

AN ANALYSIS OF TECHNOLOGY USE AND QUALITY  
OF LIFE IN A RURAL WEST TEXAS COMMUNITY

by

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## ABSTRACT

As the populations in rural West Texas communities continue to decline, the resources the community can use to rebuild its population also decline. As the resources decline, so does the population. The downward spiral feeds on itself until the community has very little to offer its residents in quality of life. As computer and Internet technology become more available, the world becomes smaller and smaller. We now live in a global economy where access to products, services, and information can be had as quickly as the click of a mouse. This study was undertaken to measure how much and for what purposes the citizens of Littlefield, Texas, used computers and the Internet. Furthermore, it was sought to determine the quality of life using pre-tested instruments designed to measure adults' and adolescents' views of their quality of life. The author used a tool that defined quality of life as, "How good is your life for you?" By determining whether technology use is positively correlated to a person's view of his or her quality of life, then one could also determine whether greater diffusion of computer technology and adoption of broadband Internet access might provide answers to the youth and leadership migration from rural areas to metropolitan areas.

The results of this study indicated that an overwhelming majority of the residents of Littlefield, Texas, consider their quality of life to be adequate, very adequate, or excellent. Only three reported their quality of life as problematic and none as very problematic. As age increased, the resident's quality of life seemed to increase. Researchers conducting this study found little correlation between the use of computers

and the Internet and quality of life. Technology, defined for this study as computer plus Internet use, was negatively correlated with quality of life as age increased.

However, broadband Internet access at home was slightly positively correlated for high school students' parents who fell in the middle age bracket. For Littlefield High School students, a negative correlation existed between grade level and quality of life. Males indicated a higher number of hours using technology than females.

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## CHAPTER I

### INTRODUCTION

From the beginning of time, humans have exhibited tendencies toward socialization. As populations grow, the issue of community arises. In an effort to bring consensus to the definition of community, George Hillery, Jr. (1955) subjected 94 sociological definitions of the term “community” to qualitative and quantitative analysis. Common threads emerged which simplified its meaning and will be used as a foundational concept for this study. Howard Rheingold (1993) argued that the development of virtual communities is “in part a response to the hunger for community that has followed the disintegration of traditional communities around the world” (p. 418). Citizens build communities for the purposes of survival, commerce, and entertainment (Cohill & Kavanagh, 2000).

As communities develop and populations grow, new technologies, such as computers and the Internet, develop (Gromov, 1998). Historic events often serve as catalysts for latent or immature ideas to come into their own. Having compromised the very structure of American society, including its transportation system, security, economic stability, and overall sense of well-being, the terror attacks on the World Trade Center and the Pentagon struck the core of two of America’s largest and most influential communities. The events of September 11, 2001, could be the occurrences that catapult the concept of virtual communities into maturity and spark the return of populations to rural America.

Dillman (1979) indicates that “if people were free to choose, they would prefer to live in rural areas rather than in cities” (Cited in Smith, 1999, p. 14). Many are choosing more rural settings that can provide similar benefits to those in the city, minus the crowded living conditions. Can society build virtual communities that will satisfy the needs of its members as well as traditional communities? If so, at what levels?

Technology, as defined by Merriam-Webster (2001), is 1(a) the practical application of knowledge especially in a particular area such as engineering or medical technology, 1(b) a capability given by the practical application of knowledge such as a car’s fuel-saving technology, 2) a manner of accomplishing a task especially using technical processes, methods, or knowledge as in new technologies for information storage, and 3) the specialized aspects of a particular field of endeavor, for example, in educational technology.

Everett M. Rogers (1995) in his book, *Diffusion of Innovations*, uses the words “innovation” and “technology” as synonyms. He further suggests, “A technology is a design for instrumental action that reduces the uncertainty in the cause-effect relationships involved in achieving a desired outcome” (p. 12).

Rogers’ definition of technology as information is based upon Thompson (1967) and Eveland (1986), who stressed the uncertainty-reduction aspect of technology, and thus the important role of information, a view of technology that has not been widely recognized. Technology is information and transfer is a communication process, and so technology transfer is the communication of information (Eveland, 1986).

Rogers (1995, p. 12) further described any technology as having two components, hardware and software. The hardware is the tool that embodies the technology. The software provides the information base that drives the hardware tool.

Never in the history of the world has society experienced such rapid advancement in technology. Ranging from the discovery and application of natural phenomena such as fire and electricity, to the development of the wheel, most view the adoption of new technologies as a prerequisite for improved quality of life.

With this rapidly advancing growth of technology have come an increased life expectancy and a growing world population. The dramatic improvement in life expectancy occurred during the first half of the 20<sup>th</sup> century as a result of improvements in public sanitation, personal hygiene, and food safety. During the second half of the century, new medical technologies such as antibiotics and vaccines, in their ability to fight and prevent disease, were the greatest contributors to a longer life expectancy (Faria, 2002, pp. 122-23).

With the secret to longer life becoming less of a mystery, medical scientists and social scientists are focusing extensively on quality of life issues. As we enter the 21<sup>st</sup> century, can technology improve the quality of life in the same way that it has increased the quantity or length of life?

### Statement of the Problem

As the world's economy shifted from an agrarian society to an industrial-based one and then moved into the information age, populations continued to migrate from rural

areas to the cities. Quality of life has become particularly relevant for these small rural communities. Their ability to offer the amenities that average Americans now view as necessities is stretched thin. As more rural youth leave home to secure higher education, staying in the metropolitan areas where they attend college has become the norm.

According to David A. Sampson (2004), assistant secretary of Commerce for Economic Development, “If the ‘best and brightest’ leave home and never return—and if the most promising home-grown technologies get commercialized in another state—then the future of the state’s innovation economy will be stunted” (p. 5).

At Western Carolina University, Joseph Carter, a former vice chancellor of business affairs, was asked to come out of retirement to guide the state’s rural schools’ Millennial Campus project through the planning phases. He explained that the campus is intended to help slow or stop the area’s “brain drain.” Carter adds, “This region has had a history of seeing its young people, and especially its better-educated young people, leave to find employment opportunities” (Burns, 2004, p. 14). This innovative Millennial Campus is patterned after the existing Centennial Campus Middle School, a science magnet school, which is a collaborative effort between the Wake County public school system and North Carolina State University.

What has become known as the “brain drain” creates a vicious cycle. As talented young individuals move away to secure education and jobs, rural communities have less and less to offer those remaining and little to attract new individuals. Figure 1.1 depicts the distribution of population in Texas and illustrates the contrast between the sparse

areas in West Texas and the high population densities of metropolitan areas in the eastern and southeastern portions of the state.

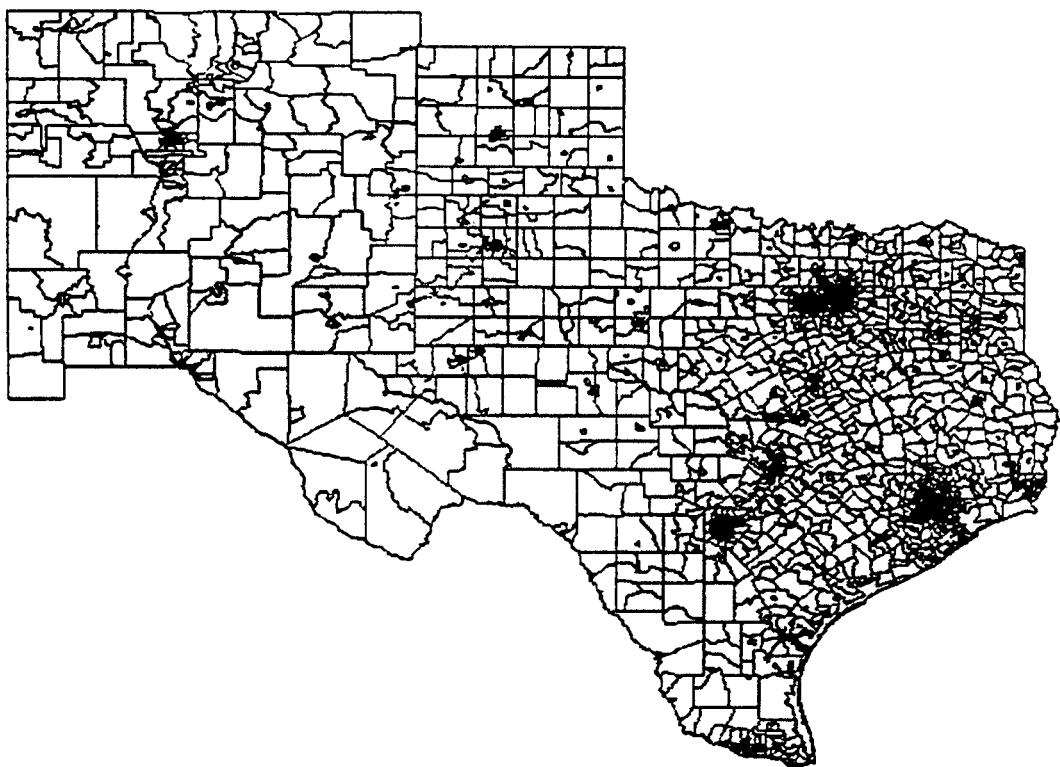


Figure 1.1. Distribution of Population in Texas and New Mexico.

Source: McComb, R. (2002). Texas Tech University Office of Economic Development

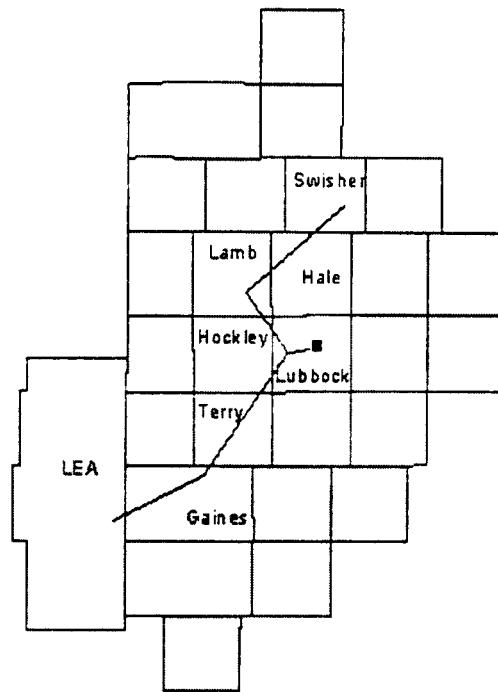
In an effort to identify resources that could be brought to bear on the revitalization of rural West Texas towns, universities and local community governments are beginning to collaborate more. Littlefield's community leaders and a Littlefield technology specialist approached researchers in Texas Tech University's Department of Agricultural Education and Communications about collaborating on a community-development project of mutual interest that provided the impetus for this study.

Based on trends in population, the warp-speed adoption of new Internet-related technologies, and a renewed dialogue on quality of life issues, there is an increased curiosity about the relationship between technology—particularly high-speed Internet access—quality of life, and rural community development.

In 2002, Texas Tech's Office of Economic Development received a grant to create an infrastructure for high-speed Internet connectivity to portions of West Texas and Eastern New Mexico (McComb, 2002). The proposed project was for deployment of a wireless broadband network backbone along a line from Hobbs, New Mexico, to Amarillo, Texas, passing to the west of Lubbock, Texas, as shown in Figure 1.2. Segments of the network will be located in Randall, Swisher, Hale, Lubbock, Hockley, Lamb, Terry, Andrews, and Gaines Counties in Texas and Lea County, New Mexico.

According to Robert McComb (Personal communication March 9, 2002), associate professor at Texas Tech University, the first phase in deployment of the wireless network consisted of placement of a wireless backbone that will provide the opportunity for wireless broadband access to Hobbs, New Mexico, and to Seminole, Denver City, Seagreaves, Brownfield, Levelland, Shallowater, Littlefield, Abernathy, Hale Center, Plainview, Tulia, Canyon, and Amarillo, Texas. McComb indicated that a wireless, line-of-sight backbone is ideally suited to the geography of the southern High Plains, because it is robust and extremely cost-effective when compared to wired solutions. Securing of easements for mounting of equipment to relay signals along the broadband was underway at the time of this writing. Making the broadband accessible to as many communities in West Texas and beyond remained a priority of Texas Tech's

Office of Economic Development and was a centerpiece for collaboration among key players at the university, Market Lubbock, Inc., and surrounding communities.



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Figure 1.2. Path of Texas Tech University Broadband Backbone.

Source: Texas Tech University Office of Economic Development White Paper (2002).

The changing of the agricultural economy has affected the overall livelihoods of many West Texas residents. Larger farms and improved technology have resulted in the loss of farm and agriculturally related jobs. Depletion of the Ogallala Aquifer and rising cost of production—cost of labor, chemicals, and energy—have made farming and ranching less profitable. Economies heavily dependent on agriculture have seen a

reduction in gross sales receipts, a situation which in turn damages communities' employment opportunities (Lewis, 1990, pp. 42-4). One community that has been particularly affected is Littlefield, Lamb County, Texas. Figure 1.3 shows the change in populations for Lamb and surrounding counties from 1990 to 2000.

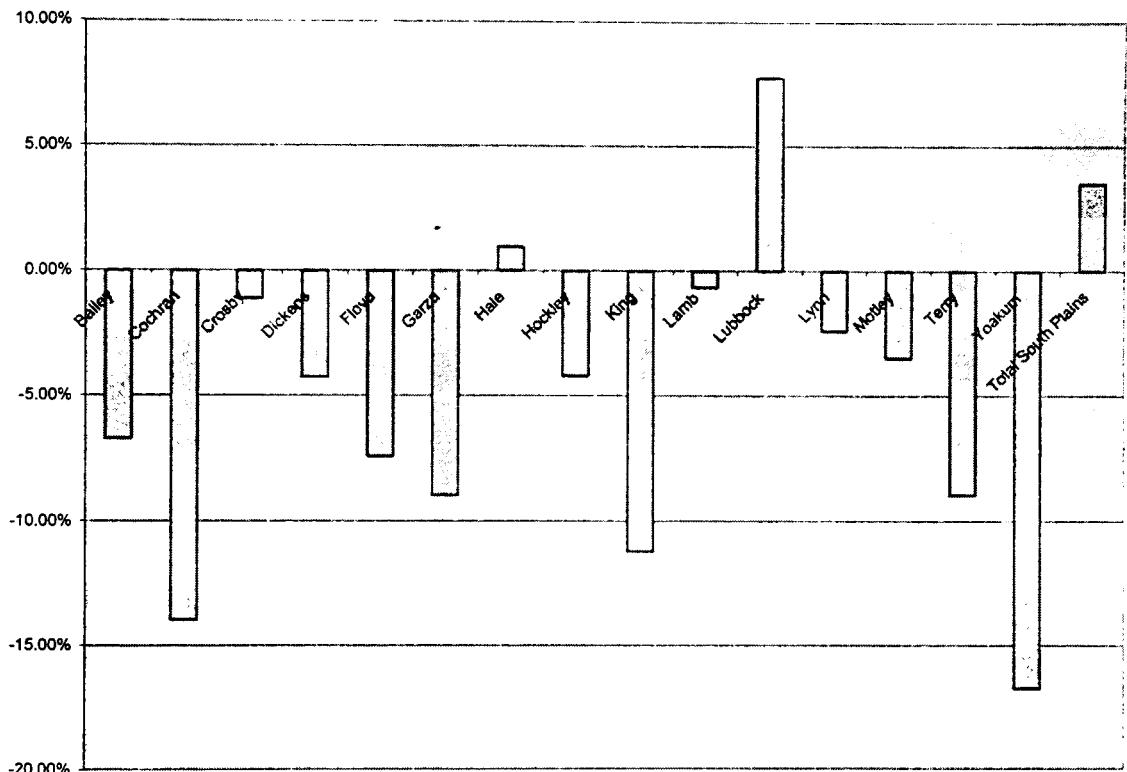


Figure 1.3. Change in Population, Ages 18-65 from 1990 to 2000, Less Correctional Population, in South Plains Counties of Texas.

Source: McComb, R. (2002) and U. S. Bureau of the Census, 2000.

#### Purpose of the Study

Many Americans would prefer to live away from the congested environment of metropolitan areas, which are becoming increasingly fraught with the effects of

overpopulation (Middlebrook, 1999). It follows that displaced Americans forced to leave the rural areas of their youth to pursue education and gainful employment may return to rural communities if leaders can find a way to create jobs sufficient to support families and offer them those products, services, and creature comforts that tend to bring about a high level of satisfaction with one's circumstances or quality of life.

As Internet technology improves in speed and in price to the consumer, the trend is toward accessing those services that are highly correlated with quality of life. Enhancing job satisfaction and training through telecommuting, keeping up with extended family in today's transient society, accessing high quality health care in rural areas via telemedicine, and acquiring entertainment and products not available in the rural areas on a real basis will be key to the longevity and health of rural communities worldwide.

The purposes of this study were to: 1) identify the demographic characteristics and Internet/computer technology use of high school students, parents, and other adults, 2) describe the quality of life of high school students, parents, and other adults, and 3) examine the relationships among demographic characteristics, technology use, and quality of life. Principal to this research was the examination of high school students, parents, and other adults in the rural West Texas community of Littlefield, Texas.

#### Questions to Frame the Study

As a means of achieving the purpose of the study, answers to the following questions were sought:

1. What are the demographic characteristics of high school students, parents, and other adults included in the study?
2. What is the use of technology by students, parents, and other adults?
3. What is the quality of life of students, parents, and other adults?
4. Are there any relationships among the demographic characteristics, technology use, and quality of life of students, parents, and other adults?

### Theoretical Framework

Quality of life as related to this study is based on the definition used by Renwick & Brown (1996). In their study, quality of life was defined as “an overall general well-being comprised of both objective and subjective evaluations of physical, material, social, and emotional well-being, together with the degree to which individuals enjoy the important possibilities of their lives.” James Smith (1999) used the same definition in his study, *Quality of Life of Houston Livestock Show and Rodeo (HLS&R) Scholarship Recipients.*

The first major study of the quality of life experience, based on a probability sample of the American population, was conducted in 1957 by Gurin, Veroff, and Feld (1960) of the Survey Research Center of the Institute for Social Research. The Russell Sage Foundation sponsored research by Campbell, Converse, and Rodgers (1976), which established benchmark data for a national study of the quality of American life.

The Campbell et al. study made it clear that experience of life constitutes an individual’s perception of quality of life rather than the conditions of life. This study

sought to get past the traditionally materialistic approach to evaluating quality of life by measuring the satisfaction level or subjective factors rather than just the experience or objective level.

Global measure of well-being can be obtained through direct measurement. Previous research has shown that evaluations of specific areas of experience combine to produce general quality-of-life perceptions (Campbell et al., 1976; Andrews & Withey, 1976). Cummins (as cited in Brown, Raphael, & Renwick, 1997) identified six characteristics of good quality of life scales. He contended they 1) contain both objective and subjective measures, 2) are useable within any population subgroup, 3) provide for measurement across domains, 4) yield domain satisfaction weighted by domain importance to the individual, 5) are based on normative data, and 6) are reliable, valid, and sensitive.

The Quality of Life Profile (QOLP) developed by Raphael, Brown, and Renwick (1996) exhibits these traits. It is one part of the overall instrument prepared for this study, which was designed to retrieve quality of life indices, specific demographic data, and information regarding the use of technologies, particularly computers and the Internet, of the citizens of Littlefield, Texas. In a previous quality-of-life study conducted in Floydada, Texas, by Smith, Kistler, Williams, Edmiston, and Baker (2002), the adolescent questionnaire yielded a .97 content validity, and a study by Smith (1999) established a content validity of .96 for the adult version.

Certain types of demographic characteristics are positively correlated with quality of life. Research by Campbell and Converse (1972) and Campbell, Converse, and

Rodgers (1976) indicated that education was positively related to quality of life. Education, income, and occupation status are positively associated with quality of life (Edwards & Klemmack, 1973). Although Campbell (1981) found that college graduates were somewhat more satisfied with their lives than other people, the amount of education otherwise does not have much influence on an individual's general satisfaction with life (Metzen, Bradley, & Helmick, 1986).

Campbell and Converse (1972) found income to be a positively related quality of life indicator along with race, sex, age, work status, life cycle stages, and urbanicity. It is this last indicator that is of prime interest to this research and has the greatest implications for rebuilding rural communities. Results of the 1972 study indicated that respondents living in rural areas were the most satisfied with their quality of life.

A research team from the Quality of Life Research Unit at the Centre for Health Promotion (CHP), housed at the University of Toronto, approached the development of this model in a multidisciplinary fashion (Renwick, Brown, & Raphael, 1994; Rootman, Raphael, Shewchuk, Renwick, Friefeld, Garber, Talbot, & Woodill, 1992a, 1992b). Although the CHP approach was formulated as the conceptual foundation of a three-phase study conducted from 1991 to 1998 for the benefit of individuals with developmental disabilities, the research team soon realized that the quality of life for any group must be based on a broader, more comprehensive concept of quality of life that could apply to the general population.

The initial phase of research by the CHP team, geared toward defining and conceptualizing quality of life, involved the investigation of current literature on quality

of life of persons with and without disabilities. Literature in the areas of health, rehabilitation, medicine, disability, psychology, sociology, and philosophy was reviewed.

The second phase of the CHP team's developmental process involved interviews with researchers and theorists on quality of life, health, and disability. The importance of personal empowerment and choice of quality of life and individuals' views of their own quality of life were the major contributions of the research team's second phase of study.

The third phase consisted of collection of information from persons with disabilities, their families, and service providers about their perspectives on quality of life (Rootman et al., 1992a). These in-depth interviews yielded additional dimensions to the quality-of-life profile related to the need for personal control in many areas of life and for opportunities that enhance an individual's quality of life.

The CHP conceptual approach was broadly influenced by the humanistic-existential tradition (Bakan, 1964; Becker, 1971; Merleau-Ponty, 1968; Sullivan, 1984; Zaner, 1981). A summary of this literature conveys the idea that individuals have physical, psychological, and spiritual dimensions. It also acknowledges people's need to belong, in both physical and social senses, to places and social groups. However, people also have a need to retain their own individuality in pursuing their own goals and making their own choices and decisions. These themes were encapsulated in three major domains of quality of life—being, belonging, and becoming—as shown in Figure 1.4.

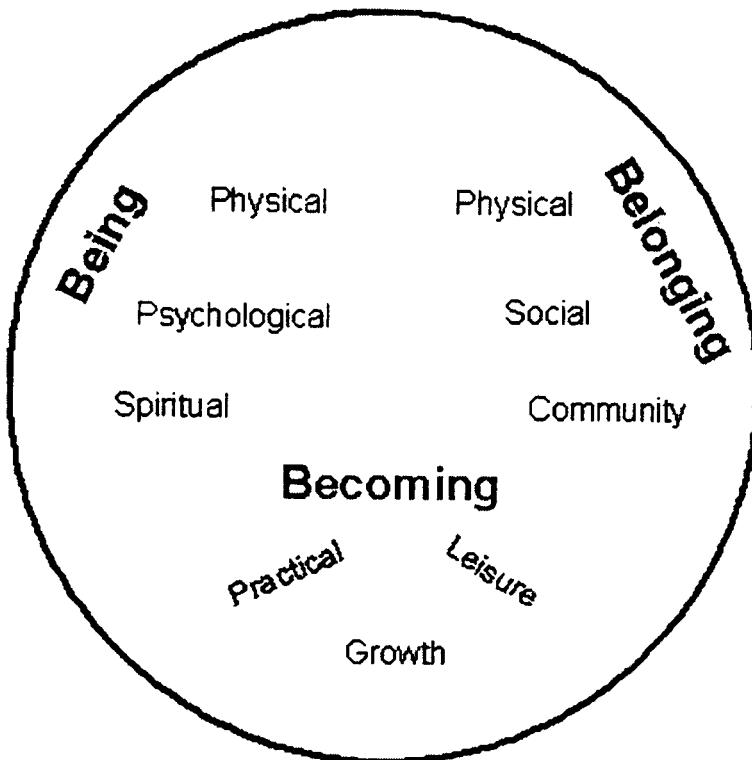


Figure 1.4. Three Fundamental Life Domains and Subdomains Common to All Human Beings (Raphael, Renwick, Brown, & Rootman, 1994).

Further development of these domains shows that being reflects who one is as an individual. Belonging refers to ties that individuals have with their social and physical environment. The third domain, becoming, focuses on purposeful activity in which individuals engage in an attempt to accomplish goals, aspirations, and hopes (Raphael et al., 1994).

In the figure below, Smith (1999) personalizes the QOL Model by describing activities in an individual's daily life that fit into each subdomain. These practical applications render the theoretical QOL Model observable and measurable.

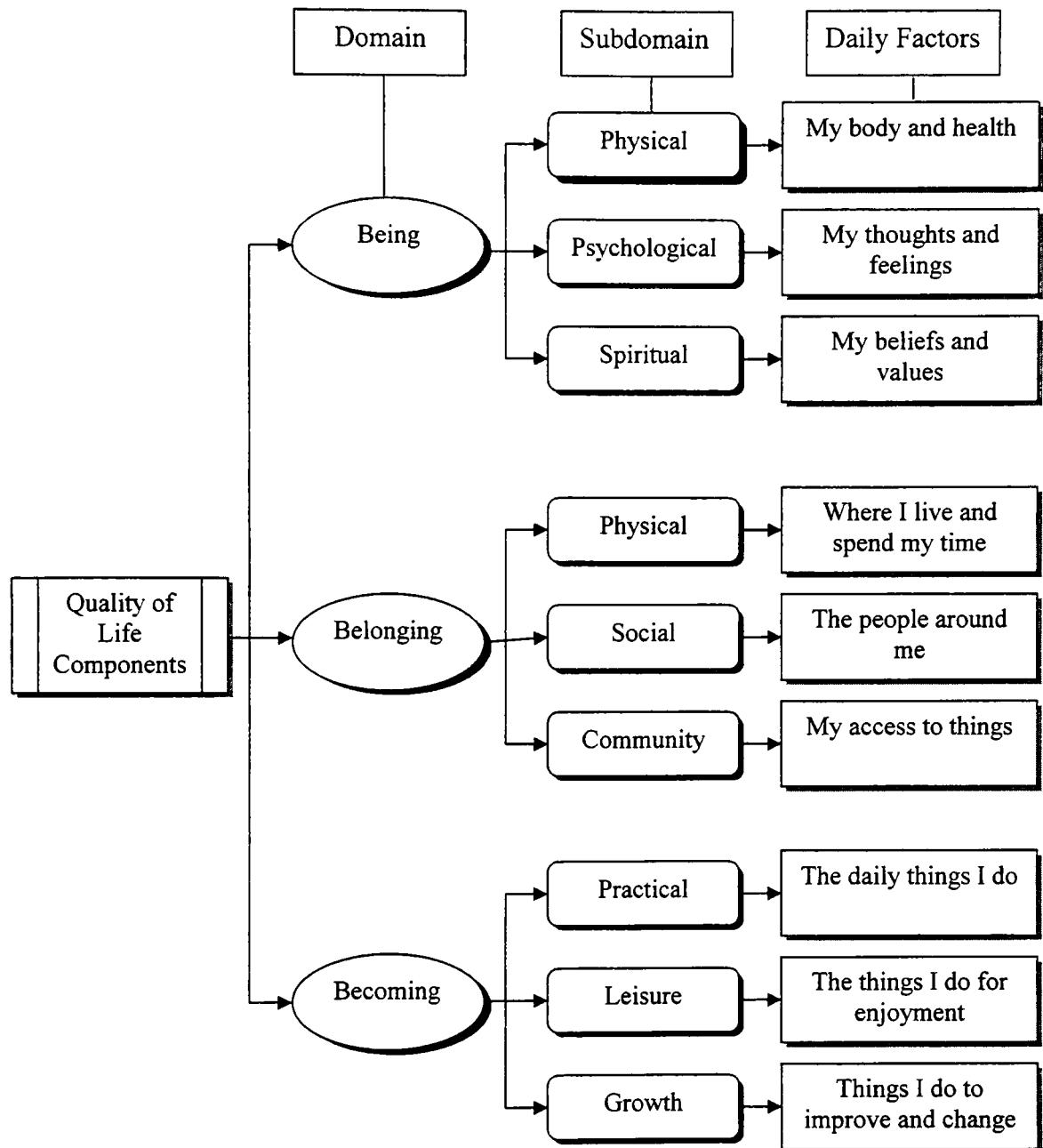


Figure 1.5. Components of Quality of Life (Smith, 1999).

### Significance of the Study

In the Littlefield Comprehensive Strategic Economic Development Plan (Hildreth, McComb, & Starnes, 2003) prepared by Texas Tech University's Office of Economic Development staff, the authors defined economic development as "building, exploiting, and leveraging resources that contribute to a community's quality of life" (p. i). They further point out that in community-based economic development, "communities prosper by expanding opportunities for individuals to reach their potential and achieve their dreams and by empowering people to do what they are passionate about" (p. i).

According to Hildreth et al. (2003), the 1890 U.S. Census reported the population of Lamb County with only four residents. The county continued to grow through the turn of the century, spawning small towns such as Littlefield in 1912. That year, Littlefield had 30 residents, and in 1913, its leaders officially chartered the town. At the beginning of the Roaring '20s, Littlefield boasted a population of 400 (U.S. Census, 1890-1920).

