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An Analytical Model To Assess Technology Needs In A Rural Community

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Biographical Sketch

Orlando Ray Terry is a native of the city of Henderson, North Carolina and the county of Vance. He earned his Bachelor of Science degree in Electronics and Computer Technology from North Carolina Agricultural and Technical State University in 1998. In 2012, he joined the graduate program in Information Systems at North Carolina Agricultural State University in Greensboro, N.C.

Dedication

I dedicate this thesis to my children, Noah Rashod, Isreal Elijah, and Zari Brooks Terry; and to my beautiful and supportive wife Fanta. This work is also dedicated to my mom, Delores. Noah and Isreal, thank you so much for staying up with Daddy during the long homework nights and weekends, for your understanding and sacrifices that you made so daddy could get the job done.

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Abstract

Information technology (IT) has shaped fundamental changes throughout society. IT has facilitated the shift from an industrial age to a network age. In addition to altering commerce, education, government and communications, IT affects the construction of and response to social problems such as poverty and inequality. The very existence of the "digital divide"--or lack of access to IT for certain segments of the population-- is evidence of the ability of technology to worsen existing inequality. At the same time, technology promotes organizing efforts to disadvantaged communities, and it can connect people to a range of opportunities. The community technology movement--a grassroots social movement that employs IT to empower historically disadvantaged individuals and communities--demonstrates the potential of IT to serve as a tool of social change.

In our research, we answer the following questions: What are the technological gaps that exist in low socioeconomic rural communities such as Vance County? And what are the community resources and potential partnerships specifically relevant to establishing a community technology center in rural communities such as those in Vance County?

For this research, we created an analytical community-mapping model that collected, populated, organized and generated reliable data useful in determining the unmet technological needs of a rural community and producing an on-line or print "map" of the wide variety of relevant technology literacy activities and public access sites in a low socioeconomic rural community. The overall approach to this research was that of mixed methods. The proposed model consisted of a needs assessment that included a proven survey (that we modified for Vance County), interview questions, a case study, and

evaluation research that will aid communities in discovering what digital technologies are currently available, and to whom.

Judging from our data, we concluded that Vance County has several organizations that serve underserved populations. However, there is a gap in computer literacy service to youth in the community, and there are no organizations that use their computers solely for computer literacy training. Our findings also reveal that Vance County community technology efforts are fragmented and the community's efforts in this area are not visible to the community nor are their linkages among them. Finally, as a result of our data, we were not able to produce an effect map of relevant technology literacy activities in Vance County, as there were no activities or programs to report.

Our recommendations, as a result of our research are as follows: 1) To submit a proposal to the policy makers of the city of Henderson to include community technology into their economic and community development policy goals. 2) To propose a Community Technology Planner position to the City Council. 3) To create a community forum to discuss community technology needs in Vance County.

Chapter 1

Introduction

In today's society, individuals must possess knowledge of technology and have the ability to use it. Technology is used in classrooms, homes and businesses for training, project completion, research and basic communication. Today's technology-based economy creates a platform for technology to open the door to many resources. These resources are readily available at the fingertips of individuals who know how to use technology to access information.

Rural communities suffer many disadvantages that keep them from having access to technology and the information this technology allows them to access. Residents are disproportionately isolated from informal networks that carry information about good economic opportunities. This isolation helps to perpetuate joblessness, financial insecurity, and undesirable living arrangements, including fatherless households. Even for people with jobs, earnings are often insufficient. Political participation is weak, and voter turnout is low. Communities where all these conditions coexist are in danger of becoming more and more isolated from the mainstream of society. Measures to counteract this possibility should be high priorities (Ferguson and Dickens 1999).

The digital divide is now recognized as an international issue (Servon 2002). Current and historical patterns of access to IT illustrate a significant separation between information "haves" and information "have-nots" along lines of race, socioeconomic status, education level, household type and geographic location. The technology gap has emerged as a prominent issue. It affects how we work and what we work toward, how we connect with each other and with whom we connect, and how we make decisions and using what

information. Living on the wrong side of the digital divide, as do the persistent poor, means being cut off from these changes and disconnected from the information society.

The technology gap has been defined as a problem of access in the narrow sense of possession or permission to use a computer and the Internet (Servon 2002). Because the technology gap has been narrowly defined as a problem of access, policies and programs have also been narrowly focused. Proposed solutions to the digital divide tend to begin with making sure that schools are wired and every household has a computer. The focus on simply getting computers to people has resulted in millions of dollars of misspent money. Clearly the digital divide is much more complex than a mere lack of computers. Servon suggests that redefining access requires shifting the primary question from who has access to "what are people doing and what are they able to do, when they go online?" (Servon 2002).

Community Technology Centers (CTCs -known as telecenters) have emerged at an increasing pace in the last several years to deal with the digital divide. CTCs are locally based nonprofit organizations that link community residents to IT resources. Thousands of organizations are currently working to disseminate IT to local communities. CTCs work to foster the potential positive benefits of the information revolution while combating its associated problems. CTCs address the digital divide comprehensively and advance larger social, political and economic goals in the process (Servon 2002).

The success of community technology centers depends largely on how well they complement the existing programs and addresses interest and needs currently unmet with the community. (Stone, CTCNet Start-Up Manual 2003). Therefore, a community technology center should be in direct response to an unmet community need. A needs assessment is

defined by Kaufman, Herman, and Watters (1996) as the process of identifying gaps in results (needs), placing them in priority order and selecting the most important for reduction or elimination on the basis of what it costs to close versus what it will cost to ignore the need. Kaufman, Herman and Waters define a need as the gap between current and desired/required results. It is not a gap in resources, processes or how-to's.

