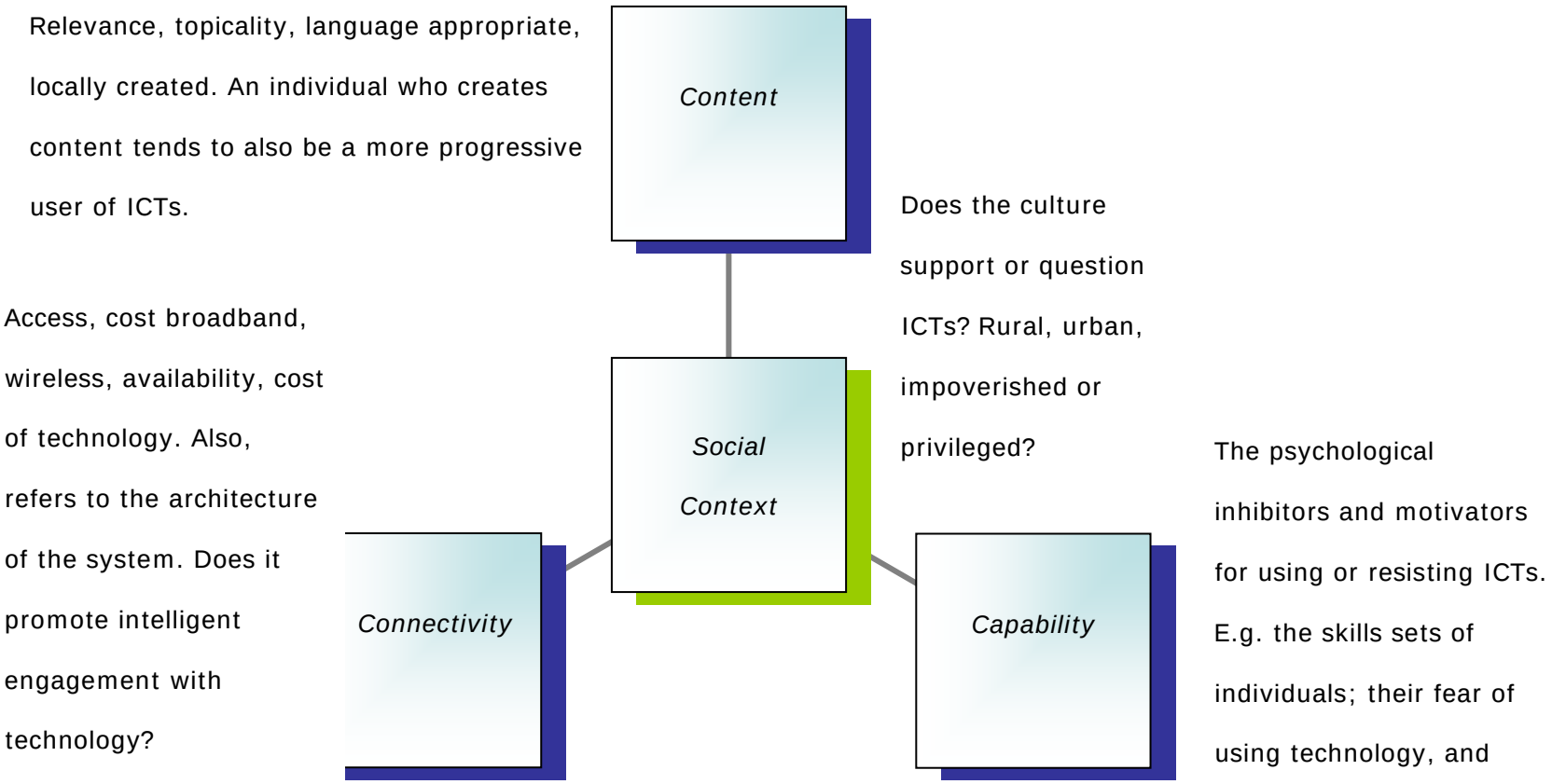

Figure 32. 4-C Framework: Factors for Effectively Addressing the Digital Divide

Recommendations for Educational Research

Understanding the social context plays an integral role in an individuals' learning experience. Many rural areas are underserved, but as technology becomes more ubiquitous (e.g. e-learning, emerging synchronous educational technologies) it will become more important to study how individuals are making sense of this social phenomenon. Several areas of further study are recommended to promote this genre of research.

For example, conducting a cross-case study of two underserved rural communities would provide a comparison model. Likewise, conducting a cross-case study between an urban and a rural community would shed light on the aforementioned rural/urban split. There is a need to study the impact of technology from the sociological and educational perspectives that would include a cross case analysis approach analyzing two or more educational programs and the changes technology represents in the lives of the community.