As shown in Table 1.1, the city's population peaked in 1960 with a population of 7,236 and has been in a steady decline since that time. Littlefield gained in population from 1990 (6,489 residents) to 2000 (6,507 residents) for a net increase of 18, but declined to 6,456 by July 2002 (U.S. Census, 2002).

As with most rural communities that draw their livelihoods from agriculture, Littlefield is facing the need to diversify its economy if it is to survive and prosper. According to an article in *Progressive Farmer* (Wolfshol, 2004), one of the most significant challenges to agriculture is a dwindling supply of water: "Farmers on the southern High Plains are pumping much more water onto their cotton than the [Ogallala] aquifer can stand to lose"

(par. 1), and the result is a continued downward spiral in West Texas communities that have economic bases heavily dependent on agriculture.

Table 1.1. Population of Littlefield and Lamb County, Texas, 1890-2000.

Source: U.S. Census Bureau

Year	Lamb County	Littlefield
1890	4	-
1900	31	-
1910	540	-
1912	-	30
1915	-	250
1920	1,175	400
1923	-	2,500
1930	17,452	3,500
1940	17,606	3,817
1950	20,015	6,558
1960	21,896	7,236
1970	17,770	6,738
1980	18,669	7,409
1990	15,072	6,489
2000	14,709	6,507

With the loss of resources come a decline in business potential and the ability of rural residents to earn adequate incomes to support a quality existence for their families. The loss of this major water supply would pose a threat to the current economical, dependable source of drinking water necessary for the health and well-being of West Texas residents.

If high-speed Internet access can truly deliver education, health care, e-commerce for both buying and selling goods, social interaction/connection, and leisure to rural areas, it is likely that users will perceive their quality of life as being improved.

With the expansion of an existing broadband backbone owned by Lamb County Electric Cooperative and the introduction of two new broadband backbones, the entire Texas Panhandle will have access to a reasonably-priced, dependable source of high-speed Internet. In 2004, Texas Tech University began construction of a new Internet backbone, extending from Hobbs, New Mexico, to Amarillo, Texas. Another is based at Reese Technology Center, just outside of Lubbock, Texas. Many already are looking to high-speed Internet as a way of making a living for themselves and their families without having to leave the small-town life style for the congestion of major metropolitan areas.

According to survey data, there exists a strong preference for smaller-scale living conditions. A majority of individuals indicated they would prefer to live in a small town or rural environment (Elgin, Thomas, Logotheti, & Cox, 1974). An article entitled “Reviving Rural America” in *Trend Letter* (January 5, 2004) says, “But the real key to revitalizing rural America is job creation” (p. 4). The report goes on to say that several groups are developing programs to encourage rural residents to become their own bosses. In Nebraska, more than 70 percent of the net job growth is coming from non-farm self-employment. Telecommunications, computer, and financial services companies are taking advantage of rural America’s workforce, mostly for back-office operations such as billing, technical, and marketing support.

Joel Kotkin, senior fellow with the Davenport Institute for Public Policy at Pepperdine University, believes that the \$25 billion spent on direct subsidies to farmers, and the billions more spent to subsidize rural water and power suppliers, “should

gradually be redirected to venture funds and development grants to help build the technical infrastructure that will enable rural residents to fully participate in the coming age of innovation" (Reviving Rural America, January 4, 2004, p. 4).

The U.S. Department of Agriculture, U.S. Office of Economic Development, state governments, and private institutions are funneling large amounts of money into rural areas in hopes of stemming the tide of migration of businesses and people, especially rural youth. According to Schalock (1996), access to goods and services leads to a sense of empowerment and is a key indicator of quality of life. Additionally, he listed home ownership, private telephone, name on mail box or rental lease, and possessions as potential quality of life indicators (Renwick, Brown, & Nagler, 1996, p. 111).

### Delimitations

The study was delimited to a census of the students in Littlefield High School and their parents and a random sample of the remaining residents of the city. The population from which the random sample was taken consisted of residents living in the Littlefield Independent School District (LISD) and the surrounding rural areas that had no high school students living at home. The members of this group consisted of residents having city water connections and a list of residents on the LISD tax roll. The researcher eliminated duplicates from these two groups by cross-referencing current school tax rolls and city water billing records provided by LISD and the City of Littlefield Water Department, respectively.

### Limitations

This study had the following limitations for consideration in interpreting the findings:

1. The study was limited to students in attendance during the period of time the survey was given at Littlefield High School.
2. The study was limited to parents receiving copies of the survey delivered and returned by their children.
3. This study cannot be generalized to other rural communities because of the lack of true randomization in sampling and because of the low response rate.

In regard to measuring the respondents' quality of life, a limitation was accepted similar to that of Smith's 1999 study of Houston Livestock Show and Rodeo scholarship recipients. The developers of the Quality of Life Profile questionnaire indicated that good measures of internal consistency of the overall questionnaire exist for each of the three domains and for each of the nine subdomains (Raphael, D'Amico et al., 1996). However, they further noted that the instrument had not been factor analyzed with adults in the general population. Thus, they suggested that the scores for each of the nine subdomains be used with caution. Therefore, no correlational analysis was done in the study reported herein using any of the nine subdomains or the three domains. Relationships with quality of life were examined using overall scores of the Quality of Life Profiles only.

### Basic Assumptions

The following assumptions were used for this study:

- All citizens of Littlefield, Texas, have computer and Internet access either at home, school, or the public library.
- Internet access is available in Littlefield, Texas, via telephone lines, Digital Subscriber Lines (DSL), and wireless connectivity.
- Quality of life applies to all human beings, is subject to change, includes components that are common for all individuals, is holistic, and is a measure of importance and satisfaction that includes both objective conditions and subjective evaluations from the individuals' perspective of their current conditions.

### Definition of Terms

Brain Drain: The departure of educated or professional people from one country, sector, or field to another, usually for better pay or living conditions (Merriam-Webster, 2001).

Broadband: Internet connection via high-speed data transmission of 56 kilobytes per second (kbps) or higher delivered by hard-wired cable or wireless signals. Federal Communications Commission (FCC) defines broadband connectivity as a minimum of 200kbps.

Community: In the interest of clarity and brevity, this study will use Hillery's definition based on the 1955 research. The sociological term "community" should be understood here as meaning (1) a group of people (2) who share social interaction (3) and some common ties among themselves and the other members of the group (4) and who share an area for at least some of the time.

Computer: a programmable electronic device that can store, retrieve, and process data.

This device may be operated on one of two platforms—Macintosh or Windows.

Cyberspace: Originally a term from William Gibson's 1984 science-fiction novel, *Neuromancer*, “cyberspace” is the name some people use for the conceptual space where words, human relations, data, wealth, and power are manifested by people using computer-mediated communications (CMC).

Dial-up: Internet connection via traditional telephone lines, usually delivered at 28kbps or less.

Digital Subscriber Line: A telecommunications line that provides a fast permanent connection to the Internet.

Internet: An electronic communications network that connects computer networks worldwide.

Internet Use: The number of hours per week that an individual uses the Internet, regardless of the purpose.

Levels of Computer, Internet, or Technology Use: Variation in the number of hours per week an individual uses a computer, regardless of the purpose.

1. Very Low Use = Fewer than 7 hours weekly
2. Low Use = 7.01 to 14 hours weekly
3. Medium Use = 14.01 to 25 hours weekly
4. High Use = 25.01 to 50 hours weekly
5. Very High Use = More than 50 hours weekly

Quality of Life: The degree to which a person enjoys the important possibilities of life, or offers a favorable answer to the question, "How good is your life for you?"

Technology Use: The combined number of hours per week that an individual uses both a computer and the Internet, regardless of the purpose.

Telecommuting: The practice of working at home and communicating with other workers through the phone, typically with a computer and the Internet.

Virtual Community: An entity that delivers all the pleasures and benefits of a traditional community as defined above with the mode of gathering or collecting citizens being the various tools of the Internet. Rheingold defines virtual communities as social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace (1993, p. 5).

WLAN: Acronym for *wireless local-area network*. Also referred to as *LAWN*. A type of local-area network that uses high-frequency radio waves rather than wires to communicate between nodes.

### Organization of the Remainder of the Study

The second chapter of this study will include a review of the pertinent literature in the studies of quality of life and technology. It will further investigate through the eyes of previous researchers how these two phenomena converge to enhance each other and how technology has made it possible for virtual communities to deliver many of the same benefits that traditional communities have provided their citizens toward an improved

quality of life. The third chapter describes the participants, research methods used, instrumentation, and data analysis. The findings of this research are presented in chapter four. Finally, Chapter V provides a summary, discussion, implications of the study, and recommendations for further research.

## CHAPTER II

### REVIEW OF THE LITERATURE

The past decade has seen a surge in technological advancements designed to make life easier for those who embrace them. At the same time, economic conditions have dictated a migration of rural populations, especially among the younger generation, to more metropolitan areas. This trend in the decline of human capital is especially important to the quality of life that communities can offer their citizens. Scholarly and popular literature suggest strongly that technology, defined for this study as computers and Internet, can bring “virtually” through online communities many of the same resources, benefits, and activities related to quality of life needs that citizens have depended on their traditional communities to fulfill in the past. This section contains a summary of key pieces of literature related to the use of technology, the concept of community, and their relationships to quality of life.

#### Quality of Life

The study of quality of life is an examination of factors that contribute to the goodness and meaning of life, as well as people's happiness. It also explores the inter-relationships among these factors. The ideological thrust of quality of life study is to promote means for people, within their environments, to live in ways that are best for them. The ultimate goal of quality of life study and its subsequent application to people's

lives is to enable people to live quality lives—lives that are both meaningful and enjoyed (Renwick, Brown, & Nagler, 1996).

New technologies have brought about less stress on the human body, and advancements in the world of chemistry and medicine have brought about new drugs to fight diseases which previously would have been fatal. As a result, life expectancy increased dramatically throughout the 20<sup>th</sup> century. In 1900, life expectancy in the U.S. was 47 years. In 2003 life expectancy had reached 77 years, according to National Vital Statistics (Life expectancy . . . , 2003, p. 1).

The total potential human life span, which is the maximum number of living years, has remained unchanged at about 120 years. There are, however, a growing number of centenarians—people age 100 and over—and supercentenarians, those age 110+.

According to the latest United Nations population estimates, world population reached the six billion mark on October 12, 1999, an historic milestone in the growth of world population. During the 20<sup>th</sup> century, world population increased from 1.65 billion to 6 billion, and experienced both the highest rate of population growth (averaging 2.04 per cent per year) during the late 1960s, and the largest annual increment to world population (86 million persons each year) in the late 1980s (United Nations, 1999, p. 1).

The world population growth rate has fallen from its peak of 2 percent per year to around 1.3 percent per year today. Nonetheless, world population will continue to increase substantially during the 21st century. United Nations projections (medium fertility scenario) indicate that world population will nearly stabilize at just above 10

billion persons after 2200. However, the 21st century is expected to be one of comparatively slower population growth than the previous century and be characterized by declining fertility and the aging of populations (United Nations, 1999).

Most people believe that increased longevity translates into a higher quality of life. Extending the human lifespan may also have negative effects on society, such as a less productive labor force. Further, it will lead to a surge in the population, which would rapidly put a strain on food, water, and space. On the other hand, overpopulation will bring about new needs that will call for innovative thinking and developments as problem-solving tools. The graying of America will likely drive technology research and development.

B. S. Harrell (2000) provides an extensive review of the evolution of the Internet, e-mail programming, and dissemination of the technology involved. She includes a review of the development of the Uses and Gratification Theory that can be traced to Harold Laswell's Limited Effects Theory and his findings on why people choose specific media. Other sources of research on the subject include Salwen & Stacks (1996, p. 146) and Katz, Haas & Gurevitch (1973, p. 164), who delve into the subject of computer-mediated technologies as new types of media the masses use to meet their communications and information needs.

Additional research in the 1970s formed an increasing awareness among researchers of audiences' active media use as a mediating factor as researchers study media effects. Researchers believed that active audience members made a choice of

whether specific media effects were desirable and set out to achieve those effects (Baran & Davis, 1995, p. 218).

Historically, research on media effects has focused solely on negative effects from the media, while intended and positive media effects were ignored (Baran & Davis, 1995, p. 218). This study intends to take an objective approach to determining whether use of technology influences individuals' views of their quality of life positively or negatively.

In 1973, researchers Katz, Haas, & Gurevitch (1973) were among the first researchers to compare gratifications among different types of mass media. Researchers found that respondents used the media to gratify their needs for escaping reality, for entertainment, for killing time, and for social needs (topics of conversation) (p. 164).

In 1974, uses and gratifications researchers began measuring audiences' uses and gratifications by constructing Likert scales. Scale questions were developed from focus groups, interviews, and researcher observations. Researchers (Salwen & Stacks, 1996) found that the uses and gratifications approach included an audience's needs, which then generated expectations of mass media, which resulted in gratifications. (p. 147).

In 1985, Palmgreen, Wenner, and Rosengren (1985) produced another important development in uses and gratifications studies. They created the following assumptions for the uses and gratifications model:

- (1) The audience is active, thus (2) much media use can be conceived as goal-directed, and (3) competing with other sources of need gratifications so that when (4) substantial audience initiative links needs to media choice, (5) media consumption can fulfill a wide range of gratifications accurately because (7) media characteristics structure the degree to which needs may be gratified at different times, and further because (8) gratifications obtained have their origins in media content, exposure in and of itself, and/or the social situation in which exposure takes place. (pp. 11-37)

Katz's model along with Palmgreen, Wenner, and Rosegren's assumptions have been the guidelines for researchers since their development. The interactive nature of computers and the Internet make Uses and Gratifications Theory useful in predicting users' behavior in relation to technology. Several studies have affirmed the active audience assumption.

Uses and gratifications researcher J. D. Rayburn (1996) assumed that interactive media consumption is purposive and that the Internet, as an interactive medium, qualifies. He argues that, by definition, interactive media are intentionally consumed, as an audience member must make conscious choices within the medium. For instance, with the Internet, the audience member chooses his or her Internet avenue from among choices such as America On-Line, CompuServe or local Internet Service Providers (Salwen & Stacks, 1996, p. 157).

In her research, Harrell (2000) fishes for the answers to questions such as:

1. How do respondents use the Internet?
2. How do respondents use electronic mail (email)?
3. What gratifications are respondents seeking and receiving from using the Internet?
4. What gratifications are respondents seeking and receiving from using electronic mail?
5. What are the demographic profiles of respondents who use the Internet and electronic mail?

Based on research of traditional organizational structures, this study seeks to determine if virtual communities take on a similar hierarchy. After analyzing the structure of a particular organization, the Soar group, Ahuja and Carley (1998) hypothesized that a similar hierarchy to that in a traditional organization will emerge.

Rather than proving the points initially set forth in their hypotheses, Ahuja and Carley actually found that the hierarchy in virtual organizations may differ from that of traditional face-to-face encounters but may also follow a similar pattern on certain types of work activity.

### The Quality of Life Model

The Quality of Life model used in research projects carried out by the Quality of Life Research Unit was developed at the Centre for Health Promotion, University of Toronto. It was the development of this model and a request by the Ontario Ministry of Community and Social Services to carry out Quality of Life research that led to the formation of the Quality of Life Research Unit.

### Development

The Centre for Health Promotion conceptual model is seen as applicable to all persons, with or without developmental disabilities. It was developed on the basis of an analysis of the literature on quality of life and qualitative data collected in the context of focus groups and in-depth interviews with persons with and without developmental disabilities.

Following the preliminary development of the conceptual model, it was tested for relevance and refined by means of rigorous review by adults with and without physical and developmental disabilities, adolescents, and older adults living in the community. The model is multidimensional and assumes that quality of life is holistic in nature.

According to Renwick, Brown, and Nagler (1996), quality of life is a social construct and has no real meaning in itself, but only the meaning that individuals give it. Quality usually means something that is good or superior, so quality of life would mean how superior one's life is. The variations in how people perceive the quality of their lives bring about a difficulty in measuring quality of life objectively and consistently across the board. Brown (1994) explained as follows:

It is highly likely that no two people form their own perspectives, think of excellence [and] superiority...in precisely the same way....The essential meaning of quality may be understood by all, but when it is related to real people's lives, it is interpreted in any number of ways. (p. ii)

The Quality of Life Profile was developed to provide a measure that considers both the components and determinants of health and well-being. It draws upon a conceptual model that is consistent with recent definitions of health and health promotion as provided by the World Health Organization. The profile emphasizes individuals' physical, psychological, and spiritual functioning; their connections with their environments; and opportunities for maintaining and enhancing skills.

Conceptual Framework as defined by the Centre for Quality of Life defines quality of life as "the degree to which a person enjoys the important possibilities of his or her life" (Renwick, Brown, & Nagler, 1996, p. 16). Possibilities result from the

opportunities and limitations each person has in his/her life and reflect the interaction of personal and environmental factors. Enjoyment has two components: the experience of satisfaction or the possession or achievement of some characteristic, as illustrated by the expression: "She enjoys good health."

Renwick, Brown, and Nagler (1996) offer several basic assumptions or themes concerning quality of life as guiding principles for the ongoing study of quality of life issues. These guiding principles are as follows:

1. Quality of life is a multidimensional construct.
2. Every individual is biopsychosocial in nature (i.e., has physical, psychological, and social aspects) and is in continual interaction with his or her environment.
3. Because quality of life arises out of this complex person-environment interaction, a holistic approach is necessary for understanding it.
4. The components of quality of life are the same for people with and without disabilities.
5. Disabilities or any other handicapping condition, by itself, does not necessarily lead to increased or decreased quality of life for a person.
6. The basic components of quality of life are those things that are common to all people and that constitute the human condition.
7. Although the basic components of quality of life are the same for all people, the meaning attached to quality will differ to varying degrees from one person to another, because individuals attach differing relative importance to the basic

components of quality of life and have differing opportunities and constraints within their lives.

The conceptual framework borrowed for this study has three life domains, each of which has three sub-domains as noted previously in Figure 1.4 (Raphael, Renwick, Brown, & Rootman, 1994). These fundamental life domains and sub-domains are common to all human beings. Each has practical applications in everyday life which are observable, bringing research to reality and giving dimension and meaning to scientific theory.

Renwick, et al. (1996) also observed that the extent of a person's quality of life in the areas of Being, Belonging, and Becoming and their sub-domains is determined by two factors: importance and enjoyment. Thus, quality of life consists of the relative importance or meaning attached to each particular dimension and the extent of the person's enjoyment with respect to each dimension. In this way, quality of life is adapted to the lives of all humans, at any time, and from their individual perspectives.

Renwick, et al. (1996) argued that environment also plays a part in people's perception of quality of life. This may result from people being unaware that better quality is possible, or from people being consciously aware that they have to suppress the importance of some possibilities because of their present circumstances. For example, people living in institutions may consider their quality of life to be good, because they have had no opportunities to know other possibilities and have no power to effect change in any case. Thus quality of life needs to include the quality of the environment in which the person lives.

To address this concern, Renwick, et al. (1996) considered that a quality environment is one which

1. provides for basic needs to be met (food, shelter, safety, social contact)
2. provides for a range of opportunities within the individual's potential
3. provides for control and choice within that environment

Thus, a person's perceptions concerning his/her decision making regarding the important possibilities of his/her life and the extent of his/her potential opportunities in the areas encompassed by Being, Belonging, and Becoming are indicated by the Control and Opportunities scores. While these measures are not part of the computation of QOL scores, they provide information by which Quality of Life scores can be interpreted.

In its development of the conceptual approach to measuring quality of life, the Center for Health Promotion (CHP) was influenced by the humanistic-existential tradition (Bakan, 1964; Becker, 1971; Merleau-Ponty, 1968; Sullivan, 1984; Zaner, 1981). Woodill, Renwick, Brown, and Raphael (1994) include a detailed review of these philosophical foundations.

In contrast, some quality of life work focuses on the individual in relation with society. The volume *The Quality of Urban Life* (Frick, 1986) considers issues of measuring the quality of urban life, social networks within neighborhoods, physical aspects of urban environments, and the effect of these factors on psychological functioning and mental health. Lindstrom's (1994) work on the quality of life of children considers a range of important issues that move well beyond an individual perspective, identifying issues of resource allocation and economic equity. Schalock's 1990 study

suggests that quality of life conceptualizations in the developmental disabilities are also increasingly likely to be sociologically oriented. “Quality of life is the outcome of individuals meeting basic needs and fulfilling basic responsibilities in community settings (family, recreational, school, and work)” (Schalock, 1990, p. x).

In summary, the literature and Figure 2.1 show that individuals have physical, psychological, and spiritual dimensions. It acknowledges that people need to belong, in both physical and social senses (i.e., to places and social groups), as well as to distinguish themselves as individuals by pursuing their own goals and making their own choices and decisions. The CHP model was specifically and intentionally developed to include a balance of the qualitative (Rootman et al., 1992a) and quantitative measures (Rootman, et al., 1994a; Renwick, Rudman, Brown, & Raphael, 1994; Rudman, Renwick, Raphael, & Brown, 1995) and quantitative measurement tools. The approach gave the development of the model shown in Figure 2.1 a clear direction and gave it concrete definition in operational terms.

<b>Being</b>	<b><i>Who One Is</i></b>
Physical Being	<ul style="list-style-type: none"><li>• physical health</li><li>• personal hygiene</li><li>• nutrition</li><li>• exercise</li><li>• grooming and clothing</li><li>• general physical appearance</li></ul>

Figure 2.1. Practical Manifestations of Three Fundamental Life Domains and Subdomains.

Source: Center for Quality of Life, Toronto, Canada.

Figure 2.1. Continued.

<b>Being</b>	<b><i>Who One Is</i></b>
Psychological Being	<ul style="list-style-type: none"> <li>• psychological health and adjustment</li> <li>• cognitions</li> <li>• feelings</li> <li>• self-esteem, self-concept and self-control</li> </ul>
Spiritual Being	<ul style="list-style-type: none"> <li>• personal values</li> <li>• personal standards of conduct</li> <li>• spiritual beliefs</li> </ul>
<b>Belonging</b>	<b><i>Connections with One's Environment</i></b>
Physical	<ul style="list-style-type: none"> <li>• home</li> <li>• workplace/school</li> <li>• neighborhood</li> <li>• community</li> </ul>
Social	<ul style="list-style-type: none"> <li>• intimate others</li> <li>• family</li> <li>• friends</li> <li>• co-workers</li> <li>• neighborhood and community</li> </ul>
Community	<ul style="list-style-type: none"> <li>• adequate income</li> <li>• health and social services</li> <li>• employment</li> <li>• educational programs</li> <li>• recreational programs</li> <li>• community events and activities</li> </ul>
<b>Becoming</b>	<b><i>Achieving Personal Goals, Hopes, and Aspirations</i></b>
Practical	<ul style="list-style-type: none"> <li>• domestic activities</li> <li>• paid work</li> <li>• school or volunteer activities</li> <li>• seeing to health or social needs.</li> </ul>
Leisure	<ul style="list-style-type: none"> <li>• activities that promote relaxation and stress reduction</li> </ul>
Growth	<ul style="list-style-type: none"> <li>• activities that promote the maintenance or improvement of knowledge and skills</li> <li>• adapting to change.</li> </ul>

## Technology

Kurzweil & Meyers (2003) note, “Because of the explosive power of exponential growth of technology, the progress made in the 21<sup>st</sup> century will be equivalent to 20,000 years of progress at today’s rate.”

Barnes (1997) says, “In the 19<sup>th</sup> century steel plows, grain drills, mowing machines, reapers, binders, and threshing machines become universal in all advanced agricultural areas. But in the 20<sup>th</sup> century labor-saving devices made possible execution of the harvesting process in a single action” (p. 484).

During the 1930s the single most important device in agriculture, then the major underpinning of the U.S. rural economy, was the gasoline-powered tractor. The Department of Agriculture estimated that there were 1.6 million tractors in use on American farms in 1939, almost twice the number of 1930 (Pursell, 1995). By 1996 there were 4.67 million tractors in operation in the U.S. (NASS, 2000). As tractors replaced the horse-drawn plows, farmers realized a reduction in the physical stress of tending their fields and recaptured hours of time that could be spent for personal leisure and family interaction.

Just as the tractor became the workhorse of an earlier agrarian society, the computer is becoming a staple item in more and more American homes. According to the U.S. Census Bureau, in the fall of 1984, just 7.9 percent of U.S. households reported that they owned a home computer; by 1997, this number had more than quadrupled to 36.6 percent. About half of all children ages three to 17 had access to a computer at home by 1997, as did about 40 percent of all adults, ages 18 and older. About 71 percent

of children in school had some use of a computer, while 50 percent of working adults report that they now use a computer in their job.

Combining figures for home, school, and work, three-fourths of the children reported they used a computer somewhere in 1997, up from just about a third 14 years earlier. For adults, there is also an impressive rate of growth, but at lower levels. While in 1984 just 18 percent of adults reported they use a computer somewhere, by 1997 this level had risen to 47 percent. For the entire population three years and older, in 1997, over 53 percent of all persons reported using a computer somewhere in their daily life.

Computation is not the only technology that is growing exponentially. Communications, bandwidth, speed and price performance—both wireless and wired—are also doubling every year. Experts (Kurtzweil & Meyers, 2003) talk of an age when nanotechnology is fully in the mainstream—perhaps as early as 2020—which will allow for the conversion of information into almost any product. Nanotechnology will allow relatively few people in a factory to convert inexpensive raw materials to be, very efficiently, secured and routed, shipped and shaped into high-quality products.

Sophisticated computer software has brought about an information economy. The first computers were designed using pencil and paper and were built with screwdrivers. Today, we use computers to build computers.

The observation was made in 1965 by Gordon Moore, co-founder of Intel, that the number of transistors per square inch on integrated circuits had doubled every year since the integrated circuit was invented. Moore predicted that this trend would continue for the foreseeable future. In subsequent years, the pace slowed down a bit, but data density

has doubled approximately every 18 months, which is the current definition of Moore's Law. Most experts, including Moore himself, expect Moore's Law to hold for at least another two decades (Moore's Law, 2004).

Newburger (2002) reports that the rapid adoption of computer and Internet technology by the U.S. population in general has brought about a corresponding increase in computers and the Internet at home.

In August 2000, 54 million households, or 51 percent, had one or more computers, up from 42 percent in December 1998. Since 1984, the first year in which the Census Bureau collected data on computer ownership and use, the number of households with computers has increased five times.

Figure 2.2 tracks the increasing pace of adoption of computers and Internet access in the home from 1984 to 2000. Note that U.S. Census Bureau began measuring household Internet access in 1997.

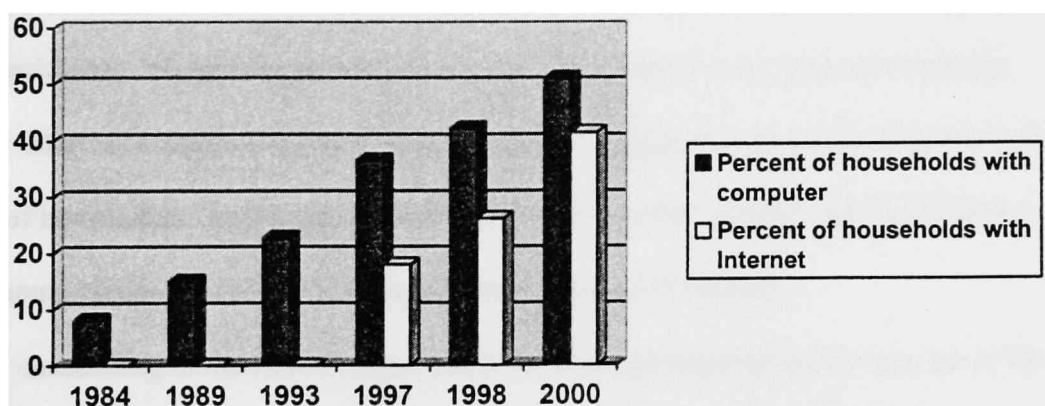


Figure 2.2. Households with Computer and Internet, 1984-2000.

Source: U.S. Census Bureau, Current Population Survey, various years. Data on Internet access were not collected before 1997.

Newburger (2001) adds that 45 million households, or 42 percent, had at least one member who used the Internet at home in 2000 as compared to 26 percent in 1998 and 18 percent in 1997. "The widespread use of Internet has made computer use and Internet access almost synonymous," Newburger says. "In 2000, more than four in five households with a computer had at least one member using the Internet at home."

Newburger's report indicates that high-income households showed a greater likelihood of computer ownership and Internet access. Among families with incomes of \$75,000 or more during the 12 months prior to the survey, 88 percent had at least one computer, and 79 percent had at least one household member who used Internet at home in 2000. Among family households with income below \$25,000, only 28 percent had Internet access as shown in Appendix K.

One-person households were least likely to have a computer or Internet access. While 58 percent of households with two to four people had a computer, only 30 percent of one-person households had a computer. Forty-seven percent of two-to-four person households had Internet access compared with 24 percent of one-person households.

Married couples were more likely to have a computer or Internet access than other types of households. Residents of the western region of the country were most likely to have home computers (57 percent) and Internet access (47 percent).

According to the 2000 Census, households in metropolitan areas were more likely to have a computer (58 percent) or Internet (48 percent) than non-metropolitan households (computers, 42 percent and Internet, 32 percent). In addition, more children have access to a computer or use the Internet at home than ever before. Nearly two-thirds

or 65 percent of all children three to 17 years lived in households with a computer in 2000, up from 55 percent in 1988. Thirty percent of all children had access to the Internet at home in 2000 compared with just 19 percent in 1998. Some 48 percent, or nearly half, of the children 12 to 17 years used the Internet at home.

According to the 2000 census report, there remains a digital divide among the U.S. population based on nine demographic factors. Appendix K shows the breakdown of home computer and Internet access based on nine factors: age, race, education, size of household, type of household, school-age children in household, region, metropolitan status, and family income.

Americans ages 25 to 44 years have the highest level of access to technology at home. Those age 45 to 64 are second. The under 25 years and over 65 years categories are least likely to have access at home. Whites and Asians are more likely than blacks or Hispanics to have access to technology at home.

Those with more education have greater access to technology. As the number of people in the household increases, so does access to technology. Married couples have greater access than singles. Those with school-age children have greater access than those without. Westerners are more likely to have access than Southerners, Midwesterners, and Northerners. Those living in metropolitan areas are more likely than those in rural or less metropolitan areas to have access to technology. And as household income increases, there is a near linear correlation to the increase in access to technology.

## Diffusion of Innovations

A study by Ryan and Gross (1943) investigating the rate of adoption of hybrid corn by Iowa farmers set the stage for much of the diffusion research that followed. They addressed four main aspects of diffusion, which include 1) the individual innovation-decision process with its three stages—awareness, trial, and adoption, 2) the roles of communication sources/channels in conveying the innovation, 3) the S-shaped rate of adoption, a curve that was tested as to whether it fit a normal distribution, and 4) the personal, economic, and social characteristics of various adopter categories, the classification of individuals on the basis of their relative earliness in adopting an innovation (Valente and Rogers, 1993).

The demographics of Internet users track closely the characteristics of early adopters as described by Rogers (1995). He notes that those on the front end of adopting an innovation tend to have more formal education and have higher socio-economic status than late knowers and adopters.

Much of the past research surrounding new computer and Internet technologies has related to the rate of adoption and uses of these 20<sup>th</sup>-century innovations and the effect of socialization on adoption of innovations. These characteristics tend to follow earlier adopters for most innovations:

### Age

Earlier adopters of innovations such as computers and the Internet are not different from later adopters, as a rule. However, Rogers states there is “inconsistent evidence about the relationship of age and innovativeness; about half of the some 228

studies on this subject show no relationship, a few show that earlier adopters are younger, and some indicate they are older” (Rogers, 1995, p. 269).

### Education and Literacy

Early adopters have more years of formal education than later adopters. Early adopters are more likely to be literate than are later adopters.

### Social status

Earlier adopters are more likely to have higher social status than later adopters. Status is indicated by such variables as income, level of living, possession of wealth, occupational prestige, self-perceived identification with a social class, and the like. However measured, social status is usually positively related with innovativeness.

### Upward Social Mobility

Earlier adopters have a greater degree of upward social mobility than later adopters. Evidence suggests that earlier adopters are not only of higher status but are on the move in the direction of still higher levels of social status. In fact, they may be using the adoption of innovations as one means of getting there.

### Larger economic units

Earlier adopters have larger units (farms, schools, companies, ...) than later adopters. In the words of Rogers (1995), “The social characteristics of earlier adopters mark them as more educated, of higher social status, and the like. They are wealthier and have large units. Socioeconomics status and innovativeness appear to go hand in hand” (p. 269).

At this juncture, the question arises of whether innovators move faster to accept and use innovations because they are richer, or are they richer because they innovate? The answer does not seem to be a direct cause-and-effect, but Rogers (1995) notes some logical reasons why social status and innovativeness vary together.

Frequently, new ideas cost more in the early stages of diffusion, so that companies can recover the high costs of research and development. Only the wealthy can afford to purchase and operate these new innovations. In addition, the greatest profits are realized by the first to adopt and prior to the onset of the “cockroach effect,” in which for every one innovator who takes the lead, there are thousands of additional users waiting to benefit after the highest risk takers enter the market. The innovator gains a financial advantage through relatively early adoption of the innovation. The innovators become richer and the laggards become relatively poorer through this process as the major profits have already been taken.

An integral part of this phenomenon is that there is a relatively high risk associated with being among the first to use a new product. The wealthy are in a better position to absorb the losses resulting from the failures that are certain for some new innovations.

Rogers' definition of technology used in Chapter I bears repeating here as it cuts to the very heart of why computer and Internet use may be on the verge of expanding at a much more rapid pace, possibly to reach the peak of adoption in the very near future. “Technology is a design for instrumental action that reduces the uncertainty in the

cause-effect relationships involved in achieving a desired outcome. This definition implies some need or problem that a tool can help to solve" (1995, p. 135).

A close parallel can be made between the diffusion theory and the spread of computer and Internet technology. Innovations diffuse more through the influence of early adopters' social networks than any other factor. Products and services through the Internet—specifically, email, chat rooms, the World Wide Web, and video conferencing—are in themselves almost synonymous with socialization and communication.

The basis of Roger's diffusion of innovations theory (Rogers, 1995, p. 110) is that innovations diffuse slowly at first, but the rate of adoption increases with the passage of time. As the five characteristics of innovations—relative advantage, compatibility, complexity, trialability, and observability—have time to work among potential users, there is an increase in the rate at which users pick up an innovation. When the number of users is plotted on a graph in relation to time, the result yields a slight S-shaped curve. It is noteworthy that if the traditional S-curve associated with the diffusion of innovations (Figure 2.3) is compared with a corresponding curve created by the increase in computer use with the onset of the Internet (Figure 2.2), beginning at about 1993, the two track very closely.

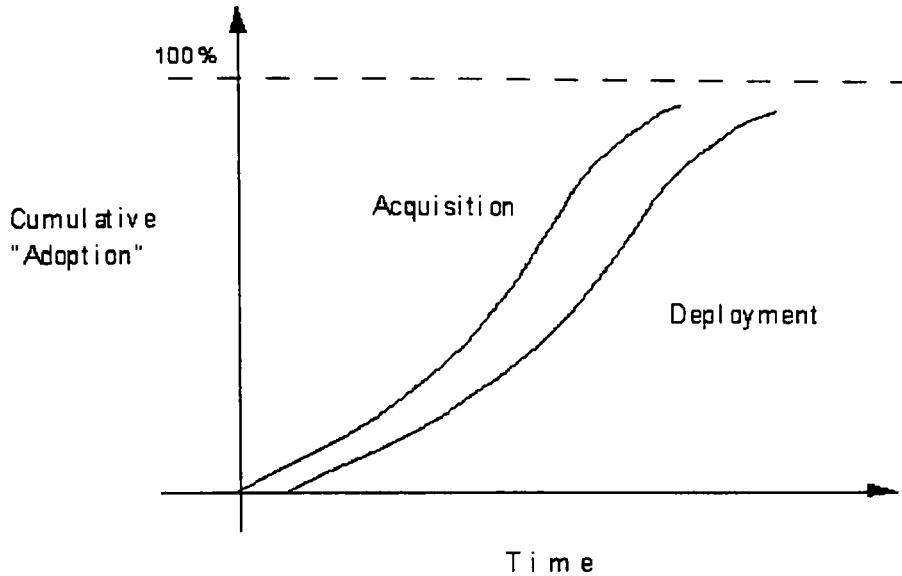


Figure 2.3. Adoption of Innovations Curve (Rogers, 1995).

### Quality of Life and Technology

In an effort to understand the relationships between ideas that at first may seem totally unrelated, it is sometimes helpful to consider a simple idea or mechanism that is universal and has made its way into peoples' everyday lives in ways that enhance the individual's quality of life. Teisberg (1992) uses the cellular telephone as a recent example of a technological innovation that has spread quickly. In addition to the visible, practical advantages of cell phones over traditional phones—time management, fewer missed calls, and portability—the cell phone brought with it a sense of having social status (Rogers, 1995, p. 245). The adoption of cell phones expanded further as they became small enough with wireless capabilities to fit into peoples' pockets and purses.

Cell phones were used identically to regular phones which made them compatible with and as simple to use as regular phones, so that they were usable no matter how few or how many owners of cell phones existed. Cell phone users could talk to regular phone users. No new skills were necessary.

Cell phones were highly observable in cars, restaurants, on the street, and in other public places. Potential users could easily see the convenience, portability, flexibility, and status afforded to users and that could be theirs as potential users of cell phones. Potential users could borrow a friend's phone to experience all the benefits without actually buying one.

It is at this juncture that this review of literature begins to reveal the interconnectedness of one simple technology and quality of life. Cell phones address the 1) belonging domain of the quality of life model (Renwick, Brown, & Nagler, 1996, p. 77) in their ability to facilitate socialization, 2) the becoming domain in their ability to make business transactions and communications possible without the bounds of a regular phone line, and 3) the being domain with their ability to reduce stress and help ensure safety.

The Quality of Life Research Unit promotes research into quality of life and the development of sustainable, yet livable cities. The group's vision is to achieve a robust local economy; communities that are safe, healthy, and free from social exclusion; and a sustainable environment. They define and monitor quality of life indicators in the areas of unemployment, regeneration, social exclusion, educational attainment, health, housing,

drug related crime, community involvement, pollution, quality of the environment, and improvements to transportation.

There have been a large number of researchers who have reviewed methodological and conceptual issues of information technology, everyday life, virtuality and meaning: for instance, Hine (2000), Danet (2001), Dreyfus (2001), Chaney (2001), Henwood et. al (2001), Waterworth (2001), Das et. al. (2001), Munt (2001), Sveningsson (2001), Denning (2002), Highmore (2002), Johnson (2002), and Rodriguez and Ryave (2002). These works all offer important insights into the problematic research domain of meaning and significance of contemporary information technology (IT) use. They all serve as an intellectual and literary base on which this project and its findings can stand.

In reference to a report by the Alliance for Public Technology (2003), Paul Schroeder, President of APT, said, "This document articulates our strong belief that broadband can change the way people live, work and learn. Broadband is an essential tool for empowering people and offering opportunities for better health care, lifelong learning, independent living and more that can enhance the quality of life" (p. 1).

In addition, wireless video surveillance equipment means more safety, both for businesses and for people. For businesses like shops, constantly threatened, being connected with the broadband network means 24 hours/day video control.

A quote from the Cool Town Studios bulletin board posting entitled *Broadband = quality of life, jobs* (Takemoto, 2003) notes, "Understanding that people will be more apt to use technology they don't see, a town-wide broadband infrastructure may do wonders

for the local economy and quality of life. It essentially means you can work at home, or at your local third place with free wireless broadband” (p. 1).

During his speech at the 17th Annual CATA*Alliance* Innovation and Leadership Awards Reception and Gala, Smart City Summit, April 23, 2002, in Ottawa, Canada, Larry Boisvert said, “Technology is about making life better—not just for some, but for as many people as possible. The goals are learning more, working smarter, connecting and communicating, being healthy and happy, and living in comfort and safety” (p. 1).

Boisvert (2002) considers e-business critical to the development and diversification of disadvantaged regions. “It means people and businesses will no longer have to move to the big city just to make a living,” he says. “And it can preserve the rural communities that are so important to Canada” (p. 1).

### Quality of Life Benefits

Sage Research (2001) reported that in addition to productivity, there are other “soft” benefits of using wireless local-area networks (WLANs). In particular, users cite “quality of life” benefits to connecting to the LAN via a wireless connection. According to WLAN users, the three most important quality of life benefits of using a wireless LAN include:

1. Reduced stress
2. Improved family life
3. Increased status

Each of these quality of life benefits is presented in more detail in the subsections below:

### Reduced Stress

The Sage Research Report (2001) explained that some users view WLANs as stress reducers. This is the case for one primary reason—readily available information. Wireless LAN users do not have to worry about trying to find a wired connection. For example, if a wireless LAN user brings the wrong presentation to a meeting, he or she will not have to worry since the correct presentation can be accessed on the server wirelessly. In this way, stress is alleviated since the user doesn't have to worry about being “plugged in” to access the LAN (p. 7-8).

In addition to the ability to download files, users can respond to important queries via email quickly without having to worry about finding a connection. For example, an IT user with a wireless connection can go to lunch in the cafeteria without having to worry about missing urgent emails. Again, the point is that stress is reduced in some ways by having this continuous access to email, files, and applications.

### Improved Family Life

Some users are even able to spend more time at home due to WLANs. Some wireless LAN users stated that they are able to reduce the hours they spend at work as a result of accomplishing more by being mobile at the office. Some users are able to save

up to two hours each day at the office and go home at a more reasonable hour—perhaps five o’clock rather than seven o’clock.

In fact, according to the Sage Research Report, some users find that WLAN use enables them to be more involved in their children’s lives. For example, some say they are able to attend their children’s sporting events or choir events because of the freedom they have with this technology (p. 8).

### Increased status

For some users surveyed by the Sage Research Institute (2001), WLANs provide a level of status, in terms of both a personal edge, as well as a competitive edge. Employees that are using the wireless LAN feel that they have a personal advantage over users who do not have WLAN access. This percentage shows that feeling of having complete access to data at any time is very powerful for wireless LAN users. This feeling of power, in the minds of the wireless LAN users, leads to feelings of having a competitive edge (p. 9).

The second feeling of having a competitive edge stems from having an edge over the competition. For example, one participant in particular feels a sense of appreciation that his organization provides a technology that allows him to be one step ahead of the competition. This gives the WLAN user a sense of security within his organization.

U.S. Congressman Rick Boucher (2004), in an opinion editorial said, “Advanced telecommunications services are providing an economic and quality of life bridge to the

American mainstream for many rural regions which have been characterized by under-investment on the part of traditional sectors of the nation's economy" (par. 1).

### Making Technology Adoptable

The early days of computer technology exhibited few of the characteristics that make an innovation adoptable by the masses. Mainframes were not very dependable and were large and bulky, sometimes being housed in multistory buildings. The first computers were very expensive and mostly industrial models. The relative advantage, compatibility, complexity, trialability and observability were almost nonexistent (First Generation: 1946-1958—The Vacuum Tube Years, 1998, par. 2-4).

It wasn't until the 1970s that people began buying computers for personal use. One of the earliest personal computers (PCs) was the Altair 8800 computer kit. In 1975, users could purchase this kit and put it together to make their own personal computer. In 1977 the Apple II was sold to the public and in 1981 IBM entered the PC market (Hames, 1998).

From this stage, computers and computer programming evolved rapidly. The move from vacuum tubes to transistors significantly reduced the size and cost of the machines and increased their reliability. Then came integrated circuit technology, which has reduced the size and cost of computers. In the 1960s, the typical computer was a transistor-based machine that cost half a million dollars and needed a large, air-conditioned room and an on-site engineer. The same computer power now costs

\$2,000 and sits on a desk. As computers became smaller and cheaper, a single integrated circuit called a chip also made them faster (Taylor, 2004).

### The Internet

The Internet was originally established by the military “as a wide area, packet-switching network called the ARPANET” in 1969 (Marine, Kirkpatrick, Neou & Ward, 1993). ARPA is the acronym for the Advanced Research Projects Agency, a part of the United States Department of Defense. It was established to “provide efficient communication between different types of computers over a large geographic area. The goal was to allow a large community of users to share resources that were available on these computers” (Marine, et al., 1993, p. 129). It also served as a means of ensuring uninterrupted communications in the event of an attack on the U.S. The network was designed so that if one segment of the country’s communication network was destroyed, a connecting link would pick up the communication and carry it to its destination.

However, the rate of broadband growth in the U.S. slowed in 2003, according to figures released by the Federal Communications Commission (FCC) in December 2003. The number of high-speed Internet connections increased 23 percent in the last half of 2002, but grew by only 18 percent in the first half of 2003, according to the FCC report. For the year ended June 30, 2003, high-speed lines increased 45 percent to 23.5 million, the FCC said.

What's more, technology researchers from IDC, a global market intelligence and advisory firm, forecast that broadband subscription growth in the U.S. will continue to

slow through 2007. In a report released in August 2003, IDC predicted that broadband subscriptions would increase 35.1 percent in 2004 and slow to a growth rate of 16.3 percent in 2007.

Rogers (1995) notes that interactive innovations are dependent on more than one individual's owning and using them. For example, if only one person had email capabilities, with whom would that person correspond? Messages would reverberate through the empty halls of cyberspace. But, when the second individual gained Internet access, the innovation became a practical tool by which to communicate and socialize. Again, socialization, an important element in quality of life, and the Internet have become an important tool in satisfying the need to communicate.

Email is arguably the most rapidly accelerating application of computers today. Furthermore, the socialization and networking capabilities of the Internet brought the critical mass needed to make Internet technology self-sustaining. Cohill and Kavanaugh (2000) said:

The Internet has arrived. It is the fastest growing technology in the history of the world. It has changed us; it is changing us still; and it will continue to change us long into the future. Technology is not the problem. Lack of community is the problem, and education is the solution. We must find better ways to preserve what is good in our communities, and we must find better ways to sustain our local systems (education, public services, local government, civic institutions). (p. 12)

### Demographic Factors and Internet Use

Differences in the ethnic composition of computer and Internet users in Texas remain evident. According to the Telecommunications and Information Policy Institute (TIPI) study (Availability of advanced services in rural and high cost areas, 2001), nearly

68% of the Anglo community regularly use the Internet, compared to 45.2% of Hispanics and 32.8% of African Americans. The reverse pattern is true for those who use neither a computer nor the Internet: 32.8% of the African Americans, 28% of the Hispanics, and 14.2% of the Anglos.

However, among people who routinely use the Internet (“Internet users”), ethnic differences are negligible in terms of the amount of time spent on the Internet (10.6 hours per week for Anglos, 10.8 for Hispanics, and 9.5 for African Americans). Predictably, higher percentages of people in older age categories do not use computers or the Internet.

About 50% of the people 66 and older used either a computer or the Internet, but nearly 26% used both. Not surprisingly, people under 55 were far more likely to use the Internet than were older people.

Consequently, those not using a computer or the Internet can generally be characterized as being older, poorer, and often members of a minority group. They also tend to be less well educated. In addition, TIPI’s analyses showed that the better-educated and wealthier individuals are, the more likely they are to use computers and the Internet. At higher incomes, there are virtually no differences in Internet use by ethnic group, but at lower income levels, ethnic group membership still makes a difference—Anglos in lower income groups use computers and the Internet in greater numbers than do African Americans or Hispanics at the same income level (Availability of advanced services in rural and high cost areas, 2001, p. 25-26).

The January 2001 TIPI study shows that Internet use by ethnic groups at lower income levels is still affected by ethnicity. Anglos in lower income groups use computers

and the Internet in greater numbers than do African Americans or Hispanics at the same income level.

As income and education increase, so do computer and Internet use. Statistics show that people making less than \$10,000 per year represent the largest cluster of people who use neither computers nor the Internet. At incomes over \$30,000-\$40,000, Internet use is very common; the results for higher and lower levels of education follow a similar pattern, with more highly educated people using the Internet more commonly than those less well educated. The TIPI study demonstrates that most Internet users have had some education beyond high school, while the nonusers are disproportionately composed of people who did not complete high school.

There are still some important differences between rural and nonrural segments of the population. For example, the TIPI study finds that the rural population spends somewhat less time on the Internet and also undertakes fewer commercial or financial transactions on the Internet (p. 29).

#### Use of Computers and the Internet Summary

According to the TIPI study, a large majority, 67%, of the Texas population currently use a computer and 60% use the Internet. People who have never used either computers or the Internet represent just 17% of the sample. The study also finds that demographic factors, such as ethnic group, age, income, and education differences, affect Internet use.

## Rural/Nonrural Comparisons Summary

There is concern nationwide about the effects of less well-developed telecommunications infrastructure in rural areas. A study jointly sponsored by the NTIA and the Rural Utilities Service raised several issues pertaining to the availability of advanced telecommunications facilities in rural areas, noting that deployment of such facilities in rural areas lags behind that in urban areas. In Texas, while the gap exists between the percentage of rural and nonrural Internet users, the percentage of rural Texans using the Internet far exceeds national rural usage.

TIPI sought to compare rural versus nonrural respondents' behaviors and attitudes with respect to their use of computers and the Internet. TIPI's results (NTIA, 2000) reveal that people in rural areas are only somewhat less likely to use the Internet than are people in metropolitan areas: 55% of rural respondents in Texas use the Internet compared to 60% of nonrural respondents.

## Community

### The Role of Communities in Quality of Life

As the capabilities of the Internet evolved and Internet use continued to grow exponentially, virtual communities (Rheingold, 1993) such as the WELL (Whole Earth 'Lectronic Link) began to emerge. Such online communities provided a forum that enabled people around the world to carry on public conversations and exchange private electronic mail.

Rheingold says:

The idea of a community accessible only via my computer screen sounded cold to me at first, but I learned quickly that people can feel passionately about e-mail and computer conferences. I've become one of them. I care about these people I met through my computer, and I care deeply about the future of the medium that enables us to assemble. (p. 1)

Rheingold (1993) goes on to say that the virtual village of a few hundred people he stumbled upon in 1985 grew to 8,000 by 1993. He reports that it became clear in the first few months after his introduction to the citizens of the WELL that he was participating in a new kind of culture. He reveals:

People in virtual communities use words on screens to exchange pleasantries and argue, engage in intellectual discourse, conduct commerce, exchange knowledge, share emotional support, make plans, brainstorm, gossip, feud, fall in love, find friends and lost them, play games, flirt, create a little high are and a lot of idle talk. People in virtual communities do just about everything people do in real life, but we leave our bodies behind. (p. 3)

Even in his enthusiasm for the online community in which he participated by home computer on a daily basis, Rheingold was quick to keep his eyes open for the pitfalls of mixing technology and human relationships. Rheingold believes that the technology that makes virtual communities possible has the potential to bring enormous leverage to ordinary citizens at relatively little cost—intellectual leverage, social leverage, commercial leverage, and political leverage. However, he warns that “the technology will not in itself fulfill that potential; this latent technical power must be used intelligently and deliberately by an informed population” (Rheingold, 1993, p. 4).

Given that the price of technology has become affordable for the average citizen and software applications are paving the way for seamless practical uses for the everyday user, one might predict that the diffusion of computer and Internet technologies will

continue to occur with ever-increasing speed. And, with the increased number of users, the number of practical applications are likely to expand. In the words of William Gibson (1986), whose book, *Neuromancer* (1984), gave us the word “cyberspace,” “the street finds its own uses for things” (*Burning Chrome*, p. 186).

### Traditional Communities

From the earliest days of human existence, people have banded together to improve their individual lives. What we know as traditional communities have been important to the survival of societies from the onset of the world. Ancient civilizations banded together into communities for the benefit of all in regard to safety, socialization, and economy of living (food, water, and shelter).

In the language of Abraham Maslow’s hierarchy of needs (Maslow, 1954), it can be said that the United States

surpasses the world in the degree to which it has been able to gratify the elemental needs of its people for food and shelter. It has freed its people to deal with the higher-order needs for social esteem, recognition, and self-actualization. The quality of life has taken on new dimensions, and the national concern has turned increasingly from its focus on the needs of the “ill-housed, ill-clad, ill-nourished to the needs of all the people from equity, participation, respect, challenge, and personal growth. The revolution of rising expectations is not simply a desire of a larger house and a second car but a growing demand for the fulfilment of needs which are not basically material but are primarily needs of the spirit, needs for a larger and more satisfying life experience. (Campbell, Converse, & Rogers, 1976, p. 2)

There is a wide range of disagreement among sociologists on just one concrete definition of community. In what is noted as one of the best efforts ever to assess agreement among definitions of community, George Hillery, Jr., subjected 94

sociological definitions of the term community to qualitative and quantitative analysis (Hillery, 1955, p. 111). He was able to identify 16 different defining concepts within this sample (p.115). He found only one concept that was common among all 94 of the original definitions—they all dealt with people (p. 117). However, there are other areas where the majority of studies analyzed by Hillery are in agreement. Hillery stated that “of the 94 definitions, 69 say that social interaction, area, and a common tie or ties are commonly found in community life” (p. 118). Poplin (1979, p. 8) noted that in a more recent empirical study of 15 sociological definitions of the term “community,” the above defining aspects were still present in the majority of definitions, despite some minor changes in the use of the term over the years.

In the interest of brevity and to avoid confusion, this study leaned on Hillery’s findings and considered the term “community” as meaning 1) a group of people 2) who share social interaction 3) and some common ties between themselves and the other members of the group 4) and who share an area for at least some of the time.

In his book, *The Different Drum: Community-Making and Peace*, M. Scott Peck (1987) said:

We know the rules of community; we know the healing effect of community in terms of individual lives. If we could somehow find a way across the bridge of our knowledge, would not these same rules have a healing effect upon our world? We human beings have often been referred to as social animals. Be we are not yet community creatures. We are impelled to relate with each other for our survival. But we do not yet relate with the inclusivity, realism, self-awareness, vulnerability, commitment, openness, freedom, equality, and love of genuine community. It is clearly no longer enough to be simply social animals, babbling together at cocktail parties and brawling with each other in business and over boundaries. It is our task—our essential, central, crucial task—to transform ourselves from mere social creatures into community creatures. It is the only way that human evolution will be able to proceed. (p. 165)

The Subcommittee on Identifying Data Needs for Place-Based Decision Making, (Committee on Geography, National Research Council 2002) suggests that quality of life, livability, and a sense of place and connectedness are the benefits that individuals expect as part of their membership in communities.

### Virtual Communities

In examining the connections between community and quality of life, researchers at the Center for Quality of Life based in Toronto, Canada, have investigated and discussed important concepts that undergird community life and offer recommendations for collaborative planning across space and time. Because computer and Internet technology, by nature, transcend the restrictions of time and space, they would intuitively seem to be natural forums for community planning and building.

The continued advancement of computer and Internet technologies continues to be an integral part of the improving quality of life. As wireless access makes connectivity seamless, the mode of interfacing will not be a computer that sits on a desktop or even a laptop that brings the user to it to access the benefits of the Internet. As the technology becomes less visible and more user friendly, non-users will be more likely to become adopters.

Peter Mosca (2004) reports:

...consumers today can have total control of their home's interior and exterior, whether they are inside their property or not. From lighting, heating, ventilation and air conditioning (HVAC), security systems, and home entertainment, to keeping an eye on kids as they arrive home from school, technologies are in place and at a reasonable cost. (p. 1)

Best of all for consumers and the installers of these devices, home automation systems are controlled by user-friendly appliances such as push-button interfaces, personal computers, and telephones.

Helping fuel the growth of home automation as a quality of life issue has been the proliferation of household broadband Internet access. According to Michael Greeson, Vice President and Principal Analyst with Parks Associates, and featured speaker at the International Computer Economic Summit, 15 million U.S. households had cable broadband access in the third quarter of 2003 compared with 2.9 million in the same period three years earlier. With DSL, Greeson pointed out, six million U.S. households had this service in their homes in third quarter 2003, compared to only 800,000 in the third quarter of 2000. Greeson predicted that there will be 51.5 million broadband Internet subscribers, or about 48% of all U.S. households, by the year 2007 (Mosca, 2004).

Bill Gates, chairman and chief software architect for Microsoft Corp., used the 2004 International CES to launch his concept of seamless computing. The theme of seamless computing, explained Gates, is the ability to bring devices together into one connected world. Gates explained that software and broadband technology are the building blocks to make seamless computing a reality (Mosca, 2004).

Fabio Ginnetti (2004) of Fast Web Mediterraneo says progress is when it is for everyone. He adds that citizens' quality of life can significantly be improved by creating a metropolitan broadband network. He makes the assumption that quality of life related to telecommunications means time-saving, safe, lower-cost, new services.

Despite all the benefits of using computer networks, there are those who still feel that the use of computer networks is detrimental to both individuals and society (Hamman, 2001). Others have noted the existence of negative portrayals of computer network users as socially isolated nerds. Howard Rheingold (1993) writes that, in the late 1980s, the media myth about people who used computers to communicate was that they were totally lacking in social skills and were unemotional.

This myth, as Rheingold calls it, has given rise to a number of social theories and research projects. Michael Heim (1993, p. 100) argues, “Technology increasingly eliminates direct human interdependence. While our devices give us greater personal autonomy, at the same time they disrupt the familiar networks of direct association.”

In *Data Trash*, Kroker and Weinstein (1994) warn of the increased loneliness of the online community member when they write, “The virtual community” of electronic networking has such charismatic appeal today because, like a failing spacecraft, we are re-entering the burning atmosphere of the lonely (virtual) crowd.

According to a Carnegie Mellon study which examined the social and psychological impact of the Internet on 169 people in 73 households during their first one to two years online, Kraut et al. (1998) suggest, “Greater use of the Internet was associated with declines in participants’ communication with family members in the household, declines in the size of their social circle, and increases in their depression and loneliness” (p. 1025).

However, under closer scrutiny, the study reveals that “the statistically significant changes the researchers reported were quite small—a 1 percent increase in the depression scale for people who spend an hour a week online” (Rosenburg, 1998).

Hamman (2001) dismisses the study as seriously flawed in a number of ways, including the extremely small sample size and failure to control for outside factors which might have affected the participants’ level of depression.