How can technology effectively promote diversity issues and respond to the needs of rural adult learners? This would also build on the work of Fabos and Young (1999), who found that to promote multicultural awareness teachers must go beyond simply recognizing differences but to also help students understand how these differences are socially constructed and the associated implications.

There is a need for a usability study exposing the students to various technologies and an analysis of what the user perceives. This process is

standard for many software beta-testers who are early adopters of technology. But, what about the late adopters?

Other areas for future exploration and questions to consider include: the use of technologies to foster and facilitate reflective and critical thinking skills through knowledge construction environments is a higher order set of learning than working to learn 'with' computer technologies. To what extent do adult classrooms employ learning 'from' technology approach? Also, a case study of the relationship between technology and democracy could potentially look at how individuals are involved with political movements. How has e-government impacted their lives? What are the local, state and federal implications? There are many assumptions that the designers of the technology make that lead to frustration.

Research on the spread of community technology centers (CTCs) or telecenters and their impact on the community would be in alignment with Kvasny (2002) who found social reproduction an inherent part of an urban CTC. The marginalization and commercialization, as well as, the globalization and integration of technology are just some of the social informatics issues for further research.

Other potential areas for research include using the action research approach to involve more of the community in the effective use of ICTs. This could include examining specific technologies like distance learning and the role they play in the lives of these individuals. Can technology be a basis for economic and community development? The issue of sustainability has been

a concern in the most recent research on community efforts to bridge the Digital Divide with technology.

Instructional designers need to be cognizant of the dispositional factors facing rural use of ICTs. The traditional notion of an IT user is based on egregious assumptions and errors.

Implications

There are several implications related to the literature on social informatics, adult education, and instructional technology. The conclusion that the community and cultural setting play a major influence on the adoption of computer technologies supports recent work done by Tsikalas (2004), and Dorr and Besser (2002). The Hierarchy of Technologies (HOT) provided in Chapter 6 offers a continuum by which students and facilitators of education can better situate their level of skills.

Lifelong learning means “those changes in consciousness that take place throughout the life span which result in an active and progressive process to comprehend the intellectual, societal, and personal changes that confront each individual human being”(Galbraith, 1992, p. 4). The basic tenets for rural education are: (1) Learning opportunities should exist for all people of all ages and (2) formal and nonformal community organizations should take part in providing educational opportunities (Galbraith, 1992, xii).

Providing computer technologies is arguably part of the greater picture of serving culturally diverse populations. Donnermeyer & Hollifield (2003) conducted a study (n = 471) of four rural communities to examine patterns of email and Web usage. A statistically significant finding from their research

is “email and Internet use was strongly associated with the educational status of respondents” (p. 111).

Ross-Gordon (1990) points out that with the shift of the economy to computer technologies that many minorities are underrepresented in these related occupational fields. The demographic changes in the number of ethnic and racial minorities participating in adult education programs demonstrate a growing need for action. As part of her work on empowering communities, Pittman (2003) found that adults can be benefited from “strategic uses of technology” (p. 53). She states:

> Adults in homes, schools, and community centers need to embrace, not fear, technology and believe in its transformative power; they must develop new capacities to embed technology in all of their work. We owe learners many and varied ways to experience technology’s value in the learning process and use it to take charge of their own learning. (p. 53)

Understanding the culture is an integral part of being an adult educator. Wangoola (1996) notes:

> People’s culture, science, technology, skills, and value systems should be the very basis of adult education. Those of us therefore who are culturally delinked or diluted, cannot play the role of “animateur,” “facilitator,” or “change agent.” How can you animate or facilitate what you do not know? Some of us even call ourselves community educators. How can you be the community educator of a community you do not live in? Seeking

> to animate the people into cultural action without being culturally rooted is to be part of the problem rather than part of the solution. And if we think or realize that we are part of the problem, the most revolutionary thing to do is to go and sit at the feet of our community to unlearn and to learn. (p. 329)

Kambayashi (2003) writes about cultural determinism (as opposed to technological determinism) and how social values of technology influence culture. Kimble and McLoughlin (1994) have found that "technology does not emerge unsullied from some objective notion of scientific progress but that social values are inevitably "built into" a technology with the intention of bringing about a certain outcome" (p. 160). Hardina (2002, p. 47) notes the importance of the *strength* perspective that marginalized and underserved groups can transform their lives. This builds on a *mobilization* hypothesis which holds that marginalized groups and individuals will become empowered via the Internet and the ample opportunities to become more visible through greater participation in the democratic process (Norris, 2001). However, skeptics argue that the Internet will merely be a *reinforcement* for those active citizens already connected to the appropriate digital channels. Overall, according to the Pew Surveys of online users (Lenhart, 2000; 2003) and the general public, there is a pattern of reinforcement that dominates the mobilization theory (Norris, 1999).