Wellman (1995), a researcher at the University of Toronto, was one of the first to note the current shift away from communities based on a shared geographic area. He describes the situation as it exists today—rather than gathering with neighbors in public places such as street corners or cafes, people now communicate with their friends by telephone or email or in small groups in private homes (p. 1).

### Building Community Networks

Hamman (2001) contends that although community has taken on a different meaning in today’s society, it has not disappeared over the years. The work of Wellman (1995) demonstrated that communities are becoming more and more privatized and centered on individuals instead of neighborhoods. This shift toward private network communities and away from communities rooted in a specific, confined geographic area is due to the privatization of public spaces once important to the development of community. Hamman says,

In the absence of public gathering places of the type which often facilitate the development of geographically based communities, the Internet becomes a practical, efficient, and valuable tool for interpersonal communication which is

important to the continuance of private network communities based upon individuals. (pp. 75-76)

Alfred Marshall (1890), in his book *On Wants and Their Satisfaction*, puts it this way, “He desires not merely larger quantities of the things he has been accustomed to consume, but better qualities of those things; he desires a greater choice of things, and things that will satisfy new wants growing up in him” (p. 23).

As the delivery systems for virtual community services advance, are the characteristics of traditional and virtual communities converging? The gap between the expectations and the ability of the Internet to meet those expectations is narrowing.

On January 29, 2003, Secretary of Agriculture Ann Veneman announced \$11.3 million in broadband technology grants to assist in the dissemination of broadband technology to rural areas of the country. The press release featured in Appendix H provides evidence that the Bush administration has taken note of the possibilities for technology in rural areas by making funds available for improvement of technology (Veneman, 2003). See Appendix H.

### The Convergence of Traditional and Virtual Communities

Many traditional communities have incorporated technology for the mutual enhancement of the traditional and virtual aspects of those communities. Telecommuting is just one of many examples of how technology already is enhancing the role traditional communities play in offering individuals the ability to choose their work setting while maintaining a reasonable pay scale.

A 2002 Internet and IT industry news story (Internet and IT, 2002) reported that U.S. adults think their quality of life would be improved if they could telecommute. A recent survey from the ITAA's Positively Broadband project, conducted by The Winston Group, found that 54% of U.S. adults believe that telecommuting would improve their quality of life. Additionally, 46% believe it would improve the quality of the work they produced.

Other practical applications deal with distance education, telemedicine, teleconferencing, precision agriculture, security, communications, and aging in place. The possibilities are as endless as the imagination and needs of each individual.

### Summary

In combing through the massive literature related to these facets of our modern world, one finds that there is a convergence of the three theories of quality of life, technology, and community. Recurring themes surface repeatedly and common themes and characteristics become more evident the longer one spends investigating the three as separate entities.

In presenting eCanada as a model case study for using technology to improve quality of life, an anonymous author writes, “Canada is arguably the most ‘wired’ country in the world when it comes to communications technology and its use. We also enjoy the best quality of life in the world. The two things [technology and quality of life] are definitely connected” (“eCanada,” 2002, p. 2). This study sought to discover whether this interrelatedness between technology and quality of life exists.

## CHAPTER III

### METHODOLOGY

This study was an identification and analysis of the technology use and quality of life of individuals in a rural West Texas community. The purpose of the study was to 1) identify the demographic characteristics and Internet/computer technology use of high school students, parents, and other adults, 2) describe the quality of life of high school students, parents, and other adults, and 3) examine the relationships among demographic characteristics, technology use, and quality of life. Descriptive-correlational research procedures were used to conduct this study.

Prior to embarking upon data collection, a proposal was submitted to the Office of Research Services at Texas Tech University. A copy of the data collection instruments and all cover letters to be used were sent with the proposal for review by an Internal Review Board (IRB). This process was to ensure that the research involved would pose no physical, mental, or emotional harm to those responding. Care was taken to include information in the cover letters noting that all answers would remain confidential and that no information would be reported that could lead to identification of any individual's answers. The IRB (Appendix M) also required that students younger than 18 years old have a permission slip (Appendix L) signed by their parent or legal guardian before being included in the study. Upon approval by Texas Tech University, a copy of the IRB form was forwarded to Texas A&M University for filing.

### Population and Sample

The target population for this study consisted of the residents of Littlefield, Texas (N=6,507). However, three strategies were used to draw samples from which to collect data. The first set of data was collected as a census of all Littlefield High School students (N=433). The second set of data was paired samples consisting of the students' parents, one data collection instrument being provided for each parent living in the home (N=866). The third set of data consisted of a random sample of all other residents of the city. City officials provided the city's water billing list, and the mayor approved use of and provided the Littlefield ISD tax roll. Duplicates were eliminated from these two lists, leaving 2,424 households. High school students/parents were deleted from the list (N=2,157) before drawing a random sample (n=326) from the remaining community population. In all, 326 households each received two questionnaires for a total of 652. Total number of questionnaires distributed was 1,951 with a return of 377 completed questionnaires from the three types of respondents—students, parents, and other community adults.

### Instrumentation

A descriptive-correlational design was used in this study. The four-page instrument used in this study consisted of two versions, an adolescent version (Appendix D) and an adult version (Appendix E). The instrument consisted of three sections. The first section, designed by the researcher, provided for the collection of descriptive personal, education and employment, and other demographic data. The second section

consisted of the Quality of Life Profile (QOLP) Adolescent or Adult version, a generic measure of well-being (Raphael, 1998). The third section designed by the researcher was an assessment of the participant's use of technology.

After submitting the data collection instruments to a panel of experts consisting of the researcher's doctoral committee for review, all of whom had engaged in similar types of research, the researcher pilot-tested the instruments with 30 students in Texas Tech's ACOM 2302 course—Scientific Communications in Agriculture and Natural Resources—for the adolescent version and various graduate students, faculty, and staff within the Department of Agricultural Education and Communications for the adult version. The instruments were revised as suggested by those pilot-testing the instruments.

#### Data Collection

Because the study involved individuals younger than 18, it was necessary to obtain a signed permission slip for the student to participate. The permission slips were dropped off at the school one week prior to data collection day with instructions for the students to return them to be eligible to participate in the study. The same day, prenotices (Appendix A) were mailed to the random sample of community participants. The Krejcie and Morgan (1970) table was used to determine that a sample of 326 was needed for an appropriate sample. Graph Pads QuickCalc random number generator (GraphPad Software, Inc., 2002) was used to accomplish random selection. A school roster of the 433 Littlefield High School students and their parents was used to eliminate duplication

from the city water bill list and tax roll lists to avoid the possibility of individuals being selected again.

Seven days later, social studies teachers at Littlefield High School administered the adolescent version of the Quality of Life Profile instrument to each student during social studies classes. A cover letter explaining the project and its significance to the community accompanied the questionnaires, along with a disclaimer that participation was voluntary.

Two adult questionnaires, one for each head of household in two-household families, went to each of the 326 households in the random sample. Self-addressed, stamped return envelopes were provided for the convenience of the respondents. The researcher adhered to Dillman's (2000) procedures for mail surveys in an effort to optimize returns. The questionnaire was accompanied by the cover letter in Appendix C. The process included a reminder in another seven days (Appendix F). The researcher worked with the university and the community to provide incentives that would help increase return rates.

As students and parents returned questionnaires, a school representative collected the questionnaires in a central location for pick-up by the researcher. Teachers were asked to remind the students each day to complete and return the packets. A raffle ticket, which qualified participants for a drawing for the incentives provided by the university and community, was removed from the packets and kept on file for a drawing conducted at the end of the project.

Following completion of the student questionnaires during the school day, packets containing two copies of the adult questionnaire were sent home with the students with a request to return the completed questionnaires in seven days. A cover letter, Appendix B, explaining the project and its significance to the community accompanied the questionnaires, along with disclaimer that participation was voluntary.

Prior to distributing the questionnaires to actual participants, the researcher conducted personal interviews with local media representatives to inform citizens of the study and its purpose. Articles appeared in the local newspaper, the *Lamb County Leader* (Appendix G), and the researcher joined the talk show host on radio station KZZN-1490AM to promote the return of completed questionnaires.

The school principal asked teachers to remind the students each day to have parents complete and return the packets. While waiting on survey returns, the researcher worked with the university and community to acquire door prizes for which participants qualified if they returned their questionnaires. One presentation to the local Rotary Club provided an overview of the study to local civic leaders. This local promotion was necessary to help ensure a higher rate of return.

### Data Analysis

All statistical analyses of the data were done using SPSS, Version 12.0. The QOLP yields scores for each domain and sub-domain with Importance scores serving as a weight for converting Satisfaction scores into quality of life scores where high satisfaction is indicated. Additionally, items rated as especially important produce

especially low quality of life scores where dissatisfaction is indicated. Items rated of less importance produce more moderate quality of life scores (Raphael, D'Amico, Brown, & Renwick, 1996). A reliability test was run on quality of life questions 1-54. The test yielded a Cronbach's Alpha of .965. This is in line with a study by Smith (1999) using the adult version of the QOLP which yielded a content validity of .96. A 2002 study in Floydada by Smith, Kistler, Williams, Edmiston, and Baker yielded a Cronbach's Alpha of .97 for content validity on the adolescent version of the QOLP.

Frequency distributions and descriptive statistics were computed to produce frequency tables for all survey items. The frequencies procedure provides statistics and graphical displays that are useful for describing many types of variables. Frequency counts, percentages, mean, median, mode, sum, standard deviation, variance, range, minimum and maximum values, standard error of the mean, and bar charts were used to report this analysis. Pearson product-moment and point biserial correlation were used to describe associations between pairs of variables. Effect sizes were calculated for all statistically significant correlations.

The research adhered to the Davis Convention (1971) to interpret effect size. Following are the verbal descriptions Davis attached to specific ranges of Pearson's Coefficient levels: 1) .70 or higher – very strong association, .50 to .69 – substantial association, .30 to .49 – moderate association, .10 to .29 – low association, and .01 to .09 – negligible association.

## CHAPTER IV

### FINDINGS AND DISCUSSION

The purpose of this study was to answer four research questions on demographics, use of technology, and quality of life as they related to a sample of high school students and their parents, and a separate random sample from the remaining residents of Littlefield, Texas. The questions were:

1. What are the demographic characteristics of high school students, parents, and other adults in Littlefield, Texas?
2. What is the technology use of students, parents, and other adults?
3. What is the quality of life of students, parents, and other adults?
4. Are there any relationships among the demographic characteristics, technology use, and quality of life of students, parents, and other adults?

This chapter reports the results of the study. The first section contains a description of the personal and situational characteristics of the survey participants. Section two contains information about the technology use of the participants. Section three describes the quality of life of participants. Section four reports the relationships among the demographic characteristics, technology use, and quality of life of the participants.

**Research Question 1: What are the demographics of the high school students, parents, and other adults in Littlefield, Texas?**

There were 377 responses to the data collection instrument used in the Littlefield technology study. Of this total, 126 were students, 141 were parents of students, and 110 were residents drawn at random from the remaining population of Littlefield.

Demographic information displayed in charts and tables in this section includes gender, age, grade level, ethnicity, marital status, number of children, number of children at home, annual salary, employment, and years of residence in Littlefield. Information for the respondents as a whole was reported for questions consistent for both adults and adolescents. Data appropriate only for adults and that appropriate only for adolescents were reported separately.

Gender

Table 4.1 provides an overview of responses by gender. Of the 377 participants, 203 (53.8%) were female and 174 (46.2 %) were male. These data track closely the patterns in the overall population of Littlefield. According to the U.S. Census Bureau, the population of Littlefield in the year 2000 was 6,507 with 52.6% being female and 48.4% being male.

Further analysis provided in Table 4.1 shows that the student participants (n=126) and the community participants (n=110) were equally divided based on gender with the student group consisting of 63 females (16.7%) and 63 males (16.7%) and the community group consisting of 55 females (14.6%) and 55 males (14.6%). Responses of parents

(n=141) differed somewhat in their make-up with 85 females (22.5%) and 56 males (14.9%).

Table 4.1. Composition of Gender of Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Gender					
	Female		Male		Total	
	N	%	N	%	N	%
Students	63	16.7%	63	16.7%	126	33.4%
Parents	85	22.5%	56	14.9%	141	37.4%
Community	55	14.6%	55	14.6%	110	29.2%
Total	203	53.8%	174	46.2%	377	100.0%

### Age

The mean age of the respondents to the Technology Use/Quality-of-Life instrument was 37.81 years with a standard deviation of .791. The youngest participant was 14 years old and the oldest was 91. For reporting purposes, a participant's age was recoded into five categories. The data show a distinct stratification of responses into three age brackets—14-19 years old (34.1%), 20-39 years old (20.9%), 30-49 years old (37.4%), and 50 years and older (28.5%). Table 4.2 gives further details of the three distinct sub-populations.

**Table 4.2. Detailed Information of Participants by Category Based on Age, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.**

Response Group	Age Categories				Total
	14 -19 N	20-39 N	40-59 N	>59 N	
Students	126				126
Parents		61	74	3	138
Community		16	36	53	105
Total	126	77	110	56	369

### Ethnicity

Participants were asked to select the ethnicity with which they most closely identified. Figure 4.3 contains details of the ethnicity of participants. Based on the analysis of descriptive statistics of all participants (N=375), a majority consisting of 204 (54.4%) of the respondents identified themselves as White; 156 ( 41.6 %), Hispanic; 6 (1.6%), African American; 4 (1.1%), Native American; and 5 (1.3%), other. The Hispanic population was more highly represented in the student and parent populations, but the trend reversed itself in the community respondents with a preponderance of white respondents, 89 (23.7%) and only 15, 2, 2, and 1 respondents in the Hispanic, African American, Native American, and other categories, respectively.

Table 4.3. Ethnic Backgrounds of Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Ethnicity					
	African American	Hispanic	Native American	White	Other	Total
	N	N	N	N	N	N
Students	2	65	1	56	2	126
Parents	2	76	1	59	2	140
Community	2	15	2	89	1	109
Total	6	156	4	204	5	375

### Marital Status

As shown in Table 4.4, only two (1.6%) students of the 126 answering this question reported being married. In the parent category (n=139), 114 (82%) were married, 15 (10.8%) were divorced, and 10 (7.19%) were single. Among community respondents (n=108), 76 (70.4%) were married, six (5.6%) were divorced, and 26 (24.1%) were single. The single status includes those who had never been married or who were widowed.

Table 4.4. Marital Status of Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Marital Status						Total	
	Single		Married		Divorced			
	N	%	N	%	N	%	N	%
Students	124	33.2%	2	.5%			126	33.8%
Parents	10	2.7%	114	30.6%	15	4.0%	139	37.3%
Community	26	7.0%	76	20.4%	6	1.6%	108	29.0%
Total	160	42.9%	192	51.5%	21	5.6%	373	100.0%

### Number of Brothers and Sisters/Children

The students were asked how many brothers and sisters they had. A combined statistic was calculated to transform this information into total number of siblings reported by participants.

Table 4.5. Number of Siblings of Students, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Number of Siblings	Student Responses	Valid Percent
0	9	7.2
1	36	28.8
2	32	25.6
3	24	19.2
4	5	4.0
5	7	5.6
6	6	4.8
7	2	1.6
8	3	2.4
11	1	.8
Total	125	100.0

Adults were asked two questions related to the number of children at home. First, they were asked how many children they had and then how many still lived at home. Information on number of children and number of children living at home is reported in Tables 4.6 and 4.7 respectively.

**Table 4.6. Number of Children of Parent Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.**

Response Group	Number of Children										Total
	0	1	2	3	4	5	6	7	9		
Parent	1	14	52	29	20	4	7	7	3	137	
Community	11	15	31	29	13	4	2	3	1	109	
	12	29	83	58	33	8	9	10	4	246	

Parent respondents report a higher number of children than other adults from the community. A large majority 85 of the other 109 adults in the community reported no children still living at home. Only six of the 137 parents did not have children still living at home. One might assume these were parents who were divorced or separated without custody of the children.

**Figure 4.7. Number of Children at Home for Parent and Other Community Adults, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.**

Response Group	Number of Children At Home									Total
	0	1	2	3	4	5	6	7		
Parent	6	38	45	22	12	9	4	1	137	
Community	85	7	10	4	3	0	0	0	109	
Total	91	45	55	26	15	9	4	1	246	

### Employment

As shown in Table 4.8, a majority, 191 (52.9%) of the 361 participants answering this question had jobs. Students reported the highest unemployment level, but perhaps

naturally so, because many of them had not yet reached the age of 15 which qualified them legally for employment by the public sector. Even so, 33 students (9.1%) reported having jobs. Parents had the highest employment with 107 (29.6%) having jobs, 25 (6.9%) being unemployed, and 3 (.8%) being retired. Community participants showed 51 (14.1%) employed, 18 (5.0%) unemployed, and 38 (10.5%) retired.

Table 4.8. Employment Status of Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Employment						Total			
	No		Yes		Retired					
	N	%	N	%	N	%				
Students	86	23.8%	33	9.1%			119	33.0%		
Parents	25	6.9%	107	29.6%	3	.8%	135	37.4%		
Community	18	5.0%	51	14.1%	38	10.5%	107	29.6%		
Total	129	35.7%	191	52.9%	41	11.4%	361	100.0%		

### Salary

Salaries of participants were, by far, on the lower end of the salary scale (Table 4.9). Fewer than half of the participants responded to this question, but it is interesting to note that income figures for these participants fell behind the income trends for users reported in the August 2000 U.S. Census Report included in Appendix K.

Table 4.9. Salary Ranges of Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Salary						Total
	< \$20,000	\$20,000- 29,999	\$30,000- 39,999	\$40,000- 49,999	\$50,000 +		
	N	N	N	N	N		
Students	30						30
Parents	41	24	21	19	10	115	
Community	34	23	10	7	17	91	
Total	105	47	31	26	27	236	

#### Years in Littlefield

A large majority of students reported (Table 4.10) they had lived in Littlefield 11 to 20 years, which means they had lived in Littlefield all or most of their lives. Forty-nine (36.0%) of the 136 respondents indicated they had lived in Littlefield only 1-10 years, which means that much of the parent population was relatively new to Littlefield. Other community respondents reported the highest longevity with 70 (66.7%) of the 105 having lived in Littlefield more than 20 years.

Table 4.10. Number of Years Lived in Littlefield, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Years in Littlefield						Total
	1-10	11-20	21-30	31-40	41-50	>50	
	N	N	N	N	N	N	
Students	38	84					122
Parents	49	26	21	28	12		136
Community	19	16	14	14	17	25	105
Total	106	126	35	42	29	25	363

**Research Question 2: What is the technology use of students, parents, and other adults?**

The first set of technology-use data centered around a question created by the researcher for convenience in determining whether participants had access to computers only or computer and Internet access. In this study, access to both computers and the Internet defines the term “technology use.” If the participant indicated having access to computers on Computer Use questions 1, 2, 3, or 4, but not on Internet Use questions 1, 2, 3, or 4, they were described as having computer access only. If the participant responded favorably to any of the Internet access questions, they were assumed to have access to a computer also (computer + Internet = technology).

**Computer Access Only**

Access to computers seemed relatively high in Littlefield. Considering all possibilities for computers at home, work, and school, 284 (75.3%) of the respondents reported they had access to a computer. The highest percentage, when isolated by category (Table 4.11), was that of the students with 123 of the 126 (97.6%) respondents reporting access in one of the three places. This appeared to be a logical result because the school had computers onsite. However, an interview with Littlefield’s technology specialist revealed that there were only two computer labs with 15 computers each that could be used on the students’ own time with permission from a teacher, and 20 computers in the vocational education building for which the teacher had to sign up students. The school library housed 15 additional computers, that were of limited access to students because of the large number of students needing to use the same library for

research as well as strict rules about use of library computers established by the “gatekeeper.”

Parent access to computers was the next highest category with 102 (72.3%) of the 141 answering this question reporting access to computers in some location. The Littlefield technology specialist indicated that there were 10 computers at the Lamb County Library. Other adults in the community reported much lower computer access with only 59 (53.6%) of the 110 respondents having access to a computer.

Table 4.11. Number of Participants Reporting Access to a Computer,  
Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Use Computer					
	No		Yes		Total	
	N	%	N	%	N	%
Students	3	.8%	123	32.6%	126	33.4%
Parents	39	10.3%	102	27.1%	141	37.4%
Community	51	13.5%	59	15.6%	110	29.2%
Total	93	24.7%	284	75.3%	377	100.0%

#### Weekly Hours of Computer Use

On average students reported 4.48 hours of computer use weekly at home, less than one hour at work, and 3.29 hours at school. Table 4.12 also shows the minimum and maximum hours of computer use weekly at home, work, and school.

**Table 4.12. Number of Hours Weekly Students Use Computers by Location of Computer, Quality-of-Life Study, Littlefield, Texas, 2004.**

Location	N	Minimum	Maximum	Mean	Std. Deviation
Home	117	.00	42.00	4.48	6.48
Work	117	.00	15.00	.74	2.78
School	118	.00	60.00	3.29	6.29

Parents reported a higher number of hours of computer use than students with a higher average at work (10.74 hours) and 5.38 hours at home. Table 4.13 gives the details of parent use of computers by location.

**Table 4.13. Number of Hours Weekly Parents Use Computers by Location of Computer, Quality-of-Life Study, Littlefield, Texas, 2004.**

Location	N	Minimum	Maximum	Mean	Std. Deviation
Home	101	.00	70.00	5.38	10.09
Work	100	.00	48.00	10.74	13.67
School	99	.00	17.00	.37	2.13

Others adults reported the highest average weekly computer use with near-equal means of 8.63 hours at home and 8.83 hours at work. Table 4.14 shows the lowest use at school. This low mean is accounted for because most of these respondents are in the older age bracket and have completed school.

**Table 4.14. Number of Hours Weekly Computer Use of Other Adults by Location of Computer, Quality-of-Life Study, Littlefield, Texas, 2004.**

Location	N	Minimum	Maximum	Mean	Std. Deviation
Home	60	.00	40.00	8.63	10.16
Work	60	.00	60.00	8.83	13.29
School	60	.00	7.00	.35	1.27

### Internet Access

Again, for ease of reporting mere access to the Internet, the researcher created a new variable indicating whether respondents had Internet access at home, work, or school. If so, an automatic response of yes was recorded to the new variable indicating Internet access. The respondents to the Internet access question (Table 4.15) had a high rate of access with 268 (72.2%) of the total respondents having Internet access of some kind. Within sub-categories by response type, students had the highest rate of access with 96 percent of the students having Internet access. Parents followed in their rate of access with 67.6% of the parents responding that they had Internet access, and 50.9% of the adults in the remainder of the community sample had Internet access.

**Table 4.15.** Number of Participants Indicating Access to Internet in Any Location by Response Type, Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Internet Access					
	No		Yes		Total	
	N	%	N	%	N	%
Students	5	4.0%	119	96.0%	124	100.0%
Parents	45	32.4%	94	67.6%	139	100.0%
Community	53	49.1%	55	50.9%	108	100.0%
Total	103	27.8%	268	72.2%	371	100.0%

It is important to note that merely having Internet access does not provide a complete nor accurate measure of Internet use by the participants. An additional question on the data collection instrument asked respondents to estimate the number of hours per week they used the Internet at home, work, and school. Table 4.16 shows that the average number of hours per week reported by students at school was 5.8 hours (n=112) with the most use by any one respondent being 96 hours. Work use (n=111) was the lowest at .34 hours and school Internet use (n=112) was between home and work at 2.8 hours.

**Table 4.16.** Weekly Internet Use of Students by Location of Internet Connection, Quality-of-Life Study, Littlefield, Texas, 2004.

Location	N	Minimum	Maximum	Mean	Std. Deviation
Home	112	.00	96.00	5.78	11.90
Work	111	.00	15.00	.34	1.83
School	112	.00	20.00	2.80	3.26

Parent category respondents (Table 4.17) reported a mean of 4.3 hours weekly Internet use at home with one participant using the Internet 70 hours per week at home. Internet use at work came in second with an average of 3.7 hours per week and a maximum of 40 hours. Because it was likely that few parents actually attended school, Internet use at school was the lowest for this group of respondents with an average of .12 hours weekly Internet use.

Table 4.17. Weekly Internet Use by Parents by Location of Internet Connection, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Location	N	Minimum	Maximum	Mean	Std. Deviation
Home	94	.00	70.00	4.34	9.02
Work	94	.00	40.00	3.72	7.61
School	94	.00	5.00	.12	.67

Adults in the sample (Table 4.18) from the remaining community population (n=54) reported a mean of 6.9 hours of Internet use at home and 4.1 hours of Internet use at work with the maximum being 35 hours. School Internet use was the lowest for this group (n=55), probably because few in the upper age brackets still attend school.

**Table 4.18. Weekly Internet Use by Other Adults in the Community by Location of Internet Connection, Quality-of-Life Study, Littlefield, Texas, 2004.**

Location	N	Minimum	Maximum	Mean	Std. Deviation
Home	54	.00	35.00	6.90	8.78
Work	54	.00	35.00	4.13	8.31
School	55	.00	8.00	.24	1.17

Both the literature and practical observation bear out the fact that computer use alone is no longer considered full use of technology. The widespread and ever-increasing use of the Internet makes it an integral part of everyday life. Technology use for purposes of this study is the combined hours of weekly computer and Internet use. Responses were included only if respondents indicated hours of computer use and hours of Internet use per week. Otherwise, the response was reported by SPSS as a missing value. This accounts for the high number, 126, of missing values in this computation.

For ease of reporting, hours of weekly technology use were grouped into ranges based on clustering patterns of the incoming data. The researcher cautions that because these categories are not based on literature, they should be used for comparative purpose among the respondents of this study. Labels are as follows:

1. Very Low Use = Fewer than 7 hours weekly
2. Low Use = 7.01 to 14 hours weekly
3. Medium Use = 14.01 to 25 hours weekly
4. High Use = 25.01 to 50 hours weekly
5. Very High Use = More than 50 hours weekly

Descriptive statistics for technology use by students, parents, and other adults in the community illustrate how responses varied by category. The 107 student respondents showed a mean of 18 hours (medium use) total technology hours per week with a minimum of one hour (very low use) and a maximum of 102 hours (very high use). The most frequent response was 3 hours which falls into the very low use range.

The 91 parents responding to this question, use technology an average of 26 hours (high use), a minimum of zero hours (very low use), and a maximum of 160 hours (very high use). The most frequent response was 2 hours (very low use).

Other adults in the community (n=53) reported an average of 30.06 hours (high use) of technology use, with a minimum of zero hours per week (very low use), and a maximum of 105 hours (very high use). The most frequent response was 4 hours (very low use).

Somewhat surprising, according to conventional wisdom, but bearing out the literature, the older respondents, which comprised the other adults category, are more reluctant to embrace or use technology initially. However, once they have begun to use technology, their usage is higher than that of younger members of the population.

This division also provides for a clean graphic view of technology use by category. Figure 4.1 provides a breakdown overall and by category of total hours of technology use per week reported as a percentage of those responding in each response type. Student participants tended to have low technology use which runs contrary to popular belief, but falls in line with national data shown in Appendix K.

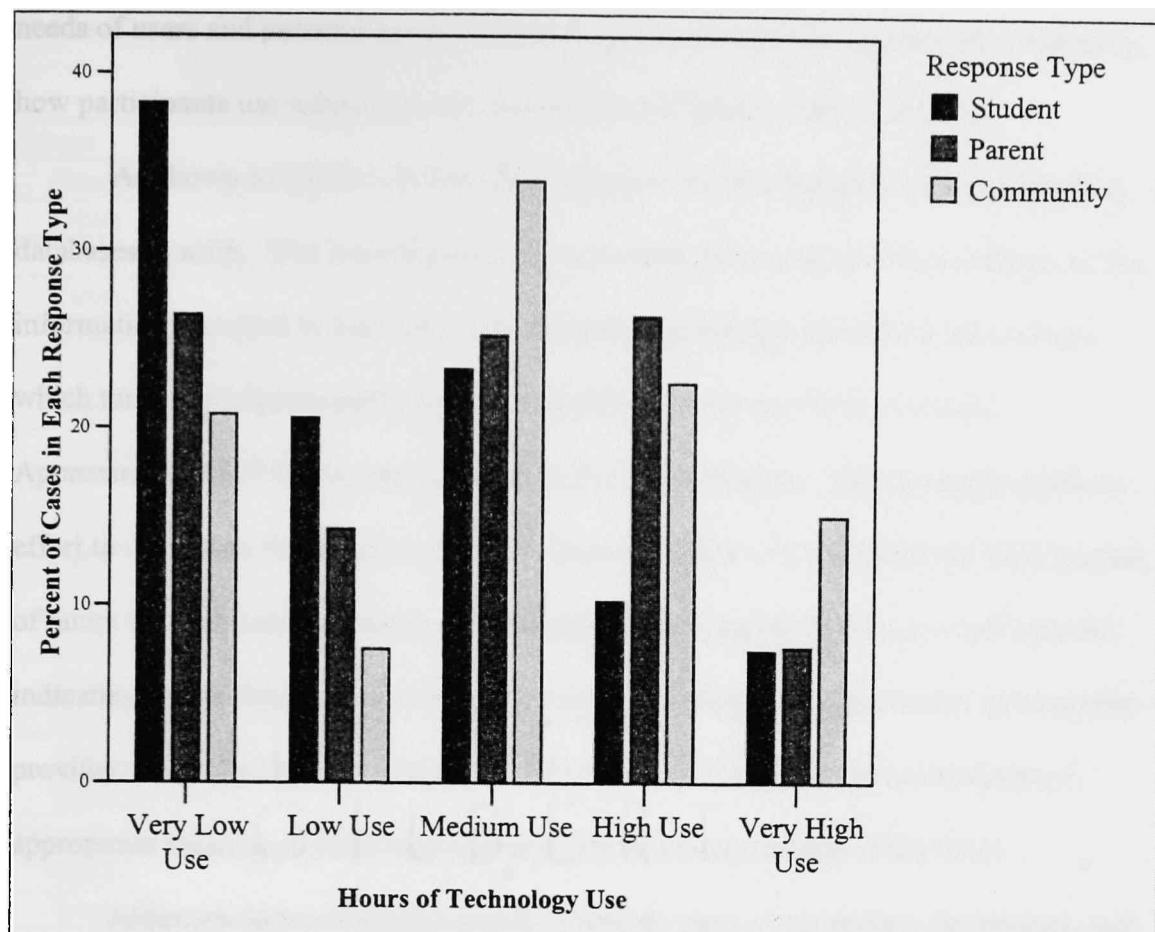


Figure 4.1. Hours of Technology Use in Ranges by Response Type for All Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Uses and Gratifications theory supposes that users will seek out the medium that best delivers the message or service that will satisfy the need of that individual. Table 4.20 lists the number of hours that respondents reported they use computers for various tasks. This information was collected at the request of the Littlefield City Technology and Community Development Specialist and the Littlefield Independent School District's Technology Specialist. In an effort to target technology education and training to the

needs of users and potential users, this information is important baseline data indicating how participants use computers for various tasks at home, work, and school.

As shown in Table 4.20, the most frequent use of computers was for compiling databases at work. The least frequent use was financial records at school. Based on the information provided in that table, educators and technology specialists can evaluate which tasks participants perform most frequently—at home, work, or school. Approximately 820 hours were reported in the other category. The researcher made no effort to determine the specifics for this response. Table 4.21 combines the total number of hours for each task. Analysis of these data brought games to the top of the uses list, indicating that technology can be and is, with the participants of this study, an important provider of leisure and entertainment. This in turn will assist in the development of appropriate training on skills that will meet the needs and desires of the users.

Although determining the details of specific uses of computers, the Internet, and their related software packages, researchers have on hand a rich collection of data that will be provided to Littlefield Independent School District and the City of Littlefield technology specialist. The details of the quantitative data collected along with additional qualitative research and pilot studies will allow the community to plan for additional training and will provide support for writing of grants to secure funding for additional technological hardware and software.

Table 4.19. Combined Hours of Computer Use by All Participants by Location and Task in Rank Order of Hours, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

<b>Home</b>	<b>Total Hours at Home – 1,463</b>
Games	500
Other	384
Word Processing	201
Financial	116
Graphic Design	93
Visual Presentations	57
Web Design	56
Databases Home	56
<b>Work</b>	<b>Total Hours at Work – 1,712</b>
Databases	619
Other	343
Word Processing	333
Financial	213
Games	101
Web Design	49
Visual Presentations	38
Graphic Design	16
<b>School</b>	<b>Total Hours at School – 609</b>
Games	163
Word Processing	107
Other	94
Graphic Design	90
Web Design	89
Visual Presentations	42
Databases	21
Financial	3
<b>Overall Total of Hours</b>	<b>3,784</b>

If home, work, and school uses of computers were combined based on task, the rank order changes as shown in Table 4.20.

Table 4.20. Rank Order of Tasks When Hours at Home, Work, and School are Combined for Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

<b>Task</b>	<b>Total of All Hours</b>
Other	820.50
Games	764.17
Databases	694.50
Word Processing	640.80
Financial Records	331.50
Graphic Design	198.50
Web Design	194.00
Visual Presentations	137.00

#### Most Frequently Used Programs

Respondents were asked to choose all software programs that they use and could choose as many as were applicable to their situation. Frequencies were run to determine which programs were used by the participants. Table 4.21 displays the software packets used by all participants of the study.

Table 4.21. Software Used by All Respondents Listed in Rank Order, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

<b>Software Program</b>	<b>Frequency (N)</b>
MS Word	172
Internet Explorer	132
America Online	117
PowerPoint	103
Excel	101
Adobe Acrobat	74
Word Perfect	68
PhotoShop	66

Table 4.21. Continued.

Publisher	60
MS Outlook	47
FrontPage	44
Netscape	39
Access	37
Quicken	31
TurboTax	16
PageMaker	14
AutoCad	12
Dreamweaver	11
Fax Software	11
FileMaker	11
CorelDraw	9
Quickbooks	8
MS Exchange	7
Illustrator	6
GoLive	3
QuarkXpress	1
Other	See Appendix I for Listing

### Internet Speed

Literature is replete with examples of the benefits of broadband Internet access over dial-up. After noting in the questionnaire that dial-up was defined as 56K or less and broadband was defined as a connection speed of 200K or greater, respondents were asked to report what type Internet access they had at home, work, and school. Responses to this question (Table 4.22) indicated that only a small number of Littlefield residents had broadband Internet connections at home—nine students, six parents, and seven other adults from the community—for a total of 22 or 8% of the 266 responding. This compared to 145 or 54.5% reporting dial-up. Even lumping those who said they did not

know what type of Internet access they had, frequency of broadband at home is less than half that of dial-up.

Table 4.22. Speed of Internet Connection at Home for Students, Parents, and Community, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Internet Access Home				Total
	None	Dial-up	Broadband	Don't Know	
	N	N	N	N	
Students	32	49	9	28	118
Parents	13	66	6	10	95
Community	10	30	7	6	53
Total	55	145	22	44	266

Broadband Internet access at work declined for students but was much more prevalent among parents and increased slightly for other adults in the community. Although the number of respondents reporting broadband Internet access at work almost doubled over those reporting broadband access at home, the number having no access at work showed a significant increase—154 at work compared with 55 at home—as shown in Table 4.23.

Table 4.23. Speed of Internet Connection at Work for Students, Parents, and Community, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Internet Access Work				Total
	None N	Dial-up N	Broadband N	Don't know N	
Students	93	5	2	18	118
Parents	35	16	26	17	94
Community	26	6	12	9	53
Total	154	27	40	44	265

Although Internet connection at school relates mostly to students, the researcher reports the data here for sake of consistency. Table 4.24 indicates that 80 students did not know that they had access to broadband at school and 10 thought they had none or are simply not allowed to access it. Only 12 students and 2 parents reported they had access to broadband at school.

Table 4.24. Speed of Internet Access at School, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Response Group	Internet Access School				Total
	None N	Dial-up N	Broadband N	Don't know N	
Students	10	15	12	80	117
Parents	85	1	2	6	94
Community	49	1	0	3	53
Total	144	17	14	89	264

### Internet Source

A personal interview with Littlefield's community development and technology manager reveals that there are seven providers of Internet access in the community. Combining customers of each provider at home, work, and school, the providers ranked as follows: 1) America Online (n=133), 2) The Door (n=50), 3) MSN (n=41), 4) Other (n=36), 5) NTS (n=17), 6) SBC Yahoo (n=13), 7) Earthlink (n=9), and 8) Wal-mart (n=4).

The final question on the Littlefield Quality of Life data-collection instrument asked participants to indicate the number of hours they used the Internet for various tasks at home, work, and school (Table 4.25). As the literature predicted, participants used the Internet for email purposes more than any other use, which indicates an interest in communication and socialization.

Table 4.25. Internet Uses in Rank Order by Number of Hours Participants Used the Internet for Given Tasks at Home, Work, and School Combined, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

<b>Task</b>	<b>Combined Hours Per Week</b>
Email	897
Games	601
Research	599
Music/Entertainment	345

Table 4.25. Continued.

Task	Combined Hours Per Week
Social (Chat and Instant Messenger)	317
Other	184
Medical Information	142
E-commerce (selling)	88
Video Conferencing	71
Travel Info/Reservations	66
E-commerce (buying)	57
Online Banking	55
Genealogy	19

**Research Question 3: What is the quality of life of students, parents, and other adults?**

Quality of life scores were computed using importance and satisfaction scores for each of the 54 aspects of life. Quality of life scores were computed as follows:  $[QOL=(importance/3) * (satisfaction\ score-3)]$  with quality of life scores ranging from -3.33 (not at all satisfied with extremely important issues) to 3.33 (extremely satisfied with very important issues). Importance scores serve as a weight for converting satisfaction scores into quality of life scores. Items rated as particularly important produce especially high quality of life scores where high satisfaction is indicated. Similarly, items rated as particularly important produce especially low quality of life scores where lack of satisfaction is indicated (Raphael & D'Amico, 1996).

Quality of life scores above 0 reflect a positive quality of life, while those below 0 reflect a negative quality. Overall quality of life scores greater than 1.50 are considered

excellent scores. Scores from .51 to 1.50 indicate a very acceptable quality of life. Scores from -.51 to .50 reflect an adequate quality of life. Scores of -.51 to -1.50 indicate problematic quality of life, while scores less than -1.50 are very problematic (Quality of Life Research Unit, 1998).

Figure 4.2 is a graph of the quality of life levels for all respondents which indicated that the participants of this study had a positive view of their quality of life as measured by the QOLP. Of the 377 individuals participating in this study, only three individuals, one in each of the student, parent, and other community adult categories, considered their quality of life problematic. There were no responses in the very problematic category. Overall quality of life scores were generated for 116 (34.1%) students, 132 (38.8%) parents, and 92 (27.1%) other adults in the community for a total of 340 (90.2%). There were 22 (19%) students, 14 (10.6%) parents, and 10 (9.2%) other adults for a total of 46 (13.5%) with scores in the adequate category. Of the 142 (41.8%) scores at the very adequate level, 45 (31.7%) were students, 56 (39.4%) were parents, and 41 (28.9%) were other adults in the community. Excellent scores numbered 149 (43.8%), and consisted of 48 (32.2%) students, 61 (40.9%) parents, and 40 (26.8%) other adults in the community.

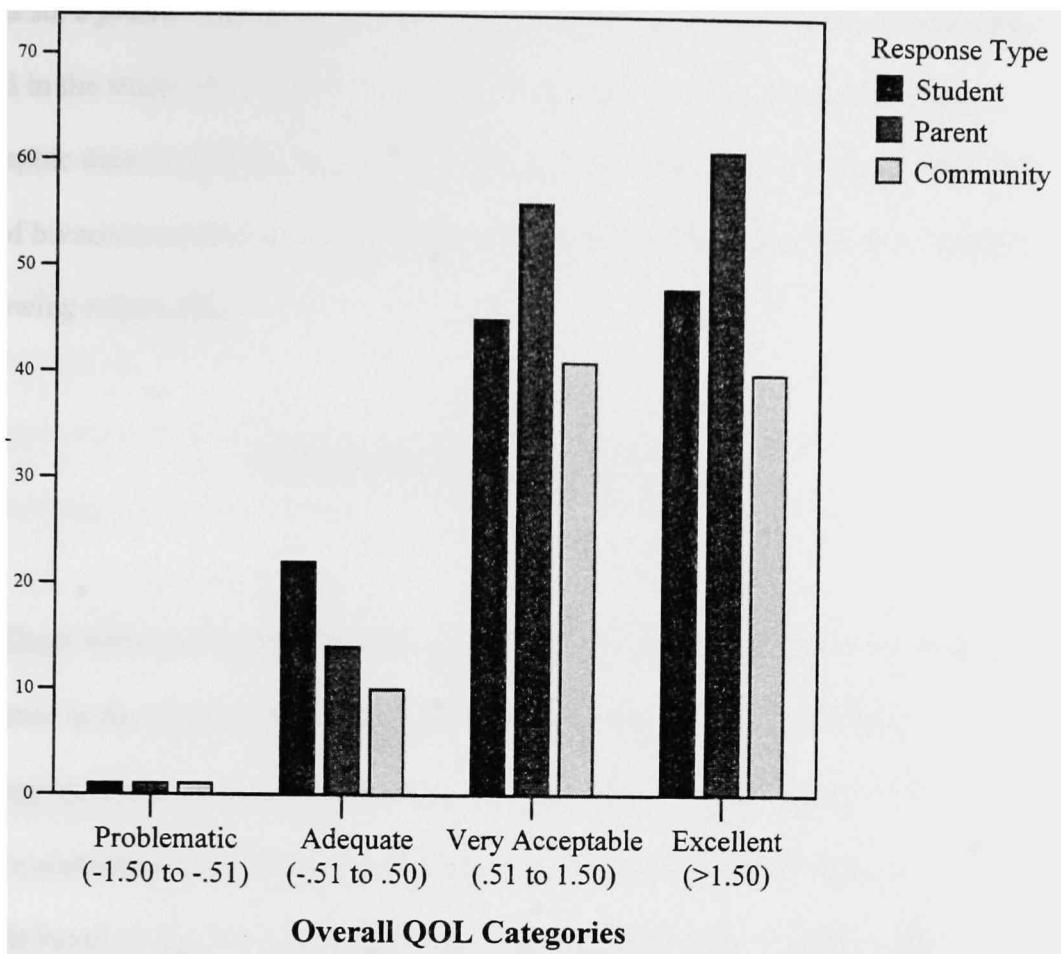


Figure 4.2. Quality of Life Scores by Response Category, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

**Research Question 4: Are there any relationships among the demographic characteristics, technology use, and quality of life of students, parents, and other adults and quality of life?**

Bivariate correlational analyses were run to determine if there were relationships among demographic variables, technology use, and quality of life. Characteristics included in the analyses were gender, age, ethnicity, marital status, number of children, number of children at home, annual salary, and employment status; a significance level of

<.05 was set *a priori*. Because of the apparent differences among the three populations involved in the study, each group was analyzed separately. Correlations between all demographic data, technology use, and overall quality of life scores were generated. The results of bivariate correlation analysis and the strength of those correlations resulted in the following relationships.

### Demographics and Technology Use

#### Gender

There were no correlations between gender and technology use at <.05 level of significance in the analysis of all participant, student, and parent data. Weekly technology use for community participants was positively related to gender with a Pearson's correlation coefficient of  $r = .023$  and an effect size of 0.046 which is negligible based on the Davis Convention of reporting effect size. Coding of this question using 0 for female and 1 for male means that males among the adult community respondents used technology more hours per week than the females in that category.

#### Age

Among the student population there was a negative correlation between age and Internet access at home ( $r = -.202$ ), a low negative association at the .05 level. The younger the participants, the more likely they were to have Internet at home.

There were no significant correlations for parents based on age. However, community participants showed a negative correlation ( $r = -.488$ ) significant at the .01

level with a very strong negative association (effect size = -1.12) between age and access to technology.

#### Grade

This factor applies to student participants only and indicates a negative correlation between grade and Internet access speed at home. The lower the grade, the more likely the students are to have broadband Internet access at home. Correlations between grade and technology use of student participants yielded a Pearson correlation coefficient of -.265 at the , $<.01$  level with an effect size of -0.55 which is a substantial negative association.

#### Interest in College Degree

Only student participants were asked to complete the question, “Are you interested in getting a college degree when you finish high school?” Yes=1 and No=0. Therefore, the positive correlation indicated that those interested in a college degree were more likely to have Internet access. Correlations between demographic data and technology use of student participants based on their desire to pursue a college degree yielded a Pearson’s correlation of .194 at the  $<.05$  level of significance and effect size of .40 indicating a moderate association.

### Number of Children

For parent participants, there is a negative correlation ( $r = -.323$ ), i.e., the more children a respondent had, the less likely the respondent was to use technology. This relationship was significant at the .01 level and exhibited a substantial association (effect size =  $-.68$ ).

### Number of Siblings

Because no student indicated having children, the researcher looked at the number of siblings the respondent had. A negative correlation existed between the number of brothers and sisters and high-speed Internet access at home ( $r = -.203$  at the  $<.05$  level of significance). The more siblings, the less likely the individual was to have Internet access at home. The effect of siblings on high-speed Internet at home was moderate at  $.42$ .

### Salary

Parents showed a positive correlation between salary and technology use. Merely having access to technology was positively correlated ( $r = .241$ ) significant at the .01 level with a substantial association (effect size =  $.50$ ).

### Employment

The 134 parents who answered this question reflected a positive correlation with simply having a job and having access to technology. Pearson's coefficient for this

relationship ( $r = .363$ ) was significant at the .01 level with a very strong association between the two (effect size = .78).

More hours worked per week indicated a greater use of technology. There was no correlation between salary and technology use among community participants. However, having a job was negatively correlated at the  $<.05$  level of significance. For those who did have a job, the more hours worked the greater likelihood they would have access to both computers and the Internet and use them for a greater number of hours during the week. Such was the case with community participants.

Table 4.26 shows for parent respondents that the more hours they work per week, the more likely they are to have access to technology and the Internet. The respondents show a positive correlation at the .01 level of significance for technology and Internet only. This association was substantial for having technology access and very strong for Internet access.

Table 4.26. Correlations Between Hours in Work Week and Technology Use of Parent Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Variable	Pearson Correlation	Sig. (2-tailed)	N	Effect Size
Technology Use Yes=1 or No=0	.303**	.001	126	0.64
Internet Access Yes=1 or No=0	.336**	.000	126	0.71

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Table 4.27 indicates a negative relationship significant at the .05 level with substantial effect between having a job, employment status, and having access to technology. The same holds true for Internet access.

Table 4.27. Correlations Between Employment Status and Technology Use of Community Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Variable	Pearson Correlation	Sig. (2-tailed)	N	Effect Size
Technology Use Yes=1 or No=0	.244*	.012	105	-0.50
Internet Access Yes=1 or No=0	-.237*	.015	105	-0.48

\* Correlation is significant at the 0.05 level (2-tailed).

Among community participants, if an individual has access to technology, the numbers of hours in a work week will increase for that individual. Table 4.28 shows a positive correlation between having access to technology and the number of hours in a work week at the .01 level of significance ( $r = .299$ ) with a substantial association between the two. The same holds true for Internet access ( $r = .277$ ).

Table 4.28. Correlations Between Hours in Work Week and Technology Use of Community Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Variable	Pearson Correlation	Sig. (2-tailed)	N	Effect Size
Technology Use Yes=1 or No=0	.299**	.003	97	0.63
Internet Access Yes=1 or No=0	.277**	.006	97	0.58

\*\* Correlation is significant at the 0.01 level (2-tailed).

Age and years lived in Littlefield were closely related. Therefore, the findings from the correlation between age and technology use and years in Littlefield and technology use show similarities in their negative correlation. The older a person is or the more years that person has lived in Littlefield, the less likely he or she is to have and use technology. However, the speed of Internet access at work showed to be accessible at a higher speed for those having lived in Littlefield longer.

Table 4.29 shows a negative correlation at the .01 level of significance between years lived in Littlefield and the likelihood of the respondent having access to technology and the Internet only. There is a very strong negative association between number of years lived in Littlefield and having access to technology.

**Table 4.29. Correlations Between Years Lived in Littlefield and Technology Use of Community Participants, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.**

Variable	Pearson Correlation	Sig. (2-tailed)	N	Effect Size
Technology Use Yes=1 or No=0	-.444**	.000	103	-0.99
Internet Access Yes=1 or No=0	-.457**	.000	103	-1.03

\*\* Correlation is significant at the 0.01 level (2-tailed).

### Demographics and Quality of Life

Significant correlations between demographic characteristics of participants and their reported quality of life are few. The four characteristics that seem to influence how participants viewed their quality of life were age, grade, number of children, and employment. Each of these had varying effects on the combined and separate population

statistics. The following are tables reflecting the correlations between demographic characteristics and quality of life for the citizens of Littlefield, Texas. Only significant correlations have been reported. It is important to note before reading this section that there were no significant relationships between any demographic characteristic and quality of life among parent participants.

#### Age

Among other adults in the community there existed a positive correlation between age and quality of life. The older an individual is, the higher that person's quality of life score. Pearson's correlation coefficient for this relationship was significant at the .05 level ( $r = .244$ ) with a substantial association of .50.

#### Grade

Students showed a very strong negative association between grade and quality of life. The older students exhibited lower quality of life scores. Significant at the .01 level ( $r = -.475$ ), the 103 students responding to this question indicated a very strong negative association between age and quality of life

#### Number of Children

Among adults in the community, there existed a moderate association between number of children and quality of life. Pearson's correlation for these variables was .214 and significant at the .05 level.

## Employment

Other adults in the community scored higher on quality of life if they had a job. This correlation was significant at the .05 level ( $r = .217$ ) and showed a moderate association (.45) between quality of life and employment.

## Use of Technology and Quality of Life

There were no significant relationships at the  $<.05$  level among student participants of the Littlefield study. Significant correlations among other categories of participants did exist, but were very sparse.

Parent participants showed a positive correlation between having high-speed or broadband Internet access at home and quality of life with significance at the .01 level  $r = .280$ ). The association between the two variables was substantial (effect size=.58)

Table 4.30 indicates that among other adults in the community having access to technology was negatively correlated with quality of life. This negative correlation measured in a Pearson's coefficient of -.273 at the .01 level with a substantial association (effect size = -.57). Alternatively, as hours of Internet use at work increased, so did quality of life ( $r = .321$ ) at the .05 level of significance with a substantial association between the two (Effect size = .68). However, because hours of Internet use at work were positively correlated with the hours in an individuals' work week, it would be presumptuous to assume a cause and effect relationship between Internet hours at work and quality of life.

Other adults in the community showed a very strong association between high-speed Internet access at home and quality of life. The correlation was .335 at the .05 level of significance and a very strong association (effect size = .71).

Table 4.30. Relationships Among Technology Use and Quality of Life for Community, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.

Variable	Pearson Correlation	Sig. (2-tailed)	N	Effect Size
Internet Access at Home (speed)	.335*	.017	50	0.71
Internet Hours at Work	.321*	.022	51	0.68
Technology Use Yes=1 No=0	-.273**	.008	93	-0.57

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Based on the findings reported in this chapter, Chapter V will summarize the resultant conclusions and implications of the study as well as recommendations for further research. It will further reveal a model depicting the convergence of the concepts of community, technology, and quality of life, that emerged as common themes of the findings of the study and the literature review reported in Chapter II.

## CHAPTER V

### SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

#### Summary

The researcher examined proposed variables of the quality of life of a select sample of students, parents, and other adults in Littlefield, Texas. Participants completed the Quality of Life Profile (a generic measure of well-being developed by the Quality of Life Research Unit in Toronto, Canada) in order to generate relevant data for this study. Additional data were collected to include descriptive personal, education, employment, salary, tenure of residence in Littlefield, and technology use—both quantity and quality (Appendices A and B).

The purposes of this study were to: 1) identify the demographic characteristics and Internet/computer technology use of high school students, parents, and other adults, 2) describe the quality of life of high school students, parents, and other adults, and 3) examine the relationship among demographic characteristics, technology use, and quality of life as perceived by individuals in the community. Proposed variables included gender, age, ethnicity, marital status, number of children, employment, salary, and years lived in Littlefield, Texas. Another purpose was to measure the technology use in the community based on computer and Internet use. For purposes of this study, the researcher defined the overall meaning of access to technology as individuals having access to a computer and the Internet.

The guiding theoretical framework for “quality of life” in the context of this research was defined as an overall general well-being comprised of both objective and subjective evaluations of physical, material, social, and emotional well-being, together with the degree to which individuals enjoy the important possibilities of their lives, or “how good is your life for you?” (Renwick & Brown, 1996).

The research focused on an individual’s possibilities in three fundamental areas of life common to all human beings, which are essential dimensions of the human experience. These three life domains are being, belonging, and becoming (Raphael, Renwick, Brown, & Rootman, 1994). Being reflects who one is as an individual and has three subdomains: physical, psychological, and spiritual being. Belonging refers to the ties that individuals have with their physical environment. This domain also has three subdomains: physical, psychological, and spiritual being. Belonging refers to the ties individuals have with their physical environment. This domain also has three subdomains: physical, social, and community. The third domain, becoming, focuses on purposeful activity in which individuals engage in an attempt to accomplish goals, aspirations, and hopes. Becoming also includes three subdomains: practical, leisure, and growth (Raphael, Renwick et al., 1994).

The following assumptions were used for this study: 1) the concept of quality of life applies to all human beings; 2) an individual’s quality of life is subject to change; 3) quality of life considers all aspects of an individual’s life, whether physical, psychological, social, or spiritual; 4) the components of quality of life, those things constituting our human condition, are common for all individuals; 5) the interaction

between the individual and the environment of the individual is vital in determination of quality of life; 6) measurement of quality of life includes both objective life conditions and subjective evaluations that individuals impose on their current circumstances; and 7) the individual's perspective is emphasized as a measure of quality of life.

The population for this study consisted of citizens of Littlefield, Texas, namely high school students and their parents, and members of the remaining population. A census of the high school students was attempted with the caveat that students had to return a signed permission slip in order to participate. After completing during their social studies period an adolescent version of a pretested instrument designed by researchers at the Center for Quality of Life in Toronto, Canada, students were asked to take home a packet with adult versions of the quality of life profile (QOL) for their mothers and fathers. During the same day, questionnaires were mailed to a random sample of the remaining population. Tax rolls and water hook-up records with duplication eliminated from each were combined, and a random number generator was used to choose 326 individuals to participate.

Prenotices, cover letters, distribution of questionnaires, and follow-ups were distributed approximately seven days apart based on the Dillman (2000) Tailored Design Method. Various procedures such as offering incentives, promoting the project with local media, and appealing to the participants' sense of community were enlisted as part of Dillman's recommended survey methods. The population of Littlefield was 6,507 at the time of this study. For purposes of calculating percent return, the researcher assumed the ideal 100% attendance at school on the survey day and that all 433 students had the

opportunity to complete the questionnaire in class under the direction of their social studies teachers. Parents were provided 866 questionnaires, one for the mother and another for the father of each of the 433 students. Three hundred twenty-six (326) households each received two questionnaires for a total of 652. Total number of questionnaires distributed was 1,951 with a return of 377 completed questionnaires from the three types of respondents—students (126), parents (141), and community (110)—for a 19.3 percent total return. Because of the low return, the results of this study cannot be generalized to the entire population of Littlefield, but only represent a description of those returning the questionnaire. And, because of the clear stratification of the results from the three audiences upon analysis of the data, statistics for each group were analyzed separately, and compared with each other.

### Conclusions

To begin, the researcher examined internal consistency coefficients, Cronbach's alpha, for quality of life questions 1-54. The test yielded a Cronbach's alpha of .965. Frequency distributions and descriptive statistics were used to produce frequency tables for all questionnaire items. The SPSS frequencies procedure provided statistics and graphical displays that were useful in providing the following results.

1. A majority of the participants were female (53.8%) with males accounting for 44.4%. An equal percentage of males and female students, 16.7%, participated in the study. Female parents made up 22.5% of the total and males 14.9% of the total. Based on these returns, one might conclude that

females are somewhat more likely to participate in surveys and that the female parent is more likely to complete and return paperwork brought home by students. However, the researcher concluded that this trend did not hold true for community participants who tended to be older because this group exhibited equal representation of 14.6% each from males and females.

2. The mean age of all survey participants was 37.8 years with the youngest being 14 and the oldest being 91. The 126 students ranged in age from 14 to 19. Sixty-one of the parents were in the 20-39 year range, 74 were between 40 and 59, and 3 were older than 59.
3. There were 204 White, 156 Hispanic, 6 African American, and 4 Native Americans, and 5 other participants.
4. Marital status showed that 42.9% of the respondents were single, 51.5% were married, and 5.6% were divorced. When students are deleted from this statistic, the marriage rate among adults is even higher. From these statistics marriage and a low rate of divorce can be assumed to be the norm in Littlefield.
5. A 52.9% majority were employed, 35.7% unemployed, and 11.4% retired. From these statistics it concluded that there is a relatively high rate of unemployment, especially among teens.
6. Annual salary ranges showed 105 (44.5%) of the 236 respondents making less than \$20,000, 47 (19.9%) making \$20,000-\$29,999, 31 (13.1%) making \$30,000-\$39,999, 26 (11%) making \$40,000-\$49,999, and 27 (11.4%) had an

annual salary of \$50,000 or greater. However, it was concluded that only a small percentage of students had jobs and because that group constituted almost a third of data collected, the high percentage of individuals making less than \$20,000 was likely not representative of all the respondents or the Littlefield community in general.

7. Of the 363 responding to the years in Littlefield question, 106 have been in Littlefield 1-10 years, 126 for 11-20 years, 35 for 21-30 years, 42 for 31-40 years, 29 for 41-50 years, and 25 more than 50 years. Based on these figures, it was concluded that there was a general trend for residents to have a long tenure in Littlefield.

Because of the stratified nature of the three sets of responses and the great disparity in the characteristics by each of the three, the following provides an overview of materials as a foundation for the more detailed analysis reported previously in Chapter IV.

1. Combined hours of technology (computer + Internet hours) use per week averaged almost 18 hours for students, almost 26 hours for parents, and 30 hours for other adults in the community. Only 22 of the 266 responding to this portion of the questionnaire reported having broadband, 145 reported dial-up, 55 had none, and 44 did not know. From these findings, the researcher concluded that teens have the lowest told hours of weekly technology use, probably because of the limited number of hours gatekeepers place on their computer and Internet access. It is further concluded that there

is a low rate of access to broadband at home. Lastly, it is concluded from these findings that once community respondents, who tend to be older, adopt technology, their hours of use is the highest of all three response groups.