Technology as a major catalyst for cultural change is the thesis of the work by Lie and Sorensen (1996). This post-structuralist study about digital empowerment examines how technology is incorporated into everyday life

and the impact on gender and society. Digital empowerment refers to the way in which individuals gain and maintain control over their own lives and communities (Gutierrez, 1995). The theoretical basis is that digital empowerment is critical to the economic and social livelihood of these rural communities and their participants. People who use computers on the job earn 43% more than other workers who do not have or use this technology (Benton, 1997).

Adult educators face critical issues of defining what is to be learned about using ICTs. Yet, few practitioners and researchers have analyzed the operational definitions and specific knowledge base for digital literacy or competencies in the adult lives. Rather, adult computer literacy, or digital literacy is often prescribed by technology experts and external environments that designate a desired universe of skills and knowledge. Perhaps this is why some are being taught Microsoft PowerPoint © and not how to design or code their own software programs to compete with the software monopoly. It is important to understand the learning experience from those who use ICTs *within* [italics added] their social context. As adult education pioneer Eduard Lindeman states, “The source of highest value in adult education is the learner’s experience” (1926/1961, p. 6).

This study shows that adult students in this rural community were affected by the social context of the rural and persistently impoverished community. While this study generates many questions for future exploration, it also contributes to the current body of adult education research in several aspects. This study fills in several gaps in the literature

regarding the adult experience with technology, given the social and cultural backdrop of an underserved rural community.

The adults in this study had overcome their initial fear of technology through the guarded and cautiously optimistic use of computers in their lives. Turkle (1983), an expert on the psychology of technology, has found that "adults are more settled . . . they are locked into roles, afraid of the new and protective of the familiar" (p. 165).

In his book, *The Making of an Adult Educator: An Autobiographical Journey* (1989), Knowles comments on how adults tend to have a practical perception of education:

> Adults need to know why they need to learn something before undertaking to learn it. While adults are responsive to some extrinsic motivators (better jobs, promotions, salary increases, and the like) the more potent motivators are intrinsic motivators (the desire for increased self-esteem, quality of life, responsibility, job satisfaction, and the like). (pp. 83-84)

However, Knowles did not take into consideration many socio-cultural factors such as geography, class, race and how the community context plays a role in learning. The influence of the community expectation that those who were able to work would go to the manufacturing plants for employment is evident in the data.

The equity (or lack of) with ICTs, the persistent poverty, and the scarcity of governmental funds and power has led to much controversy in rural Georgia. Although this research focused on adult and secondary

education, the student participants were once students in a Georgia public school system that has many widespread problems regarding equity. There is disagreement in regard to an equitable system of funding for rural schools. Some rural advocates say that the state rural schools are “underfunded by some $1.5 billion—the equivalent of about 10 percent of all the tax money the state collects in a year.” That difficulty (to raise funds), makes it tougher to supply students with access to such tools as technology labs” (Salzer, AJC 2003, A1).

This research is in alignment with the findings from Ransom (1998) whose research interests included technology and lifelong learning.

> Education and training combined in lifelong learning will then integrate rather than separate manual and mental labor. If education is to build the skills and knowledge base of society to take fullest advantage of the latest developments in technology, it must begin by recognizing how new technology has been applied during the economic restructuring . . . Resources will have to be specifically targeted at the poorest localities to overcome the disadvantage resulting from this process . . . new technologies can now provide the potential to enable all working people to become multi-skilled and flexible in a true sense, able to undertake a wide range of specific and general tasks . . ..(56-57)

And so we have Greene County, caught like so many other rural communities, at the crossroads between the colorful history of the past and

the promise of a technology-oriented future. There are a variety of challenges which Greene County should address in the next few years. This chapter offers suggestions for future research in the multidisciplinary study of technology, education, and the sociological implications of persistent poverty. There are numerous possibilities that engender the notion of the social and community informatics and the findings of this study warrant additional research.

If our agenda for the future is educational equity for all, there is more than a mere need for physical access to computer technologies. As Solomon, Allen, and Resta (2003) argue, there must be teachers who know how to effectively use the technological tools and leaders who can support continued change in the right direction. New literacies necessitate new challenges which mean new responses and change.