2. The most frequently used computer software was MS Word. The highest use of computers after the combined category of “other” was for games. If the student population is removed, database preparation takes the lead. It is concluded that training on the most efficient software program and methods dealing with databases and word processes might be the most useful technology training provided. One might also conclude that the highest use of broadband occurs in the workplace.
3. The most frequent use of the Internet, as supported by a preponderance of the literature, was for email. It is concluded from this finding that an important use of the Internet in Littlefield is socialization and that technology serves to enhance quality of life through socialization with family and friends in the local and virtual community.

The quality of life as perceived by the respondents was high.

1. This conclusion was drawn based on the fact that of the 340 responding, 337 (99.1%) indicated their quality of life was adequate, very acceptable, or excellent.
2. Only 3 reported their quality of life as being problematic and none reported a very problematic quality of life.

It was concluded that for the respondents in this study, few relationships existed among demographics, technology use, and quality of life. More could surface with further isolation of less important variables that were measured only at the request of the school and city technology specialists. However, these few should be noted as benchmarks to measure against in future longitudinal studies and in planning technology programs.

1. Technology use, having access to technology (computers + Internet), was negatively correlated with age. The older participants had a negative view of access to technology. However, those who already used technology tended to report a higher quality of life as weekly hours of technology use increased. Therefore, it is concluded that allowing older participants to observe others using technology or being able to try technology for purposes that gratify their personal needs could facilitate their initial adoption and increased weekly hours of technology use.
2. Quality of life scores go down as access to technology use goes up, except for those in the parent and community categories, who reported having broadband Internet access at home. They reported a higher overall quality of life. Although the number of responses to this question was low and should be verified through further quantitative or qualitative investigation, there is some evidence that having broadband Internet access at home improves individuals' perceptions of their quality of life.

### Implications

This breaking down of the borders between online and offline communities stands in contrast to most existing notions of online communications and could have important implications for the development of traditional communities. It is by extension the reason for the current research project. Communities that have access to the tools of online community building will be positioned to realize a higher quality of life, resulting from strong supportive communities, whether traditional or virtual (Hamman, 2001, p. 71).

Making the connections visually in three stages helps one arrive logically at a new model that indicates a close connection between technology use, defined by this study as computer and Internet, and quality of life, as measured by the QOL Profile instrument of Renwick and Brown (1996).

Research and literature indicate that a majority of Americans would prefer to live away from the congested environment of the city. It follows that displaced Americans forced to leave the rural areas of their youth to pursue education and gainful employment might return if communities could offer the resources necessary for individuals to live, raise families, and be happy. It is incumbent upon community leaders to find ways to create jobs sufficient to support families and offer them those products, services, and creature comforts that tend to bring about a high level of satisfaction with their circumstances or quality of life.

As Internet technology improves in speed and in price to the consumer, the trend is toward accessing those services that enhance job satisfaction through telecommuting

from rural areas, keeping up with family even in today's transient society, accessing high quality health care into rural areas via telemedicine, and acquiring entertainment and products not available in the rural areas on a real basis.

The implications of this study are far-reaching, if followed to their ultimate conclusion of segmenting rural populations in an effort to understand the basic needs each brings to the table. Many resources have been focused on youth, a very important part of the future of America. However, with population trends showing a large increase in the senior population, it would seem natural to begin moving resources into the areas of geriatric study as well. With this trend will come a stress on the nursing homes and retirement centers that have been the usual places for members of the older population to go as they enter their golden years. Basic literature used in this study as well as the data collected for the senior citizens in this study reveal that technology could be an important factor in relieving the pressure on tools, resources, and facilities created to deal with the "graying of America."

In addition, if Internet resources can be bolstered to the level of delivering jobs, education, goods and services, and entertainment to members of a local community, it may be possible to stem the tide of migration of the younger generation from rural West Texas. The future existence of many of these rural communities depends on their ability and willingness to shift their ways of thinking and acting to reverse the trend of economic decline that has occurred during the past decade and that has brought with it a depletion of people and resources.

## Recommendations

Based on the findings, conclusions, and implications of this study, presented below is a recommended model showing how the interaction of real and virtual communities with technology can be used to change rural communities. Also presented are recommendations for further research.

### Technology, Communities, and Quality of Life: A Model

Listed in Table 5.1 below are just a few of the goods and services offered by traditional communities that have counterparts in a virtual world. The list is not complete, but the possibilities will become more numerous as broadband becomes more accessible and as technology becomes more user friendly. Even in its early stages of development this model provides common denominators for community, technology, and quality of life. As broadband becomes more accessible and the adoption of new technologies increase—and the Diffusion of Innovations Theory and current trends indicate they will—the boundaries dividing traditional communities and on-line communities begin to disappear. As hardware and software applications advance to provide an interface more convenient than the traditional mouse tied to a computer that is mounted on a desk, Uses and Gratifications Theory would suggest that more individuals would use technology that is easy to use and meets their needs. With additional research, both qualitative and quantitative, in Littlefield as well as other rural West Texas communities, it can be determined what barriers exist to adoption of technologies for various segments of the population. This researcher predicts that as additional products

and services that could enhance quality of life are delivered via broadband Internet to individual households, users will become more accepting of technologies. With three different sets of literature—community, quality of life, diffusion of innovations—pointing to improvement of the individual's circumstance as a major focus, the landscape of sociology and community development is changing. The tools that communities have available remain limited because of limited resources; the possibilities that technology has to offer are expanding at an exponential rate.

Consequently, the researcher offers the following model—The Bullock-Smith Model for Technology, Community, and Quality of Life—as a means of defining visually the convergence of these three very powerful individual concepts into one dynamic approach that could revolutionize rural America. It reveals the interaction and the symbiotic nature of traditional communities, virtual communities, and advancing technology. This model is a collaborative effort between the researcher conducting this study and her doctoral committee chair, James H. Smith, who conducted an earlier quality-of-life study involving recipients of the Houston Livestock Show and Rodeo Scholarships.

**Table 5.1. Common Denominators for Community, Technology, and Three Domains  
Quality of Life, Technology/Quality-of-Life Study, Littlefield, Texas, 2004.**

<b>Community (traditional)</b>	<b>Technology (virtual delivery)</b>	<b>Quality of Life</b>
Medical Care	Telemedicine/Teledentistry	Being
Medical Information	WebMD	Being
Safety	Video Security via Internet	Being
Contact with friends	Email	Belonging
Family	Email/4-Video Conferencing	Belonging
Information	World Wide Web	Belonging
Public places	Chat Rooms	Belonging
Publishing	Blogs	Belonging
Shopping	E-commerce (buying)	Belonging
Social clubs	Specialized listservs	Belonging
Education	Distance Education	Becoming
Income	E-commerce (selling)	Becoming
Information	E-Newspaper	Becoming
Leisure	Gaming, music, movies	Becoming
Local jobs	Telecommuting	Becoming
Money Management	Online banking	Becoming
Travel Agency	Travel planning/reservations	Becoming
Virtual Tours	Travel	Becoming

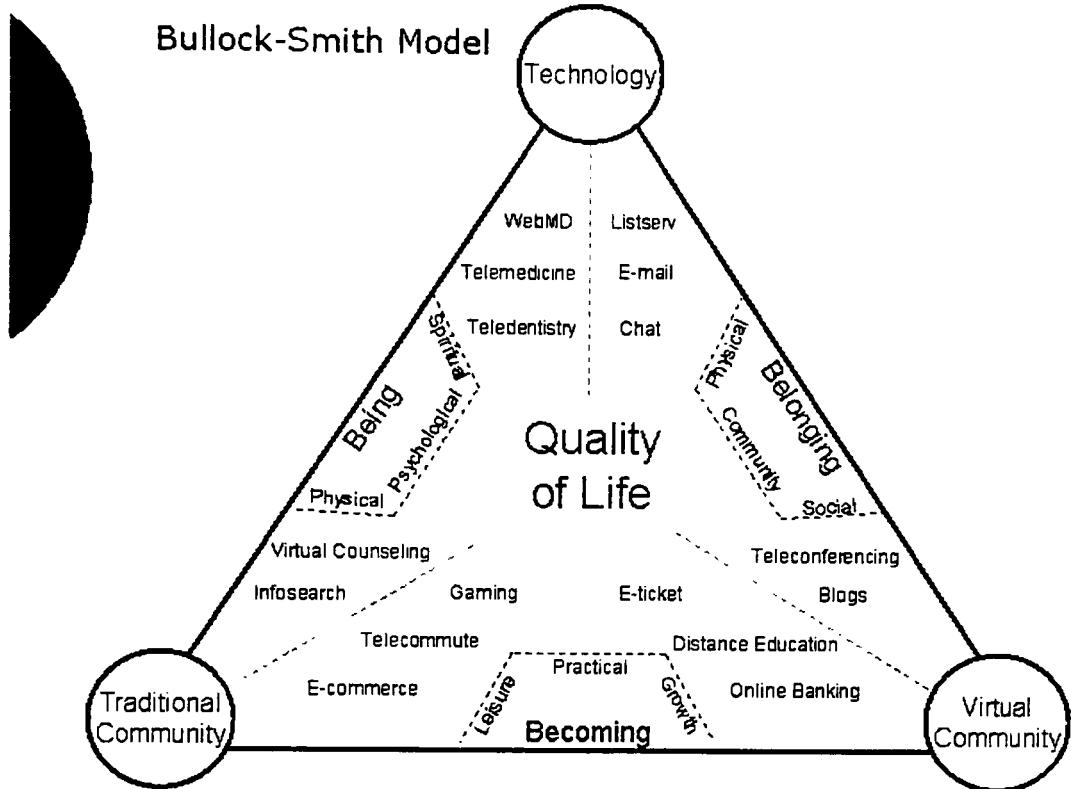


Figure 5.1. Bullock-Smith Model for Technology and Quality of Life in Communities.

Continued investigation into this current research project actually revealed three separate studies. An effort has been made to discover characteristics of three important audiences that make up the majority of small rural communities, namely youth, young/middle-aged parents, and the ever-increasing senior population. From this research comes the realization that each of these populations brings with it individual needs. Using an across-the-board approach to diffusion of technology in communities could aid in the pursuit of quality of life. This information will serve as a guidepost for

rural community developers anxious to bolster the economic and individual well-being of rural communities' residents.

### Recommendations for Further Research and Development

Five recommendations for further research follow.

1. Test the uses and gratifications theory as it relates to teens', parents', and seniors' use of technology to meet the needs in their daily lives.
2. Determine learning styles of each segment of the rural population with a view toward providing user-friendly training that would assist teens, adults, and seniors in adopting technologies that have the potential for improving their quality of life seamlessly.
3. Investigate funding sources related to each population in order to design model projects geared specifically and individually for teens, middle-aged adults, and seniors that would bring practical applications to the forefront for each audience. These funds would provide a means by which the individuals—regardless of age, financial status, or home life—could acquire the hardware and software necessary to easily embrace new technology.
4. Replicate this study in other rural communities along the new broadband Internet backbones to determine baseline data for these communities as the infrastructures begin to take shape. Follow-up studies in these communities would reveal the actual effect technology has had on individuals' perception of "how good life is" for them.

5. Find ways of bringing computers and the Internet to individual homes rather than placing increasing pressure on the limited public technology facilities of rural communities. Such efforts will make technology more available to populations that remain immobile as a result of age, disability, and other physical and social factors.

### Summary

The economic, social, and environmental needs of rural West Texas are shifting. The aging population and declining resources such as water and youth, have placed pressures on government to develop new and creative ways of bolstering the declining economies and populations. The exponential growth and development of computers and technology are making virtual communities a concept ripe for harvest.

Enhancing the convenience of technology, in some cases making the hardware invisible, will likely attract older users who currently report being frustrated by their inability to navigate today's computers and Internet access. In addition, as software is designed to meet specific wants and needs of various populations.

As e-commerce, distance education, telemedicine, teleconferencing come into routine use, residents of rural communities will have less reason to relocate, or even to travel to metropolitan areas. Broadband access has the potential for bringing sustainable economic structures back to declining communities of West Texas while offering a high quality of life.

## REFERENCES

- A broadband world: The promise of advanced services.* Digital Divide Network. Available: Retrieved January 20, 2004, from <http://www.digitaldividenetwork.org/content/stories/index.cfm?key=270>
- Ahuja, M., & Carley, K. (1998, June). Network structure in virtual organizations. *Journal of Computer-Mediated Communication [On-line]*, 3(4). Retrieved March 17, 2004, from <http://www.ascusc.org/jcmc/vol3/issue4/ahuja.html>
- Andrews, F., & Withey, S. (1976). *Social indicators of well-being*. New York: Plenum Press.
- Availability of advanced services in rural and high cost areas (2001). *Report to the 77<sup>th</sup> Texas Legislature*. Austin, TX: Public Utility Commission of Texas.
- Bakan, D. (1964). *The duality of human existence: Isolation and communion in Western man*. Boston: Beacon.
- Baran, S., & Davis, D. (1995). *Mass communication theory: Foundations, ferment and future*. Stamford, CT: Wadsworth.
- Barnes, H. (1937). *An economic history of the Western world*. New York: Harcourt, Brace, and Co.
- Becker, E. (1971). *The birth and death of meaning* (2<sup>nd</sup> ed.). New York: Free Press.
- Boisvert, Larry. (2002). Telestate: Speeches and papers. Retrieved September 5, 2003, from <http://www.telesat.ca/news/speeches/speeches02-01.htm> [Speaking notes for an address by Laurier (Larry) Boisvert, President and CEO, Telesat Canada at the 17th Annual CATAAlliance Innovation and Leadership Awards Reception and Gala, Smart City Summit, April 23, 2002, Ottawa, Canada].
- Boucher, R. (2000). Satellite services provide telecommunications bridge for rural America. *Capitol Commentary from Congressman Rick Boucher*. Retrieved June 22, 2004, from [http://lobby.la.psu.edu/019\\_Broadband\\_Deployment/Congressional\\_Statements/House/H\\_Boucher\\_042100.htm](http://lobby.la.psu.edu/019_Broadband_Deployment/Congressional_Statements/House/H_Boucher_042100.htm)
- Brown, I. (1994). Promoting quality within service delivery systems. *Journal on Developmental Disabilities*, 3(2), i-iv.
- Burns, K. (2004, Winter). Majoring in economic growth. *Economic Development America*, 12-14.

- Campbell, A., Converse, P., & Rogers, W. (1976). *The quality of American life*. New York: Russell Sage Foundation.
- Campbell, A. (1981). *The sense of well-being in America*. New York: McGraw Hill.
- Campbell, A., & Converse, P. (1972). *The human meaning of social change*. New York: Russell Sage Foundation.
- Campbell, A., Converse, P., & Rogers, W. (1976). *The quality of American life*. New York: Russell Sage Foundation.
- Chaney, B. (2001). *A case study of organization culture in a sawmill*. Unpublished dissertation, Oregon State University.
- Cohill, M., & Kavanaugh, L. (2000). *Community networks: Lessons from Blacksburg, Virginia* (2<sup>nd</sup> ed.). Boston: Artech House.
- Danet, B. (2001). *Cyberpl@y: Communicating online*. Oxford: Berg.
- Das, M. & Kolack, Shirley (2001). *Technology, values, and society: Social forces in technological change*. New York: P. Lang.
- Davis, J. (1971). *Elementary survey analysis*. Englewood Cliffs, NJ: Prentice-Hall.
- Denning, P. (2002). *The invisible future: The seamless integration of technology into everyday life*. New York: McGraw-Hill.
- Dillman, D. (1979). Residential preferences, quality of life, and the population turnaround. *American Journal of Agricultural Economics* 61(5), pp. 960-966.
- Dillman, D. (2000). *Mail and Internet surveys: The tailored design method* (2<sup>nd</sup> ed.). New York: Willey.
- Dreyfus, H. (2001). *On the Internet*. London; New York: Routledge.
- eCanada. (2004). *eCanada=eQuality of life: Access for all—The case for eCanada!* Available: <http://www.cata.ca/ecanada>, accessed May 8, 2004.
- Edwards, J., & Klemmack, D. (1973). Correlates of life satisfaction: A re-examination. *Journal of Gerontology*, 28(4), 497-502.
- Elgin, D., Thomas, T., Logotheti, T., & Cox, S. (1974). *City size and the quality of life*. Washington, DC: U.S. Government Printing Office.

- Eveland, J. (1986), Diffusion, technology transfer and implications: Thinking and talking about change. *Knowledge*, 8(2), 303-322.
- Faria, M., Jr., MD. (2002). Medical history—Hygiene and sanitation. *Medical Sentinel* 7(4), 122-23.
- The first generation: 1946-1958 (The vacuum tube years). (1998). *The Computer Chronicles*. Retrieved January 16, 2003, from <http://www.crews.org/curriculum/ex/compsci/articles/generations/htm>
- Frick, D. (1986). *The quality of urban life*. New York: Walter de Gruyter.
- Gibson, W. (1986). *Burning chrome*. New York, NY: Ace.
- Gibson, W. (1984). *Neuromancer*. New York, NY: Ace.
- Ginnetti, F. (2004). How broadband can improve citizen quality of life. The Virtual Permanent Conference of the "Sommet des Villes de la Méditerranée. Retrieved May 7, 2004, from [http://www.gisig.it/vpc\\_sommet/CD\\_Sommet/ws3/ginnetti.pdf](http://www.gisig.it/vpc_sommet/CD_Sommet/ws3/ginnetti.pdf)
- GraphPad Software, Inc. (2002). *QuickCalcs: Free online calculators for scientists*. Retrieved from <http://graphpad.com/quickcalcs/randomn2.cfm>
- Gromov, G. (1998). Silicon Valley to Internet Valley: A few points from recent IT history. *Roads and crossroads of Internet history*. Silicon Valley, CA: Net stories. Available: <http://www.netvalley.com/introduction.html>
- Gurin, G., Veroff, J., and Feld, S. (1960). *Americans view their mental health (2<sup>nd</sup> ed.)*. New York: Arno Press.
- Hamman, R. (2001). Computer networks linking network communities. In C. Werry & M. Mowbray (Eds.) *Online communities: Commerce, community action, and the virtual university* (pp. 74-95). Upper Saddle River, NJ: Prentice Hall.
- Harrell, B.S. (2000). *Uses and gratifications of the Internet*. Unpublished master's thesis, Texas Tech University.
- Health promotion and education thesaurus, 1996*. (1996). Atlanta, Ga.: Center for Health Promotion and Education, Centers for Disease Control, Public Health Service, U.S. Dept. of Health and Human Services.
- Heim, M. (1993). *Metaphysics of virtual reality*. Oxford: Oxford University Press.

Henwood, F. and Kennedy, H. *Cyborg lives: Women's technobiographies*. York: Raw Nerve.

Highmore, B. (2002). *Everyday life and cultural theory: An introduction*. London; New York: Routledge.

Hildreth, M., McComb, R., & Starnes, C. (2003). *Littlefield is a caring community where people are encouraged to pursue their dreams*. Lubbock, TX: Texas Tech University, Office of Economic Development.

Hillery, G. (1955). Definitions of community: Areas of agreement. *Rural Sociology*, 20, pp. 111-123.

Hine, C. (2000). *Virtual ethnography*. London; Thousand Oaks, CA: Sage.  
<http://www.house.gov/boucher/docs/satelliteoped.htm>

Intelligent Community Forum: The top seven intelligent communities of 2001, A project of World Teleport Association, Nevada, Missouri, USA (p. 2).

Internet and IT industry news story. U.S. adults think their quality of life would be improved if they could telecommute. July 23, 2002. Retrieved November 22, 2003, from <http://www.gcis.ca/cdne-216-jul-23-2002.htm>

Johnson, L. (2002). *Integrating instruction with technology to prepare elementary students for twenty-first century skills*. La Verne, CA: University of La Verne.

Katz, E., Haas, H., & Gurevitch, M. (1973). On the use of mass media for important things. In *American Sociological Review*, 1, 164-181.

Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukophadhyay, T., and Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist* 53(9), pp. 1017-1031.

Krejcie, R.V., & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 606-610.

Kroker, A., & Weinstein, M. (1994). *Data trash: The theory of the virtual class*. New York: St. Martin's.

Kurzweil and Meyers (2003). *Understanding the accelerating rate of change in perspectives on business innovations* on Kurzweil AI.net. Retrieved November 6, 2003, from <http://www.kurzweilai.net/articles/art0563.html>

LaGrange, Georgia, USA. Retrieved February 10, 2003, from  
<http://www.intelligentcommunity.org/art/pdf/TopSevenIC2002.PDF>, p. 3.

Lewis, J. (1990). The Ogallala Aquifer: An underground sea. *EPA Journal* 16 (Nov.-Dec. 1990), 42-44.

“Life expectancy at birth, at 65 years of age, and at 75 years of age, according to race and sex: United States, selected years 1900-2001. *National Vital Statistics* (2003). Retrieved March 20, 2004, from  
<http://www.cdc.gov/nchs/data/hus/tables/2003/03hus027.pdf>

Lindstrum, B. (1994). *The essence of existence: On the quality of life of children in the Nordic countries*. Goteborg, Sweden: Nordic School of Public Health.

Marine, A., Kirkpatrick, S., Neou, V., & Ward, C. (1993). *Internet: Getting started*. Englewood Cliffs, NJ: PTR Prentice Hall.

Marshall, A. (1890). On wants and their satisfaction. *Principles of economics*. London; New York: Macmillan.

Marshall, M. (1998). *Program development: Extension's processes for education programming* (Texas Cooperative Extension Report D-690). College Station, Texas: Texas A&M Press.

Maslow, A. (1954). *Motivation and personality*. New York: Harper.

McComb, R. (2002). Texas Tech University wireless Internet backbone. Grant application from the Texas Tech University Office of Economic Development to the U.S. Economic Development Administration.

Merleau-Ponty, J. (1968). *The visible and invisible*. Evanston, IL: Northwestern University Press.

Merriam-Webster's collegiate dictionary (10<sup>th</sup> ed.) (2001). Springfield, MA: Merriam-Webster.

Metzen, E., Bradley, J., & Helmick, S. (1986). Selected social and economic characteristics and circumstances of individuals as related to satisfaction with quality of life in metropolitan and non-metropolitan communities. In J. Hafstrom (Ed.), *Compendium of quality of life research* (pp. 19-41). Urbana, IL: Illinois Agricultural Experiment Station.

Middlebrook, J. (1999). Avoiding brain drain: How to lock in talent. *HRfocus*, 76, 3.

- Moore's Law (2004). Retrieved January 31, 2004, from  
[http://www.webopedia.com/TERM/M/Moores\\_Law.html](http://www.webopedia.com/TERM/M/Moores_Law.html)
- Mosca, P. (2004). Home automation: Quality of life inside the home. *Realty Times*. Retrieved May 15, 2004, from  
[http://realtytimes.com/rtnews/rtapages/20040112\\_automation.htm](http://realtytimes.com/rtnews/rtapages/20040112_automation.htm)
- Munt, S. (2001). *Technospaces: Inside the new media*. London; New York: Continuum.
- Newburger, E. (2001). Current population reports. *Home computers and Internet use in the United States: August 2000*. U.S. Census Bureau, September 2001.
- Palmgreen, P., Wenner, L., & Rosengren, K. (1985). *Media gratifications research: Current perspectives*. Beverly Hills, CA: Sage.
- Peck, M. Scott. (1987). *The different drum: Community-making and peace*. New York: Touchstone.
- Poplin, D. (1979). *Communities: A survey of theories and methods of research*, 2<sup>nd</sup> ed. New York: MacMillan Publishing.
- Pursell, C. (1995). *The machine in America: A social history of technology*. Baltimore: Johns Hopkins University Press.
- Quality of life research unit (1998). Scoring the quality of life profile. Retrieved March 20, 2004, from <http://www.utoronto.ca/qol>
- Raphael, D. (1998). *The quality of life profile: A generic measure of health and well-being*. Toronto: Quality of Life Research Unit, Centre for Health Promotion, University of Toronto.
- Raphael, D., Brown, I., & Renwick, R. (1993). *The quality of life profile: Seniors' version*. Toronto: University of Toronto, Centre for Health Promotion.
- Raphael, D., Brown, I., Renwick, R., & Rootman, I. (1994a). *Quality of life and health promotion: Implications of a new model of quality of life*. Toronto: University of Toronto, Centre for Health Promotion.
- Raphael, D., Brown, I., Renwick, R., & Rootman, I. (1994b). *Quality of life theory and assessment: What are the implications for health promotion?* Toronto: University of Toronto, Centre for Health Promotion.

Raphael, D., & D'Amico (1996, September). Health promotion on the Internet. Forum conducted in Toronto, Canada.

Raphael, D., D'Amico, J., Brown, I., & Renwick, R. (1996). *The quality of life profile: A generic measure of health and well-being*. Toronto, Ontario: University of Toronto.

Rayburn, J. (1996). The uses and gratifications approach. In Michael Selwen and Donald Stacks (eds.). *An integrative approach to communication theory and research*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Renwick, R. & Brown, I. (1996). *Quality of life in health promotion and rehabilitation: Conceptual approaches, issues, and applications*. Thousand Oaks: Sage Publications.

Renwick, R., Brown, I., & Nagler, M. (Eds.). (1996). *Quality of life in health promotion and rehabilitation*. Thousand Oaks, CA: Sage.

Renwick, R., Brown, I., & Raphael, D. (1994). Quality of life: Linking a conceptual approach to service provision. *Journal on Developmental Disabilities*, 3, 23-44.

Renwick, R., Rudman, D., Brown, I., & Raphael, D. (1994). *The quality of life profile: Version for persons with physical disabilities*. Toronto: University of Toronto, Centre for Health Promotion. Reviving rural America. (Jan. 5, 2004). *Trend Letter*, 4-5.

Reviving rural America. (Jan. 5, 2004). *Trend Letter*, 4-5.

Rheingold, H. (1993). *The virtual community: Surfing the Internet*. London: Minerva Publishing.

Rodriguez, N., & Ryave, A. (2002). *Systematic self-observation: A method for researching the hidden and elusive features of everyday social life*. London: Sage.

Rogers, E. (1995). *Diffusion of innovations* (4<sup>th</sup> ed.). New York: The Free Press.

Rootman, I., & Raeburn, J. (1994). The concept of health. In A. Pederson, M. O'Neill, & I. Rootman (Eds.) *Health promotion in Canada: Provincial, national and international perspectives* (pp. 56-71). Toronto: W. B. Saunders.

- Rootman, I., Raphael, D., Shewchuk, D., Renwick, R., Friefeld, S., Garber, M., Talbot, Y., & Woodill, D. (1992a). *Development of an approach and instrument package to measure quality of life of persons with developmental disabilities*. Toronto: University of Toronto, Centre for Health Promotion.
- Rootman, I., Raphael, D., Shewchuk, D., Renwick, R., Friefeld, S., Garber, M., Talbot, Y., & Woodill, G. (1992b). *Highlights from the development of an approach and instrument package to measure quality of life of persons with developmental disabilities*. Toronto, University of Toronto, Centre for Health Promotion.
- Rosenburg, S. (1998). Sad and lonely in Cyberspace: Why the new Net Depression Study is something to get bummed about. *Salon*, September 3, 1998. Available online at <http://www.salonmagazine.com/21st/rose/1998/09/03straight.html>. Retrieved May 19, 2004.
- Rudman, D., Renwick, R., Raphael, D., & Brown, I. (1995). The quality of life profile for adults with physical disabilities [Abstract]. *Canadian Journal of Occupational Therapy*, 62, 25.
- Ryan, B. & Gross, N. (1943). The diffusion of hybrid seed corn in two Iowa communities. *Rural Sociology*, 8, 15-24.
- Salwen, M., & Stacks, D. *An integrated approach to communication theory and research*. Mahwah, NJ: Erlbaum.
- Sage Research Report (2001). Wireless LANs: Improving productivity and quality of life. Retrieved online June 23, 2004, from [http://www.intel.com/business/bss/infrastructure/wireless/roi/productivity\\_studies\\_sage.pdf](http://www.intel.com/business/bss/infrastructure/wireless/roi/productivity_studies_sage.pdf)
- Sampson, D. A. (2004). Our universities: Accelerators for economic growth. *Economic Development America*, 4-5.
- Satellite Services: A Telecommunications Bridge for Rural America*. Available: <http://www.house.gov/boucher/docs/satelliteoped.htm>
- Schalock, R. (1990). Where do we go from here? In R. Schalock (Ed.), *Quality of life: Perspectives and issues*. Washington, DC: American Association of Mental Retardation.
- Schalock, R. (1996). Quality of life and quality assurance (p. 104-118). *Quality of life in health promotion rehabilitation*. Thousand Oaks, CA: Sage.

- Shaping a health statistics vision for the 21<sup>st</sup> century: Final report, November 2002.*  
Dept. of Health and Human Services Data Council; Centers for Disease Control and Prevention, National Center for Health Statistics; National Committee on Vital and Health Statistics.
- Smith, J. (1999). *Quality of life of Houston Livestock Show and Rodeo scholarship recipients.* Doctoral dissertation: Texas A&M University.
- Smith, J., Kistler, M., Williams, K., Edmiston, W., Baker, M. (2002). Relationships between selected demographic characteristics and the quality of life of adolescents in a rural West Texas community. Paper presented at the National Agricultural Education Research Conference, Orlando, FL.
- Sullivan, E. (1984). *A critical psychology: Interpretation of the personal world.* New York: Plenum.
- Sveningsson, M. (2001). *Creating a sense of community: Experiences from a Swedish Web chat.* Dissertation, Linkoping University.
- Takemoto, Neil. (2003). *Broadband = quality of life, jobs* (August 12, 2003). CoolTown Studios. Retrieved December 12, 2003,  
<http://www.cooltownstudios.com/mt/archives/000108.html>
- Taylor, T. (2004). Retrieved May 15, 2004, from  
<http://ccis.athabascau.ca/html/courses/comp210/CourseSample/chap01/section1.htm>
- Teisburg, E. O. (1992). McCaw Cellular Communications, Inc., in 1990. *Harvard Business Review*, 53, 127-133.
- Thompson, J. D. (1967). *Organization in action.* New York: McGraw-Hill.
- United Nations. (1999). *The world at six billion.* New York, NY.
- U.S. Census Bureau. (2002). *State population estimates: April 1, 2000, to July 1, 2002.* Retrieved November 3, 2003, from  
<http://eire.census.gov/popest/data/states/ST-EST2002-01.php>
- Valente, T., & Rogers, E. (1995). The origins and development of the diffusion of innovations: Paradigm as an example of scientific growth. *Science Communication*, 1.
- Waterworth, E., & Waterworth, J. (2001). Focus, locus, and sensus: The three dimensions of virtual experience. *CyberPsychology & Behavior* 4(2), 203-213.

Wellman, B. (1995). "The Privatization of Community." Presented to the Conference on Urban Regions in a Global Context, University of Toronto, October 19-20, 1995.

Wolfshohl, K. (2004). A change for the plains: As water gets scarce, cotton may not be the only option. *Progressive Farmer*. Retrieved June 23, 2004, from <http://www.progressivefarmer.com/farmer/business/article/0,19846,478029,00.html>

Woodill, G., Renwick, R., Brown, I., & Raphael, D. (1994). Being, belonging, becoming: An approach to the quality of life of persons with developmental disabilities. In D. Goode (Ed.), *Quality of life for persons with disabilities: International perspectives and issues* (pp. 57-74). Cambridge, MA: Brookline.

Zaner, R. (1981). *The context of self: A phenomenological inquiry using medicine as a clue*. Athens: Ohio University Press.

**APPENDIX A**  
**RESIDENT PRENOTICE**

Dear Littlefield Resident:

A few days from now, you will receive in the mail a brief questionnaire for an important research project being conducted by the City of Littlefield, and Littlefield High School, and Texas Tech University. The study concerns your use of technology (computers and the Internet) and how it affects your quality of life.

Please be on the lookout for this information. Your completion of this instrument will help your community and school determine additional technology needs as they relate to improving quality of life in Littlefield.

Thank you for your time and consideration. It's only with the generous help of people like you that this research can be successful. As a small token of our appreciation, your name will be entered in a drawing for a number of valuable prizes donated by Texas Tech and the community.

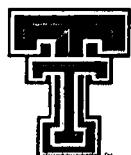
Sincerely,

  
Susie J.R. Bullock  
Instructor



**APPENDIX B**

**COVER LETTER TO STUDENTS AND PARENTS**



Dear Students and Parents:

The City of Littlefield and Littlefield High School, in cooperation with Texas Tech University, are conducting research of all students in 9th through 12th grades and their parents. We are seeking to learn about your use of technology (computers and the Internet) and how it affects your quality of life.

Quality of life simply means, "How good is life for you?" To answer this question, you are asked to focus on yourself and rate some parts of your life. These are all rated on a simple scale of 1-5.

There are nine areas which are part of the lives of all people. First, you will rate how important these parts are to you and how satisfied you are with them. Then, you will indicate how much control you have over them and whether there are possibilities for improvement or change. This sounds like a lot, but you will find that you can rate them rather quickly.

Participation in this project is completely voluntary. Your answers will be kept strictly confidential, and data will be reported collectively with no individual's data being singled out or identifiable.

Thank you in advance for your participation in this very important study. Your completion of this instrument will help our community and school determine additional technology needs as they relate to improving quality of life in Littlefield.

**Simply return the completed student and parent forms in the brown envelope to your social studies teacher, and your name will be placed in a drawing for a number of valuable prizes provided by the university and the community. We would like to have your response by Tuesday, February 24, 2004.**

If you have questions about this survey, please contact Susie Bullock at 806-742-2816 or by e-mail at susie.bullock@ttu.edu.

Sincerely,

Ricky Hobbs, Principal  
Littlefield High School

Melvin Hall, Coordinator  
Littlefield Economic Development

Susie Bullock, Instructor  
Texas Tech University

I have read the above information and voluntarily agree to participate in this study.

Would you be willing to participate in a study similar to this one in the future?

Yes  No

Participant's signature

This form will be placed in a drawing for valuable prizes and used only to contact the winners.

Name \_\_\_\_\_

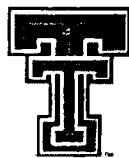
E-mail address \_\_\_\_\_

Mailing address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone: \_\_\_\_\_

**APPENDIX C**  
**COVER LETTER TO LITTLEFIELD RESIDENTS**



Dear Littlefield Resident:

The week of February 23, you should have received a packet containing a questionnaire designed to measure your use of computers and the Internet and how they affect your quality of life. Our records show we have not yet received your completed questionnaire. We want to take this opportunity to clarify that, even if you do not own or use a computer, it is important that you indicate that on the survey and complete the Quality of Life sections anyway.

Quality of life simply means, "How good is life for you?" To answer this question, you are asked to focus on yourself and rate some parts of your life. These are all rated on a simple scale of 1-5.

There are nine areas which are part of the lives of all people. In the first column, you will rate how important these parts are to you, and in the second column, how satisfied you are with them. Then on the back, you will indicate how much control you have over them and whether there are possibilities for improvement or change. This sounds like a lot, but you will find that you can rate them rather quickly.

Participation in this project is completely voluntary. Your answers will be kept strictly confidential, and data will be reported collectively with no individual's data being singled out or identifiable.

Thank you in advance for your participation in this very important study. Your completion of this instrument will help your community and school determine additional technology needs as they relate to improving quality of life in Littlefield.

Take a few minutes now to complete the survey and return your responses in the enclosed pre-addressed, stamped envelope. Your name will be placed in a drawing for a number of valuable prizes, including a \$100 cash prize and a beautiful designer necklace. If you have questions about this survey, please contact Susie Bullock at 806-742-2816 or by e-mail at susie.bullock@ttu.edu. Remember, regardless of whether or not you own or use a computer, we want to hear from you.

Sincerely,

Melvin Hall, Coordinator  
Littlefield Economic Development

Susie Bullock, Instructor  
Texas Tech University

I have read the above information and voluntarily agree to participate in this study.

Would you be willing to participate in a similar study to this one in the future?

Yes  No

Participant's signature

This form will be placed in a drawing for valuable prizes and used only to contact the winners.

Name \_\_\_\_\_

E-mail address \_\_\_\_\_

Mailing address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Phone: \_\_\_\_\_

**APPENDIX D**  
**ADOLESCENT QUALITY OF LIFE SURVEY**

# *Adolescent Quality of Life Survey*

## *Littlefield, Texas—2004*

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### ***Demographics***

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1. What is your gender?  Female  Male
  2. How old are you? \_\_\_\_\_ years old
  3. How would you describe yourself?  
 African American  Asian American  Hispanic  Native American  White  Other
  4. What grade are you in?  9th  10th  11th  12th
  5. Are you interested in getting a college degree when you finish high school?  Yes  No
  6. How many brothers and sisters do you have?  brothers  sisters
  7. What is your marital status?  Single  Married  Divorced
  8. Do you have children?  Yes  No If yes, how many? \_\_\_\_\_
  9. Do you have a job?  Yes  No If yes, how many hours do you work per week? \_\_\_\_\_
  10. How much money do you make in a year? \$\_\_\_\_\_ per year
  11. How many years have you lived in Littlefield? \_\_\_\_\_
- 

### ***Computer Use***

---

1. Please give the number and type of computers you use at  
Home:  Macintosh format  PC/Windows format  
Work:  Macintosh format  PC/Windows format  
School:  Macintosh format  PC/Windows format
2. How many hours per week would you estimate you use the computer?  
Home: \_\_\_\_\_ hours Work: \_\_\_\_\_ hours School: \_\_\_\_\_ hours
3. How many hours per week do you use your computer for the following:

Word processing	Home: _____ hours	Work: _____ hours	School: _____ hours
Databases	Home: _____ hours	Work: _____ hours	School: _____ hours
Visual presentations	Home: _____ hours	Work: _____ hours	School: _____ hours
Financial records	Home: _____ hours	Work: _____ hours	School: _____ hours
Graphics design	Home: _____ hours	Work: _____ hours	School: _____ hours
Web design	Home: _____ hours	Work: _____ hours	School: _____ hours
Games	Home: _____ hours	Work: _____ hours	School: _____ hours
Other	Home: _____ hours	Work: _____ hours	School: _____ hours
4. What software do you use? (check all that apply)

<input type="checkbox"/> MS Word	<input type="checkbox"/> QuarkXpress	<input type="checkbox"/> PhotoShop	<input type="checkbox"/> MS Outlook
<input type="checkbox"/> Word Perfect	<input type="checkbox"/> PageMaker	<input type="checkbox"/> Illustrator	<input type="checkbox"/> America Online
<input type="checkbox"/> PowerPoint	<input type="checkbox"/> Publisher	<input type="checkbox"/> Corel Draw	<input type="checkbox"/> Adobe Acrobat
<input type="checkbox"/> Excel	<input type="checkbox"/> Quicken	<input type="checkbox"/> MS Internet Explorer	<input type="checkbox"/> AutoCad
<input type="checkbox"/> Access	<input type="checkbox"/> Quickbooks	<input type="checkbox"/> Netscape	<input type="checkbox"/> Fax Software
<input type="checkbox"/> Filemaker	<input type="checkbox"/> TurboTax	<input type="checkbox"/> MS Exchange	<input type="checkbox"/> FrontPage
<input type="checkbox"/> GoLive	<input type="checkbox"/> Dreamweaver	List Other _____	_____

# ***Quality of Life***

Quality of Life simply means, "How good is your life for you?" To answer this question, you will focus on yourself and rate some aspects of your life. These are all rated on a simple scale of 1-5 with 1 being lowest and 5 being highest.

First, for each item you will ask yourself the question: How important to me is...? Second, for the same items you will ask yourself: How satisfied am I with...? Last, you will indicate the degree to which you make decisions about the nine areas of your life and the degree to which there are opportunities for improvement.

Not at All (1)	Not Very (2)	Somewhat (3)	Very (4)	Extremely (5)
<i><b>Importance</b></i>			<i><b>Satisfaction</b></i>	

## ***How important to me is...?***

### **My body and my health:**

- |  |           |
|--|-----------|
| 1. Being smart about sex                               | 1 2 3 4 5 |
| 2. Making healthy choices<br>(alcohol, drugs, smoking) | 1 2 3 4 5 |
| 3. My appearance—how I look                            | 1 2 3 4 5 |
| 4. My exercising and being fit                         | 1 2 3 4 5 |
| 5. My physical health                                  | 1 2 3 4 5 |
| 6. My nutrition and the food I eat                     | 1 2 3 4 5 |

### **My thoughts and feelings:**

- |                                       |           |
|---------------------------------------|-----------|
| 7. Being free of worry and stress     | 1 2 3 4 5 |
| 8. How I feel about myself            | 1 2 3 4 5 |
| 9. Knowing who I am                   | 1 2 3 4 5 |
| 10. Knowing where I am going          | 1 2 3 4 5 |
| 11. Thinking and acting independently | 1 2 3 4 5 |
| 12. Trusting others                   | 1 2 3 4 5 |

### **My beliefs and values:**

- |   |           |
|---|-----------|
| 13. Feeling part of things                | 1 2 3 4 5 |
| 14. Feeling that life has meaning         | 1 2 3 4 5 |
| 15. Having hope for the future            | 1 2 3 4 5 |
| 16. Having religious or spiritual beliefs | 1 2 3 4 5 |
| 17. Helping others                        | 1 2 3 4 5 |
| 18. My own ideas of right and wrong       | 1 2 3 4 5 |

### **Where I live and spend my time:**

- |  |           |
|--|-----------|
| 19. Feeling safe when I go out<br>(school, neighborhood) | 1 2 3 4 5 |
| 20. The area of the country I live in                    | 1 2 3 4 5 |
| 21. The earth and its environment                        | 1 2 3 4 5 |
| 22. The house or apartment I live in                     | 1 2 3 4 5 |
| 23. The neighborhood I live in                           | 1 2 3 4 5 |
| 24. The school I attend                                  | 1 2 3 4 5 |

## ***How satisfied am I with...?***

### **My body and my health:**

- |  |           |
|--|-----------|
| 1. Being smart about sex                               | 1 2 3 4 5 |
| 2. Making healthy choices<br>(alcohol, drugs, smoking) | 1 2 3 4 5 |
| 3. My appearance—how I look                            | 1 2 3 4 5 |
| 4. My exercising and being fit                         | 1 2 3 4 5 |
| 5. My physical health                                  | 1 2 3 4 5 |
| 6. My nutrition and the food I eat                     | 1 2 3 4 5 |

### **My thoughts and feelings:**

- |                                       |           |
|---------------------------------------|-----------|
| 7. Being free of worry and stress     | 1 2 3 4 5 |
| 8. How I feel about myself            | 1 2 3 4 5 |
| 9. Knowing who I am                   | 1 2 3 4 5 |
| 10. Knowing where I am going          | 1 2 3 4 5 |
| 11. Thinking and acting independently | 1 2 3 4 5 |
| 12. Trusting others                   | 1 2 3 4 5 |

### **My beliefs and values:**

- |   |           |
|---|-----------|
| 13. Feeling part of things                | 1 2 3 4 5 |
| 14. Feeling that life has meaning         | 1 2 3 4 5 |
| 15. Having hope for the future            | 1 2 3 4 5 |
| 16. Having religious or spiritual beliefs | 1 2 3 4 5 |
| 17. Helping others                        | 1 2 3 4 5 |
| 18. My own ideas of right and wrong       | 1 2 3 4 5 |

### **Where I live and spend my time:**

- |  |           |
|--|-----------|
| 19. Feeling safe when I go out<br>(school, neighborhood) | 1 2 3 4 5 |
| 20. The area of the country I live in                    | 1 2 3 4 5 |
| 21. The earth and its environment                        | 1 2 3 4 5 |
| 22. The house or apartment I live in                     | 1 2 3 4 5 |
| 23. The neighborhood I live in                           | 1 2 3 4 5 |
| 24. The school I attend                                  | 1 2 3 4 5 |

Not at All (1)	Not Very (2)	Somewhat (3)	Very (4)	Extremely (5)
-------------------	-----------------	-----------------	-------------	------------------

### ***Importance***

### ***How important to me is...?***

#### **The people around me:**

25. Acting responsibly toward others 1 2 3 4 5  
 26. Being appreciated by others 1 2 3 4 5  
 27. Getting along with my family 1 2 3 4 5  
 28. Having a girlfriend/boyfriend 1 2 3 4 5  
 29. Having parties and things to go to 1 2 3 4 5  
 30. The friends I have 1 2 3 4 5

#### **My access to things:**

31. Being able to get medical/social services on my own 1 2 3 4 5  
 32. Getting a good education 1 2 3 4 5  
 33. Having enough money 1 2 3 4 5  
 34. Having jobs available while still in school 1 2 3 4 5  
 35. Having places to go with my friends 1 2 3 4 5  
 36. Having things to do in my community in my spare time 1 2 3 4 5

#### **The daily things I do:**

37. Doing volunteer work for others 1 2 3 4 5  
 38. Looking after my appearance and hygiene 1 2 3 4 5  
 39. Studying and doing homework 1 2 3 4 5  
 40. The chores I do at home 1 2 3 4 5  
 41. The things I do in school 1 2 3 4 5  
 42. The work I do at a job while still in school 1 2 3 4 5

#### **The things I do for enjoyment:**

43. Attending public entertainment 1 2 3 4 5  
 44. Having hobbies and personal interests 1 2 3 4 5  
 45. Indoor activities (TV, reading, etc.) 1 2 3 4 5  
 46. Outdoor activities (walks, cycling, etc.) 1 2 3 4 5  
 47. Participating in sports and recreation 1 2 3 4 5  
 48. Visiting and spending time with others 1 2 3 4 5

#### **The things I do to improve/change:**

49. Being successful at the things I do 1 2 3 4 5  
 50. Getting along better with others 1 2 3 4 5  
 51. Learning about new things 1 2 3 4 5  
 52. Planning for a job or career 1 2 3 4 5  
 53. Planning for more education or training 1 2 3 4 5  
 54. Solving my problems 1 2 3 4 5

### ***Satisfaction***

### ***How satisfied am I with...?***

#### **The people around me:**

25. Acting responsibly toward others 1 2 3 4 5  
 26. Being appreciated by others 1 2 3 4 5  
 27. Getting along with my family 1 2 3 4 5  
 28. Having a girlfriend/boyfriend 1 2 3 4 5  
 29. Having parties and things to go to 1 2 3 4 5  
 30. The friends I have 1 2 3 4 5

#### **My access to things:**

31. Being able to get medical/social services on my own 1 2 3 4 5  
 32. Getting a good education 1 2 3 4 5  
 33. Having enough money 1 2 3 4 5  
 34. Having jobs available while still in school 1 2 3 4 5  
 35. Having places to go with my friends 1 2 3 4 5  
 36. Having things to do in my community in my spare time 1 2 3 4 5

#### **The daily things I do:**

37. Doing volunteer work for others 1 2 3 4 5  
 38. Looking after my appearance and hygiene 1 2 3 4 5  
 39. Studying and doing homework 1 2 3 4 5  
 40. The chores I do at home 1 2 3 4 5  
 41. The things I do in school 1 2 3 4 5  
 42. The work I do at a job while still in school 1 2 3 4 5

#### **The things I do for enjoyment:**

43. Attending public entertainment 1 2 3 4 5  
 44. Having hobbies and personal interests 1 2 3 4 5  
 45. Indoor activities (e.g. TV, reading, etc.) 1 2 3 4 5  
 46. Outdoor activities (walks, cycling, etc.) 1 2 3 4 5  
 47. Participating in sports and recreation 1 2 3 4 5  
 48. Visiting and spending time with others 1 2 3 4 5

#### **The things I do to improve/change:**

49. Being successful at the things I do 1 2 3 4 5  
 50. Getting along better with others 1 2 3 4 5  
 51. Learning about new things 1 2 3 4 5  
 52. Planning for a job or career 1 2 3 4 5  
 53. Planning for more education or training 1 2 3 4 5  
 54. Solving my problems 1 2 3 4 5

1=Almost No Control  
 2=Not Much Control  
 3=Some Control  
 4=Much Control  
 5=Almost Total Control

1=Almost None  
 2=A Few  
 3=Some  
 4=Many  
 5=Great Many

## ***How much control do I have over...?***

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. My physical health                               | 1 | 2 | 3 | 4 | 5 |
| 2. My thoughts and feelings                         | 1 | 2 | 3 | 4 | 5 |
| 3. My beliefs and values                            | 1 | 2 | 3 | 4 | 5 |
| 4. Places I spend my time (home, school, work)      | 1 | 2 | 3 | 4 | 5 |
| 5. Who I spend my time with                         | 1 | 2 | 3 | 4 | 5 |
| 6. Being able to use what my community has to offer | 1 | 2 | 3 | 4 | 5 |
| 7. The everyday things I can do in my life          | 1 | 2 | 3 | 4 | 5 |
| 8. The things I can do for fun & enjoyment          | 1 | 2 | 3 | 4 | 5 |
| 9. The things I can do to improve myself            | 1 | 2 | 3 | 4 | 5 |

## ***Are there opportunities for me to improve...?***

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. My physical health                               | 1 | 2 | 3 | 4 | 5 |
| 2. My thoughts and feelings                         | 1 | 2 | 3 | 4 | 5 |
| 3. My beliefs and values                            | 1 | 2 | 3 | 4 | 5 |
| 4. Places I spend my time (home, school, work)      | 1 | 2 | 3 | 4 | 5 |
| 5. Who I spend my time with                         | 1 | 2 | 3 | 4 | 5 |
| 6. Being able to use what my community has to offer | 1 | 2 | 3 | 4 | 5 |
| 7. The everyday things I can do in my life          | 1 | 2 | 3 | 4 | 5 |
| 8. The things I can do for fun & enjoyment          | 1 | 2 | 3 | 4 | 5 |
| 9. The things I can do to improve myself            | 1 | 2 | 3 | 4 | 5 |

## ***Internet Use***

### 1. What type Internet access do you have at

Home:  None  dial-up modem (56K or less)  Broadband (200K or greater)  Don't know

Work:  None  dial-up modem (56K or less)  Broadband (200K or greater)  Don't know

School:  None  dial-up modem (56K or less)  Broadband (200K or greater)  Don't know

### 2. What is the source of your Internet connection?

Home:  SBC Yahoo!  MSN  America Online  Wal-Mart

The Door  NTS  Earthlink  Other  (please specify)  Don't know

Work:  SBC Yahoo!  MSN  America Online  Wal-Mart

The Door  NTS  Earthlink  Other  (please specify)  Don't know

School:  SBC Yahoo!  MSN  America Online  Wal-Mart

The Door  NTS  Earthlink  Other  (please specify)  Don't know

### 3. How many hours per week do you estimate you spend on the Internet?

Home:  hours Work:  hours School:  hours

### 4. How many hours per week do you use the Internet for the following:

E-mail	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Travel/Reservations Info.	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Games	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Music/Entertainment	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Social (Chat or InstMess)	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Online banking	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Medical information	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
E-commerce (buying)	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
E-commerce (selling)	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Research	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Video conferencing	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Geneolgy	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Other(list) _____	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Other(list) _____	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours
Other(list) _____	Home: <input type="checkbox"/> hours	Work: <input type="checkbox"/> hours	School: <input type="checkbox"/> hours

**APPENDIX E**  
**ADULT QUALITY OF LIFE SURVEY**

# *Adult Quality of Life Survey*

## *Littlefield, Texas—2004*

### ***Demographics***

1. What is your gender?  Female  Male
2. What is your date of birth? \_\_\_\_\_ (month) \_\_\_\_\_ (day), 19 \_\_\_\_\_ (year)
3. How would you describe yourself?  
 African American  Asian American  Hispanic  Native American  White  Other
4. What is your marital status?  Single  Married  Divorced
5. How many children do you have? \_\_\_\_\_ How many still live in the same household with you? \_\_\_\_\_
6. What is your present annual salary?  
 Less than \$20,000  \$20,000-29,999  
 \$30,000-39,999  \$40,000-49,999  \$50,000-59,999  \$60,000-69,999  
 \$70,000-79,999  \$80,000-89,999  \$90,000-99,999  More than \$100,000
7. Do you have a job?  Yes  No  Retired
8. If yes to question 7, how many hours do you work per week? \_\_\_\_\_
9. How many years have you lived in Littlefield? \_\_\_\_\_

### ***Computer Use***

1. Please give the number and type of computers you use at  
Home:  Macintosh format  PC/Windows format  
Work:  Macintosh format  PC/Windows format  
School:  Macintosh format  PC/Windows format
2. How many hours per week would you estimate you use the computer?  
Home: \_\_\_\_\_ hours Work: \_\_\_\_\_ hours School: \_\_\_\_\_ hours
3. How many hours per week do you use your computer for the following:

Word processing	Home: _____ hours	Work: _____ hours	School: _____ hours
Databases	Home: _____ hours	Work: _____ hours	School: _____ hours
Visual presentations	Home: _____ hours	Work: _____ hours	School: _____ hours
Financial records	Home: _____ hours	Work: _____ hours	School: _____ hours
Graphics design	Home: _____ hours	Work: _____ hours	School: _____ hours
Web design	Home: _____ hours	Work: _____ hours	School: _____ hours
Games	Home: _____ hours	Work: _____ hours	School: _____ hours
Other (list) _____	Home: _____ hours	Work: _____ hours	School: _____ hours
4. What software do you use? (check all that apply)

<input type="checkbox"/> MS Word	<input type="checkbox"/> QuarkXpress	<input type="checkbox"/> PhotoShop	<input type="checkbox"/> MS Outlook
<input type="checkbox"/> Word Perfect	<input type="checkbox"/> PageMaker	<input type="checkbox"/> Illustrator	<input type="checkbox"/> America Online
<input type="checkbox"/> PowerPoint	<input type="checkbox"/> Publisher	<input type="checkbox"/> Corel Draw	<input type="checkbox"/> Adobe Acrobat
<input type="checkbox"/> Excel	<input type="checkbox"/> Quicken	<input type="checkbox"/> MS Internet Explorer	<input type="checkbox"/> AutoCad
<input type="checkbox"/> Access	<input type="checkbox"/> Quickbooks	<input type="checkbox"/> Netscape	<input type="checkbox"/> Fax Software
<input type="checkbox"/> FileMaker	<input type="checkbox"/> TurboTax	<input type="checkbox"/> MS Exchange	<input type="checkbox"/> FrontPage
<input type="checkbox"/> GoLive	<input type="checkbox"/> Dreamweaver	List Other _____	_____

# ***Quality of Life***

Quality of Life simply means, "How good is your life for you?" To answer this question, you will focus on yourself and rate some aspects of your life. These are all rated on a simple scale of 1-5 with 1 being lowest and 5 being highest.

First, for each item you will ask yourself the question: How important to me is...? Second, for the same items you will ask yourself: How satisfied am I with...? Last, you will indicate the degree to which you make decisions about the nine areas of your life and the degree to which there are opportunities for improvement.