Information and communication technologies hold promise to bring our world closer together through greater understanding of the social and cultural values of many diverse groups. It also has the potential to divide. When the tool of technology is not effectively and properly taught there is potential to widen the schism between the coexisting and competing social systems of peasantry-aristocracy and/or proletariat-bourgeoisie.

There is a parallel between the change of yesteryear and the change of today but there are also sharp distinctions. I now see that the change that took place in Greensborough some 237 years ago was different because Greene County was without the misery of persistent poverty. The technological change taking place in the twenty-first century could be

designed to rectify that misery and achieve some semblance of parity between those that have and those that are without. (The “haves” the “have-nots” and the “have mores”). Arguably, this change should be about empowerment and increasing levels of human dignity. This is the purpose of education. Yet, there are many obstacles to overcome if Greene County is to truly move forward. These include: increasing the levels of access to ICTs through greater bandwidth and wireless technologies, promoting the possibilities of technology in an effective manner that does not merely reproduce the disparity, and most importantly, sustaining this momentum for all sectors of the population.

Final Word

I can hope and pray for a brighter tomorrow that includes less poverty and more opportunity for the native people of Greene County. Until there is a holistic approach to addressing the overarching issue of poverty there will be perpetual misery. NO amount of technological silver bullets can solve all of the problems associated with poverty. Perhaps something in this study can be used to work towards a solution whereby dislocated people are better understood and steps can be taken in a direction that eases the burden of persistent poverty. Addressing the issue of persistent poverty is central to the livelihood of the people of Greene County.

It is important to note that there have been negative portrayals of the rural social context in America. There are numerous rural stereotypes such as the 1965-1971 television comedy “Green Acres” and the television show (and soon to be movie) “The Dukes of Hazzard.” The television show *Green*

Acres show poked fun at the antics of two individuals from the urban environment who decided to move to the rural farmland to live. Humor was found in the awkward interactions between the extreme characterizations. The friendly, yet eccentric rural characters included a man who had a pet pig, nonsensical county extension agents, and a con-artist, carpet-bagger salesperson who would do anything for a buck. This was an extreme characterization and not indicative of the southern United States.

Raper (1936) truly saw the tragedy associated with persistent poverty and attempted to publicize the misery of this region. Due to the history of the Black Belt it is imperative to take into account the socio-cultural implications of geography, race, and class when studying the issue of technologies in underserved areas. It would be easy to put the burden of the blame for the poverty and lack of technological infrastructure in Greene County on the individual and relegate the uncertainty, fear, and technology not as a perceived need as components of their overall self-efficacy. However, it would be unreasonable not include the nature of the Black Belt persistent poverty region and the importance of the social context as major factors related to the distribution of technologies.

The most fulfilling part of this entire exploration was talking with the people of Greene County and listening to as they shared their thoughts and frustrations while learning with and about computer technologies. I am indebted to each and every individual who took time to describe in their own special way the many ways their lives have been affected by technology.

We all progress when we effectively communicate our ideas. It is my hope that technology can give voice and empower the disenfranchised of Greene county so that persistent poverty will be a relic of the past.

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APPENDICES

APPENDIX A

College of Education

Department of Adult Education

CONSENT FORM

I, (Print name)

_____

agree to participate in the research that is titled “Adults Learning about Computer Technologies in Underserved Rural Communities: The Human Side of Technology” which is being conducted by G. Andrew Page, Doctoral Student, working under the direction of Dr. Talmadge C. Guy at The University of Georgia. I understand that participation is entirely voluntary; I can withdraw my consent at any time without penalty. I can have the results of the participation, to the extent that it can be identified as mine, returned to me and removed from the research records, or destroyed.

The purpose of this research is to examine the learning experiences of individuals in rural areas in Georgia in order to understand the impact information and computer technologies on their lives.

My participation in the study would include the following:

(1) Participation in two interviews.

(2) Provide feedback on synthesis of the interviews

The above methods of data collection will require minimal interference in your life. The interviews will take place at a location that is convenient to you.

The results of this study will be confidential, and will not be released in any individually identifiable form without prior consent, unless otherwise required by law. You can choose a pseudonym to protect your identity. Audiotapes and the transcripts of the interviews and notes from the observations will be stored in a locked filing cabinet in Mr. Andy Page's home office and will be kept indefinitely for potential future use. All participants will receive copies of their interview transcripts. Participants will not have access to other participants interview transcripts except by written permission of the participant.

For questions or problems about your rights please call or write: Human Subjects Office, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-6514; E-Mail Address IRB@uga.edu

G. Andrew Page will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at (706) 613-8520 or by email at gapage@uga.edu. The cell phone number is (706) 202-9818.