Not at All (1)	Not Very (2)	Somewhat (3)	Very (4)	Extremely (5)
<b><i>Importance</i></b>			<b><i>Satisfaction</i></b>	

## ***How important to me is...?***

### **My body and my health:**

- |  |           |
|--|-----------|
| 1. Being physically able to get around | 1 2 3 4 5 |
| 2. My appearance—how I look            | 1 2 3 4 5 |
| 3. My exercising and being fit         | 1 2 3 4 5 |
| 4. My hygiene—caring for myself        | 1 2 3 4 5 |
| 5. My nutrition and the food I eat     | 1 2 3 4 5 |
| 6. My physical health                  | 1 2 3 4 5 |

### **My thoughts and feelings:**

- |                                       |           |
|---------------------------------------|-----------|
| 7. Accepting the way I am             | 1 2 3 4 5 |
| 8. Being free of worry and stress     | 1 2 3 4 5 |
| 9. How I feel about myself            | 1 2 3 4 5 |
| 10. My mental health                  | 1 2 3 4 5 |
| 11. My usual mood                     | 1 2 3 4 5 |
| 12. Thinking and acting independently | 1 2 3 4 5 |

### **My beliefs and values:**

- |   |           |
|---|-----------|
| 13. Celebrating special events in my life | 1 2 3 4 5 |
| 14. Feeling that life has meaning         | 1 2 3 4 5 |
| 15. Having hope for the future            | 1 2 3 4 5 |
| 16. Having religious or spiritual beliefs | 1 2 3 4 5 |
| 17. Helping others                        | 1 2 3 4 5 |
| 18. My own ideas of right and wrong       | 1 2 3 4 5 |

### **Where I live and spend my time:**

- |                                       |           |
|---------------------------------------|-----------|
| 19. Feeling safe in my home           | 1 2 3 4 5 |
| 20. Feeling safe when I go out        | 1 2 3 4 5 |
| 21. The area of the country I live in | 1 2 3 4 5 |
| 22. The house or apartment I live in  | 1 2 3 4 5 |
| 23. The neighborhood I live in        | 1 2 3 4 5 |
| 24. The things that I own             | 1 2 3 4 5 |

## ***How satisfied am I with...?***

### **My body and my health:**

- |  |           |
|--|-----------|
| 1. Being physically able to get around | 1 2 3 4 5 |
| 2. My appearance—how I look            | 1 2 3 4 5 |
| 3. My exercising and being fit         | 1 2 3 4 5 |
| 4. My hygiene—caring for myself        | 1 2 3 4 5 |
| 5. My nutrition and the food I eat     | 1 2 3 4 5 |
| 6. My physical health                  | 1 2 3 4 5 |

### **My thoughts and feelings:**

- |                                       |           |
|---------------------------------------|-----------|
| 7. Accepting the way I am             | 1 2 3 4 5 |
| 8. Being free of worry and stress     | 1 2 3 4 5 |
| 9. How I feel about myself            | 1 2 3 4 5 |
| 10. My mental health                  | 1 2 3 4 5 |
| 11. My usual mood                     | 1 2 3 4 5 |
| 12. Thinking and acting independently | 1 2 3 4 5 |

### **My beliefs and values:**

- |   |           |
|---|-----------|
| 13. Celebrating special events in my life | 1 2 3 4 5 |
| 14. Feeling that life has meaning         | 1 2 3 4 5 |
| 15. Having hope for the future            | 1 2 3 4 5 |
| 16. Having religious or spiritual beliefs | 1 2 3 4 5 |
| 17. Helping others                        | 1 2 3 4 5 |
| 18. My own ideas of right and wrong       | 1 2 3 4 5 |

### **Where I live and spend my time:**

- |                                       |           |
|---------------------------------------|-----------|
| 19. Feeling safe in my home           | 1 2 3 4 5 |
| 20. Feeling safe when I go out        | 1 2 3 4 5 |
| 21. The area of the country I live in | 1 2 3 4 5 |
| 22. The house or apartment I live in  | 1 2 3 4 5 |
| 23. The neighborhood I live in        | 1 2 3 4 5 |
| 24. The things that I own             | 1 2 3 4 5 |

Not at All (1)	Not Very (2)	Somewhat (3)	Very (4)	Extremely (5)
-------------------	-----------------	-----------------	-------------	------------------

### *Importance*

#### *How important to me is...?*

##### **The people around me:**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 25. Being close to people in my family | 1 | 2 | 3 | 4 | 5 |
| 26. Belonging to cultural/faith groups | 1 | 2 | 3 | 4 | 5 |
| 27. Having acquaintances               | 1 | 2 | 3 | 4 | 5 |
| 28. Having a spouse or special person  | 1 | 2 | 3 | 4 | 5 |
| 29. Having social events to attend     | 1 | 2 | 3 | 4 | 5 |
| 30. Having friends                     | 1 | 2 | 3 | 4 | 5 |

##### **My access to things:**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 31. Being able to get professional services | 1 | 2 | 3 | 4 | 5 |
| 32. Having a good education                 | 1 | 2 | 3 | 4 | 5 |
| 33. Having enough money                     | 1 | 2 | 3 | 4 | 5 |
| 34. Having events in my community to attend | 1 | 2 | 3 | 4 | 5 |
| 35. Having places in my community to attend | 1 | 2 | 3 | 4 | 5 |
| 36. Having work I enjoy                     | 1 | 2 | 3 | 4 | 5 |

##### **The daily things I do:**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 37. Doing things around my home           | 1 | 2 | 3 | 4 | 5 |
| 38. Doing volunteer work for others       | 1 | 2 | 3 | 4 | 5 |
| 39. Going to appointments (medical, etc.) | 1 | 2 | 3 | 4 | 5 |
| 40. Attending to appearance and hygiene   | 1 | 2 | 3 | 4 | 5 |
| 41. Attending to other people or pets     | 1 | 2 | 3 | 4 | 5 |
| 42. Working at a job or attending school  | 1 | 2 | 3 | 4 | 5 |

##### **The things I do for enjoyment:**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 43. Attending public entertainment            | 1 | 2 | 3 | 4 | 5 |
| 44. Having hobbies and personal interests     | 1 | 2 | 3 | 4 | 5 |
| 45. Having vacation and holiday activities    | 1 | 2 | 3 | 4 | 5 |
| 46. Indoor activities (TV, reading, etc.)     | 1 | 2 | 3 | 4 | 5 |
| 47. Outdoor activities (walks, cycling, etc.) | 1 | 2 | 3 | 4 | 5 |
| 48. Visiting and spending time with others    | 1 | 2 | 3 | 4 | 5 |

##### **The things I do to improve/change:**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 49. Being able to cope with changes in my life | 1 | 2 | 3 | 4 | 5 |
| 50. Getting along better with others           | 1 | 2 | 3 | 4 | 5 |
| 51. Improving my physical health and fitness   | 1 | 2 | 3 | 4 | 5 |
| 52. Learning about new things                  | 1 | 2 | 3 | 4 | 5 |
| 53. Solving my problems                        | 1 | 2 | 3 | 4 | 5 |
| 54. Trying out new things                      | 1 | 2 | 3 | 4 | 5 |

Not at All (1)	Not Very (2)	Somewhat (3)	Very (4)	Extremely (5)
-------------------	-----------------	-----------------	-------------	------------------

### *Satisfaction*

#### *How satisfied am I with...?*

##### **The people around me:**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 25. Being close to people in my family | 1 | 2 | 3 | 4 | 5 |
| 26. Belonging to cultural/faith groups | 1 | 2 | 3 | 4 | 5 |
| 27. Having acquaintances               | 1 | 2 | 3 | 4 | 5 |
| 28. Having a spouse or special person  | 1 | 2 | 3 | 4 | 5 |
| 29. Having social events to attend     | 1 | 2 | 3 | 4 | 5 |
| 30. Having friends                     | 1 | 2 | 3 | 4 | 5 |

##### **My access to things:**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 31. Being able to get professional services | 1 | 2 | 3 | 4 | 5 |
| 32. Having a good education                 | 1 | 2 | 3 | 4 | 5 |
| 33. Having enough money                     | 1 | 2 | 3 | 4 | 5 |
| 34. Having events in my community to attend | 1 | 2 | 3 | 4 | 5 |
| 35. Having places in my community to attend | 1 | 2 | 3 | 4 | 5 |
| 36. Having work I enjoy                     | 1 | 2 | 3 | 4 | 5 |

##### **The daily things I do:**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 37. Doing things around my home           | 1 | 2 | 3 | 4 | 5 |
| 38. Doing volunteer work for others       | 1 | 2 | 3 | 4 | 5 |
| 39. Going to appointments (medical, etc.) | 1 | 2 | 3 | 4 | 5 |
| 40. Attending to appearance and hygiene   | 1 | 2 | 3 | 4 | 5 |
| 41. Attending to other people or pets     | 1 | 2 | 3 | 4 | 5 |
| 42. Working at a job or attending school  | 1 | 2 | 3 | 4 | 5 |

##### **The things I do for enjoyment:**

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 43. Attending public entertainment            | 1 | 2 | 3 | 4 | 5 |
| 44. Having hobbies and personal interests     | 1 | 2 | 3 | 4 | 5 |
| 45. Having vacation and holiday activities    | 1 | 2 | 3 | 4 | 5 |
| 46. Indoor activities (TV, reading, etc.)     | 1 | 2 | 3 | 4 | 5 |
| 47. Outdoor activities (walks, cycling, etc.) | 1 | 2 | 3 | 4 | 5 |
| 48. Visiting and spending time with others    | 1 | 2 | 3 | 4 | 5 |

##### **The things I do to improve/change:**

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 49. Being able to cope with changes in my life | 1 | 2 | 3 | 4 | 5 |
| 50. Getting along better with others           | 1 | 2 | 3 | 4 | 5 |
| 51. Improving my physical health and fitness   | 1 | 2 | 3 | 4 | 5 |
| 52. Learning about new things                  | 1 | 2 | 3 | 4 | 5 |
| 53. Solving my problems                        | 1 | 2 | 3 | 4 | 5 |
| 54. Trying out new things                      | 1 | 2 | 3 | 4 | 5 |

1=Almost None  
 2=Not Much  
 3=Some  
 4=Much  
 5=Almost Total

1=Almost None  
 2=A Few  
 3=Some  
 4=Many  
 5=Great Many

## *How much control do I have over...?*

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. My physical health                      | 1 | 2 | 3 | 4 | 5 |
| 2. My thoughts and feelings                | 1 | 2 | 3 | 4 | 5 |
| 3. My beliefs and values                   | 1 | 2 | 3 | 4 | 5 |
| 4. Places where I spend my time            | 1 | 2 | 3 | 4 | 5 |
| 5. With whom I spend my time               | 1 | 2 | 3 | 4 | 5 |
| 6. Using what my community has to offer    | 1 | 2 | 3 | 4 | 5 |
| 7. The everyday things I can do in my life | 1 | 2 | 3 | 4 | 5 |
| 8. The things I can do for fun & enjoyment | 1 | 2 | 3 | 4 | 5 |
| 9. The things I can do to improve myself   | 1 | 2 | 3 | 4 | 5 |

## *Are there opportunities for me to improve...?*

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. My physical health                      | 1 | 2 | 3 | 4 | 5 |
| 2. My thoughts and feelings                | 1 | 2 | 3 | 4 | 5 |
| 3. My beliefs and values                   | 1 | 2 | 3 | 4 | 5 |
| 4. Places where I spend my time            | 1 | 2 | 3 | 4 | 5 |
| 5. With whom I spend my time               | 1 | 2 | 3 | 4 | 5 |
| 6. Using what my community has to offer    | 1 | 2 | 3 | 4 | 5 |
| 7. The everyday things I can do in my life | 1 | 2 | 3 | 4 | 5 |
| 8. The things I can do for fun & enjoyment | 1 | 2 | 3 | 4 | 5 |
| 9. The things I can do to improve myself   | 1 | 2 | 3 | 4 | 5 |

## *Internet Use*

### 1. What type Internet access do you have at

Home:  None  dial-up modem (56K or less)  Broadband (200K or greater)  Don't know  
 Work:  None  dial-up modem (56K or less)  Broadband (200K or greater)  Don't know  
 School:  None  dial-up modem (56K or less)  Broadband (200K or greater)  Don't know

### 2. What is the source of your Internet connection?

Home:  SBC Yahoo!  MSN  America Online  Wal-Mart  
        The Door  NTS  Earthlink  Other \_\_\_\_\_ (please specify)  Don't know  
 Work:  SBC Yahoo!  MSN  America Online  Wal-Mart  
        The Door  NTS  Earthlink  Other \_\_\_\_\_ (please specify)  Don't know  
 School:  SBC Yahoo!  MSN  America Online  Wal-Mart  
        The Door  NTS  Earthlink  Other \_\_\_\_\_ (please specify)  Don't know

### 3. How many hours per week do you estimate you spend on the Internet?

Home: \_\_\_\_\_ hours      Work: \_\_\_\_\_ hours      School: \_\_\_\_\_ hours

### 4. How many hours per week do you use the Internet for the following:

E-mail	Home: _____ hours	Work: _____ hours	School: _____ hours
Travel/Reservations Info.	Home: _____ hours	Work: _____ hours	School: _____ hours
Games	Home: _____ hours	Work: _____ hours	School: _____ hours
Music/Entertainment	Home: _____ hours	Work: _____ hours	School: _____ hours
Social (Chat or InstMess)	Home: _____ hours	Work: _____ hours	School: _____ hours
Online banking	Home: _____ hours	Work: _____ hours	School: _____ hours
Medical information	Home: _____ hours	Work: _____ hours	School: _____ hours
E-commerce (buying)	Home: _____ hours	Work: _____ hours	School: _____ hours
E-commerce (selling)	Home: _____ hours	Work: _____ hours	School: _____ hours
Research	Home: _____ hours	Work: _____ hours	School: _____ hours
Video conferencing	Home: _____ hours	Work: _____ hours	School: _____ hours
Geneolgy	Home: _____ hours	Work: _____ hours	School: _____ hours
Other(list)_____	Home: _____ hours	Work: _____ hours	School: _____ hours
Other(list)_____	Home: _____ hours	Work: _____ hours	School: _____ hours
Other(list)_____	Home: _____ hours	Work: _____ hours	School: _____ hours

**APPENDIX F**  
**REMINDER NOTICE TO COMMUNITY**

Dear Littlefield Resident:

Last week, you received in the mail a duplicate questionnaire for the quality of life research project being conducted by the City of Littlefield, Littlefield High School, and Texas Tech University. Records show we have not yet heard back from you. It is important that we receive an adequate number of responses to make the results of this study valid, so your input is vital to helping assess the technology needs of the community.

This is the last time we will contact you, and data collection will end on Friday, April 2. Your name can still be entered in the drawing for \$100 cash and the designer necklace upon receipt of your completed questionnaire. **If you have questions, please call me at 777-6489.** Thank you.

Sincerely,  
Susie J.R. Bullock  
Instructor



**APPENDIX G**  
**NEWSPAPER ARTICLES IN *LAMB COUNTY LEADER***

# THE LAMB COUNTY LEADER

Volume 82 Number 89 P.O. Box 310 Littlefield, Texas 79339 Phone (806) 385-4481



50¢  
**NEWS**

Wednesday, February 18, 2004, 8 Pages, 1 Section, 1 Supplements

## *Littlefield to be part of Quality of Life survey*

A survey will be distributed over the next couple of days to Littlefield High School students, their parents, and a random sample of the remainder of the Littlefield population to determine how technology and access to technology affects the quality of life of citizens in Littlefield.

The survey is being done by Susie Bullock, an instructor at Texas Tech University in the Agricultural Education and Communications Department. Bullock will be receiving her doctorate from both Tech and Texas A&M University in August and the survey is part of her final dissertation.

"The survey will be distributed to high school students through the social studies classes to get a census. The random sample of the population will be adults who do not have children in high school," said Bullock. The surveys going to the random sample will be mailed soon.

The survey will provide Bullock with the information to back up her thought that access to technology, especially computers and high-speed Internet, can

positively impact the quality of life in rural communities.

"No one has ever done a model on how quality of life is impacted by technology usage, so this will be the first one ever done," said Bullock.

The survey will consist of four sections: demographics, computer use, quality of life, and technology access and use.

The main part of the survey will consist of the third part of the survey, quality of life. Questions about the importance and satisfaction will be asked in areas ranging from my body and health to where I live and spend my time to the things I do to improve/change.

The results of the study will be released to the community in May.

"I hope that this study will have some implication on the technology training that the students in Littlefield receive. It is possible that this study could lead to grants being written that could help in getting a computer into every household in Littlefield," said Bullock.

Participation in the project is  
See SURVEY, Page 4

*Continued from Page 1*

## SURVEY

completely voluntary and all answers will be kept strictly confidential.

Prizes, ranging from merchandise from local merchants to cash prizes will be offered as incentives to return the surveys in a timely fashion.

It is estimated that all of the surveys will need to be returned by Mar. 1.

Littlefield Economic Development Coordinator Melvin Hall is excited about the survey being done in Littlefield.

"This survey can give us a lot of insight into where the community stands on technology, which could be a huge advantage for us when looking at economic development," said Hall.

Hall also hints that the information obtained by the survey could be a key to opening several doors for grants and other financial opportunities to bringing new enterprises to Littlefield.

"The main point of having the survey done in Littlefield is to bring a bigger and better opportunity to enhance our lives," commented Hall.

# THE LAMB COUNTY LEADER

Volume 82 Number 91 P.O. Box 310 Littlefield, Texas 79339 Phone (806) 385-4481



# 50¢ NEWS

Wednesday, February 25, 2004, 28 Pages, 2 Section, 2 Supplements

## *Quality of Life surveys due Friday*

WEDNESDAY, FEBRUARY 18, 2004 3

All surveys concerning the impact on how the access to technology affects the quality of life in rural communities is due on Friday.

The survey is being done by Susie Bullock, an instructor at Texas Tech University in the Agricultural Education and Communications Department. Bullock will be receiving her doctorate from both Tech and Texas A&M University in August and the survey is part of her final dissertation.

The survey will provide Bullock with the information to back up her thought that access to technology, especially computers and high-speed Internet, can positively impact the quality of life in rural communities.

"No one has ever done a model on how quality of life is impacted by technology usage, so this will be the first one ever done," said Bullock.

The survey will consist of four sections: demographics, computer use, quality of life, and technology access and use.

The main part of the survey will consist of the third part of the survey, quality of life. Questions about the importance and satisfaction will be asked in areas ranging from my body and health to where I live and spend my time to the things I do to improve/change.

The results of the study will be released to the community in May.

**APPENDIX H**  
**USDA RELEASE ANNOUNCING GRANTS FOR BROADBAND**

Alisa Harrison (202) 720-4623  
Tim McNeilly (202) 690-0498

## **VENEMAN ANNOUNCES \$11.3 MILLION IN BROADBAND TECHNOLOGY GRANTS**

Washington, DC (Jan. 29, 2003) — “Technology is key to the ability of rural businesses to compete in a global marketplace,” said Veneman. “Extending broadband technology to allow more families and communities to access business, education and health services is part of the Bush Administration’s effort to expand economic opportunity and improve the quality of life in rural America.”

“With the expansion of technology, fewer families will find it necessary to leave their hometowns to find jobs,” said Agriculture Under Secretary for Rural Development Thomas C. Dorr. “Technology can help bring jobs to rural America.”

Communities selected (list located at [www.rurdev.usda.gov](http://www.rurdev.usda.gov)) do not have access to broadband connectivity for the essential services of police and fire protection, hospitals, libraries and schools. In return for receiving a grant, the communities will provide residents with computer and Internet access. The grant program supplements USDA Rural Development’s standard high-speed telecommunications loan program.

USDA Rural Development’s mission is to deliver programs in a way that will support increasing economic opportunity and improve the quality of life of rural residents. [www.rurdev.usda.gov](http://www.rurdev.usda.gov).

**APPENDIX I**  
**OTHER SOFTWARE CHOSEN BY COMPUTER USERS**

## Other Software Chosen by Computer Users

Activant Lazer Cat	Pogo.com
AM	PrintShop
ATT	Reflections
AutoRead	Sigma
CAMWARE	The Door
Card Factory	Web Searches
Control Board	Windows
Creative	Yahoo
Flash-3	Yahoo.com-3
Games	
Google-2	
Internet Explorer	
J Creator	
JASC	
Java	
Kazza-3	
Master Cam	
Match	
Maximo	
Microsoft Game Net-2	
Money Works	
Mozilla	
MS Money	
MS Office XP Professional	
MS Works	
MS Works 5	
MSN	
Music	
Nero	
OpenOffice	
Paint Shop Pro	
PeachTree Accounting	
PeachTree Lucerte	

**APPENDIX J**  
**OTHER USES OF THE INTERNET BY ALL PARTICIPANTS**

## Appendix J. Other Uses of the Internet by All Participants

<b>Other Tasks</b>	<b>Other Tasks (continued)</b>
Autocad	News
Bill Paying	Printing
Cars	Ranching
E-bay, etc.	Rodeos
Excel	Shopping
Forensic Education Books	Sports
Future Jobs	Stocks (Ameritrade)
Girls	Surfing
Hardware	Talking
Homework	Workout

**APPENDIX K**  
**HOUSEHOLDS WITH COMPUTER AND INTERNET**  
**ACCESS BY SELECTED CHARACTERISTICS**

Table A.

**Households With Computers and Internet Access by Selected Characteristics:  
August 2000**

(Numbers in thousands. Civilian noninstitutional population)

Characteristic	Total households	Computer in household			Home Internet access		
	Number	Number	Percent	90 percent C.I. (+ -) <sup>1</sup>	Number	Percent	90 percent C.I. (+ -) <sup>1</sup>
<b>TOTAL HOUSEHOLDS .....</b>	<b>105,247</b>	<b>53,716</b>	<b>51.0</b>	<b>0.4</b>	<b>43,639</b>	<b>41.5</b>	<b>0.4</b>
<b>AGE OF HOUSEHOLDER</b>							
Under 25 years .....	6,104	2,675	43.8	1.5	2,179	35.7	1.5
25 to 44 years .....	42,545	25,944	61.0	0.6	21,353	50.2	0.6
45 to 64 years .....	34,800	19,800	56.9	0.6	16,251	46.7	0.6
65 years and over .....	21,798	5,297	24.3	0.7	3,856	17.7	0.6
<b>RACE AND HISPANIC ORIGIN OF HOUSEHOLDER</b>							
White .....	87,746	46,846	53.4	0.4	38,380	43.7	0.4
White non-Hispanic .....	78,719	43,829	55.7	0.4	36,260	46.1	0.4
Black .....	13,171	4,317	32.8	0.9	3,111	23.6	0.8
Asian and Pacific Islander .....	3,457	2,250	65.1	1.8	1,944	56.2	1.9
Hispanic (of any race) .....	9,565	3,224	33.7	1.4	2,255	23.6	1.3
<b>HOUSEHOLDER'S EDUCATIONAL ATTAINMENT</b>							
Less than high school diploma .....	17,402	3,162	18.2	0.7	2,032	11.7	0.6
High school diploma/GED .....	32,278	12,783	39.6	0.6	9,666	29.9	0.6
Some college .....	27,883	16,807	60.3	0.7	13,661	49.0	0.7
Bachelors degree or more .....	27,684	20,963	75.7	0.6	18,279	66.0	0.7
<b>SIZE OF HOUSEHOLD</b>							
One person .....	27,167	8,165	30.1	0.7	6,533	24.0	0.6
Two to four people .....	67,461	38,853	57.6	0.5	31,829	47.2	0.5
Five or more people .....	10,619	6,697	63.1	1.1	5,277	49.7	1.1
<b>HOUSEHOLD TYPE</b>							
Family households .....	72,044	42,238	58.6	0.4	34,315	47.6	0.4
Married-couple household .....	54,830	34,875	63.6	0.5	28,872	52.7	0.5
Male householder .....	4,179	1,879	45.0	1.8	1,455	34.8	1.7
Female householder .....	13,035	5,484	42.1	1.0	3,988	30.6	1.0
Nonfamily household .....	33,203	11,478	34.6	0.6	9,323	28.1	0.6
<b>PRESENCE OF SCHOOL-AGE CHILDREN IN HOUSEHOLD</b>							
Without children 6 to 17 years .....	76,558	34,537	45.1	0.4	28,360	37.0	0.4
With children 6 to 17 years .....	28,689	19,179	66.8	0.7	15,279	53.3	0.7
<b>REGION</b>							
Northeast .....	20,051	10,283	51.3	0.8	8,620	43.0	0.8
Midwest .....	24,276	12,442	51.3	0.8	9,929	40.9	0.8
South .....	38,009	17,891	47.1	0.6	14,404	37.9	0.6
West .....	22,912	13,099	57.2	0.8	10,685	46.6	0.8
<b>METROPOLITAN STATUS</b>							
Metropolitan .....	84,646	45,110	53.3	0.4	37,124	43.9	0.4
Inside central city .....	31,806	14,727	46.3	0.7	11,987	37.7	0.6
Outside central city .....	52,840	30,382	57.5	0.5	25,137	47.6	0.5
Nonmetropolitan .....	20,601	8,606	41.8	1.0	6,515	31.6	0.9
<b>FAMILY INCOME</b>							
<b>TOTAL FAMILIES .....</b>	<b>72,044</b>	<b>42,238</b>	<b>58.6</b>	<b>0.5</b>	<b>34,315</b>	<b>47.6</b>	<b>0.5</b>
Under \$15,000 .....	7,458	1,747	23.4	1.2	1,068	14.3	1.0
15,000-19,999 .....	3,298	1,021	30.9	2.0	674	20.4	1.7
20,000-24,999 .....	4,173	1,437	34.4	1.8	1,040	24.9	1.6
25,000-34,999 .....	8,553	4,031	47.1	1.3	2,982	34.9	1.3
35,000-49,999 .....	9,918	6,131	61.8	1.2	4,766	48.1	1.2
50,000-74,999 .....	12,555	9,424	75.1	1.0	7,825	62.3	1.1
75,000+ .....	15,040	13,198	87.8	0.7	11,886	79.0	0.8
Not reported .....	11,050	5,249	47.5	1.2	4,074	36.9	1.1

<sup>1</sup>This figure added to or subtracted from the estimate provides the 90-percent confidence interval.

Source: U.S. Census Bureau, Current Population Survey, August 2000.

Table B.

**Access to a Home Computer and Use of the Internet at Home by Children 3 to 17 Years:  
August 2000**

(Numbers in thousands. Civilian noninstitutional population)

Characteristic	Children 3 to 17 years old	Home computer access		Use Internet at home	
	Number	Number	Percent	Number	Percent
<b>TOTAL</b>	<b>60,635</b>	<b>39,430</b>	<b>65.0</b>	<b>18,437</b>	<b>30.4</b>
<b>AGE</b>					
3 to 5 years	11,915	6,905	58.0	864	7.3
6 to 11 years	24,837	15,924	64.1	6,135	24.7
12 to 17 years	23,884	16,600	69.5	11,439	47.9
<b>SEX</b>					
Male	31,055	20,273	65.3	9,392	30.2
Female	29,580	19,156	64.8	9,045	30.6
<b>RACE AND HISPANIC ORIGIN</b>					
White	47,433	33,062	69.7	15,940	33.6
White non-Hispanic	38,438	29,731	77.3	14,773	38.4
Black	9,779	4,161	42.5	1,441	14.7
Asian and Pacific Islander	2,581	1,855	71.9	909	35.2
Hispanic (of any race)	9,568	3,546	37.1	1,229	12.8
<b>HOUSEHOLDER'S EDUCATIONAL ATTAINMENT</b>					
Less than high school diploma	10,159	3,060	30.1	1,126	11.1
High school diploma/GED	18,915	10,559	55.8	4,600	24.3
Some college	16,994	12,712	74.8	5,926	34.9
Bachelors degree or more	14,567	13,098	89.9	6,786	46.6
<b>HOUSEHOLD TYPE</b>					
Family households	60,012	39,119	65.2	18,284	30.5
Married-couple household	42,936	31,593	73.6	15,050	35.1
Male householder	3,092	1,508	48.8	740	23.9
Female householder	13,984	6,017	43.0	2,493	17.8
Nonfamily household	620	310	50.0	154	24.8
<b>REGION</b>					
Northeast	10,794	7,576	70.2	3,832	35.5
Midwest	14,302	9,816	68.6	4,591	32.1
South	20,870	12,711	60.9	5,756	27.6
West	14,668	9,327	63.6	4,258	29.0
<b>METROPOLITAN STATUS</b>					
Metropolitan	49,316	32,513	65.9	15,187	30.8
Inside central city	17,478	9,341	53.4	4,149	23.7
Outside central city	31,839	23,171	72.8	11,038	34.7
Nonmetropolitan	11,319	6,917	61.1	3,250	28.7
<b>FAMILY INCOME</b>					
<b>TOTAL 3 TO 17 YEARS IN FAMILIES</b>	<b>59,288</b>	<b>38,729</b>	<b>65.3</b>	<b>18,139</b>	<b>30.6</b>
Under \$15,000	7,480	2,041	27.3	578	7.7
15,000-19,999	2,896	1,044	36.0	373	12.9
20,000-24,999	3,596	1,507	41.9	547	15.2
25,000-34,999	6,967	3,755	53.9	1,463	21.0
35,000-49,999	8,463	6,044	71.4	2,694	31.8
50,000-74,999	10,374	8,574	82.6	4,142	39.9
75,000+	12,115	11,294	93.2	6,263	51.7
Not reported	7,395	4,470	60.4	2,079	28.1

Source: U.S. Census Bureau, Current Population Survey, August 2000.

**APPENDIX L**  
**STUDENT PERMISSION SLIP AND REMINDER**

February 13, 2004

Texas Tech University, in cooperation with the City of Littlefield and Littlefield High School, is conducting research of all students in 9th through 12 grades along with their parents. We are seeking to learn about your usage of technology, especially computers and high-speed Internet, and how it affects your quality of life.

With your permission, your son or daughter will complete a Quality of Life Profile during social studies class. Then, he or she will bring home two similar questionnaires for the heads of your household to complete. If the student lives with both mother and father, we ask that each of you complete the form.

Participation in this project is completely voluntary. Your answers will be kept strictly confidential, and data will be reported collectively with no individual's data being singled out or identifiable.

Thank you in advance for your participation in this very important study. Your completion of this instrument will help our community and school determine additional technology needs as they relate to improving quality of life in Littlefield. If you have questions about this survey, please contact Susie Bullock at 806-742-2816 or by e-mail at susie.bullock@ttu.edu.

I give permission for my son/daughter \_\_\_\_\_ to participate in the  
Texas Tech Quality of Life Study.

\_\_\_\_\_  
Parent or Guardian's signature \_\_\_\_\_ Date \_\_\_\_\_

Dear Parent:

Your son or daughter expressed interest as a participant in the Quality of Life Study conducted by Texas Tech University on behalf of The City of Littlefield and Littlefield High School. However, we did not receive a signed permission slip from you.

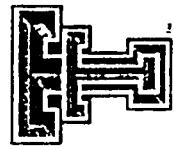
The student has already completed the questionnaire, so all we need is for you to return the enclosed permission slip in the self-addressed, stamped envelope. Participation in this project is completely voluntary. The student's answers will be kept strictly confidential, and data will be reported collectively with no individual's data being singled out or identifiable.

Thank you in advance for your participation in this very important study. Your completion of this instrument will help our community and school determine additional technology needs as they relate to improving quality of life in Littlefield.

The student's name will be placed in a drawing for a number of valuable prizes provided by the university and the community. If you have questions about this survey, please contact me at 806-742-2816 or by e-mail at [susie.bullock@ttu.edu](mailto:susie.bullock@ttu.edu).

Sincerely,

Susie Bullock, Instructor  
Texas Tech University



**APPENDIX M**  
**INTERNAL REVIEW BOARD (IRB) APPROVAL**



## TEXAS TECH UNIVERSITY

Office of Research Services

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FAX (806) 742-3892

February 11, 2004

Dr. James H. Smith  
Ms. Susie J.R. Bullock  
Ag Ed & Communications  
MS 2131

RE: Project 04004      Analysis of Technology Usage and Quality of Life in a Rural  
West Texas Community

Dear Dr. Smith:

The Texas Tech University Committee for the Protection of Human Subjects has approved your proposal referenced above. The approval is effective from February 4, 2004 through February 2, 2005. You will be reminded of the pending expiration approximately 6 weeks prior to February 2, 2005 so that you may request an extension if you wish.

The following sentence needs to be included in all consent forms this protocol uses: This consent form is not valid after 2/2/2005.

The best of luck on your project.

Sincerely,

Dr. Richard P. McGlynn, Chair  
Human Subjects Use Committee