You may also contact Dr. Talmadge C. Guy , Department of Adult Education, The University of Georgia, (706) 542-4015 or by email: tguy@coe.uga.edu

I understand that I am agreeing by my signature on this form to take part in this research project. I further understand that I will receive a signed copy of this consent form for my records.

_____

Signature of Researcher/Date

APPENDIX B

INTERVIEW GUIDE

SOCIO-CULTURAL RESEARCH QUESTION 1: How does the underserved rural adult learner make meaning of learning via computer technology?

What drew you to seek learning about computers?

What role, if any, do computers play in your life?

Give a brief history of your educational expectations and computers. i

a) When you think about using computers in your daily life, what comes to mind?

b) What led you to become interested in learning about computers?

c) Tell me about a time when you enjoyed working with computers.

d) Tell me about a time when you became frustrated with computers.

e) Tell me about your educational experiences before you began learning and working with computers. What was it like?

f) How has computers affected your lifelong education? What are the changes in their personal lives due to the impact of technology?

g) Tell about a specific incident with computer technology that impacted your life.

MEANING RESEARCH QUESTION 2: What factors facilitate or impede these adult learners?

a) What do you most enjoy about working with computers? Why?

b) What do you least like about computers? Why

CONTEXT RESEARCH QUESTION 3:

What are the implications from this experience in the lives of these adult learners?

APPENDIX C

GREENE COUNTY

COMMUNITY PROFILE (2003)

CONDITION / INDICATOR	Greene	Georgia	USA
DEMOGRAPHIC			
Population	15,101	8,560,310	288,368,698
Population growth rate	4.8%	20.9%	3.2%
Percent of population over age 65	14.4%	9.6%	12.4%
Percent of population under age 18	25.1%	29.5%	28.6%
Percent people of all ages in poverty	22.3%	12.3%	11.3%
ECONOMIC			
Per capita income	$21,655	$28,523	$30,413
Employment growth	-7.9%	1.3%	-0.7%
Unemployment rate	12.3%	5.1%	5.8%
Job Tax Credit tier	1	n/a	n/a
Total deposits per	$16,084	$15,778	$19,477

capita			
FISCAL			
Net digest per capita	$52,723	n/a	n/a
Millage rate	19.830	n/a	n/a
Long-term debt per capita	$263	$1,254	n/a
Fiscal capacity index	146.6	n/a	n/a
Fiscal effort index	83.5	n/a	n/a
EDUCATION			
Adults with at least high school diploma	70.1%	78.6%	80.4%
Adults with at least a bachelor's degree	17.6%	24.3%	24.4%
HEALTH			
Infant mortality rate	n/a	8.9	n/a
Children immunized by age 2	n/a	n/a	n/a
Physician rate per 10,000	n/a	n/a	n/a
Nursing home beds per 100	6.9	n/a	n/a

SOCIAL			
Crime rate per 1,000	23.2	41.7	n/a
Child abuse and neglect rate	25.0	10.8	n/a
Teen pregnancy rate per 1,000	65.6	55.6	n/a
ENVIRONMENTAL			
Solid waste management index	n/a	n/a	n/a
Air quality attainment	Yes	n/a	n/a
Toxic release (pounds)	n/a	n/a	n/a
CIVIC PARTICIPATION			
Homeownership rate	76.4%	67.5%	66.2%
Voter participation 1996	57.8%	62.3%	n/a
Voter participation 1998	49.5%	47.1%	n/a
Voter participation 2000 election	71.4%	69.6%	n/a
PUBLIC ASSISTANCE			
Monthly average of Food Stamp recipients as a percentage of total	12.2%	6.7%	n/a

population.			
Percentage of students eligible to receive free or reduced price school meals.	80.6%	44.2%	n/a
Percentage of individuals on Medical insurance for individuals and families.	26.2%	19.9%	n/a
Percentage of recipients on Temporary Assistance to Needy Families (TANF).	2.5%	1.5%	n/a

From http://www.dca.state.ga.us/commind/Sel1.asp

APPENDIX D

DEMOGRAPHIC DATA

1. Age
2. Sex
3. Race
4. Years of formal education
5. Length of experience with computer technology
6. How would you rate your proficiency with computers on a scale from 1-10 with 1 being non-proficient and 10 being expert?

APPENDIX E

TIMELINE

EVENT	DATE
December 2003	Prospectus Defense
Apply for Graduation in December 2004	January 2004
Preliminary Mtg. Observations/Interviews	January 11, 2004
2nd Round of Interviews/observations	January 2004
Interviews/Observations	January-June
March 2004	Data Analysis and write up of Chapter 4-7
March | April	Write up & Revisions
June-October	Revisions
Final Defense	November 16, 2004