In this research we created a analytical community-mapping model that collected, populated, organized and generated reliable data useful in determining the technological gaps that exist in low socioeconomic rural communities such as in Henderson, Vance County, N.C. The overall approach to this research was that of mixed methods. The proposed model consisted of a needs assessment that included a proven survey, interview questions, a case study and evaluation research that will aid communities in discovering what digital technologies are currently available, and to whom. The data findings will 1) enhance the success rate of the community technology center, 2) increase community buy-in and partnerships and 3) serve as a reflection of the technological needs and priorities of the rural community.

Community technology centers are judged and evaluated with a rural community according to how well it understands and reflects upon community priorities. These priorities may or may not be openly communicated.(Stone, CTCNet Start-Up Manual 2003) This research will create a model that can assess community technology needs in a rural community.

1.1 Definition of Terms

Information Technology

Refers to the combination of hardware, software, and services that people use to manage, communicate, and share information. (Rosenblatt, 2014)

CTC (Community Technology Center)

Community Technology Centers (CTCs) have emerged at an increasing pace in the last several years to deal with the digital divide. CTCs are locally based nonprofit organizations that link community residents to IT resources. CTCs work to foster the potential positive benefits of the information revolution while combating its associated problems. CTCs address the digital divide comprehensively and advance larger social, political, and economic goals in the process. (Servon, 2002)

Describing the role of CTCs, Seattle City Planner, David Keyes stated: CTCs are stepping-stones to opportunity, equality and civic participation for youth, senior citizens, minorities, low-income people and new residents. These centers also serve as focal points for job skill development, lifelong learning and community building. CTCs may be stages for cultural activity, electronic hearings, public events and conferencing. CTCs are often part of larger programs and can be found in community centers, public facilities, non-profit and schools, housing communities and libraries. CTCs provide a range of services from general access to advanced training. They usually include access to computers and the Internet and may be linked to other community network technology services such as web or email hosting. CTCs use a range of information technologies and application to do their work. (Stone, 2003)

Community Technology

Community technology helps ensure that people are not deprived of such opportunities due to a lack of personal resources while at the same time fostering community development and connectedness. (Stone, 2003)

Community technology has become a tool of both individual and community empowerment. The technology we have today enables people to take charge of their own lives, allowing a richer experience, because it does not channel what one is doing. Rather, technology allows for greater self-expression, self-directed learning and opens up new pathways for community interaction. New technology will continue to develop in response to, and in anticipation of, our needs, and our communities have a responsibility to ensure that these technologies are accessible to all community members. Hence, CTCs are a vital, community-building resource providing opportunities for continuing technology literacy amidst a backdrop of larger societal inequities. (Stone, 2003)

Community technology initiatives encompass at least three definitions of community:

1. Community as a physical place
2. Community as a social group that shares common interest
3. Community as a feeling of belonging or attachment. (Servon 2002)

Digital Divide

The lack of access to IT for certain segments of the population. (Servon 2002)

Digital Inclusion

Digital inclusion is the ability of individuals and groups to access and use information and communication technologies. Digital inclusion encompasses not only access to the Internet

but also the availability of hardware and software; relevant content and services; and training for the digital literacy skills required for effective use of information and communication technologies. (Building Digital Communities, IMLS Institute of Museum and Library Services, Washington DC, 2012)

Disadvantaged Workers

Refers to those workers who have been largely detached from the labor force, who lack requisite skills, who may face discrimination in the labor market and/ or who are currently unemployed or employed in jobs that fail to pay a living wage. (Servon 2002)

Need

A gap between current results and desired or required ones (not a gap in resources, methods, or means). (Kaufman, Herman, and Waters, 1996)

Needs Assessment

A needs assessment provide the unvarnished results-based data required to identify the gaps between current and desired (or required) results. Needs assessments are more than questionnaires. Both "hard"- independently verifiable- and "soft" –personal, not independently verifiable- data must be collected and compared, before you can have much confidence in the needs identified and selected. (Kaufman, Herman, and Waters, 1996)

Chapter 2

Motivation and Problem Definition

2.1 Motivation

Being a native and a resident of the city of Henderson and the county of Vance for over 39 years, I have witnessed first hand the economical and technological challenges of our community.

As a Human Resources Development Instructor in the Workforce Development Division of Vance-Granville Community College, I observed the empowerment and self-efficacy that Information Technology provided for the unemployed, underemployed and dislocated workers of Vance County.

As an Information Systems Instructor for Vance-Granville Community College, Information Technology played a significant role in the retraining of disadvantaged workers of the community. Especially during the time of plant closure of two of Vance County's strongest economic pillars -J.P. Taylor Tobacco Company and Harriet Henderson Yarns.

This event is similar to the case study completed by Broman, Hamilton, and Hoffman in the book, *Stressed and Distressed among the Unemployed* (2001). This study covered the time frame when General Motors announced, November 6, 1986, that it would be closing nine plants and parts of two others by 1990, most by the end of 1987. This announcement represented a major blow to the state of Michigan, which had the highest concentration of plants, and to the members of the International Union, United Automobile, Aerospace, and Agricultural Implement Workers of America (UAW). Who would take the brunt of the job losses? Early in 1987, the Michigan Health and Social Security Research Institute founded

and operated by the UAW, began a study of individual and families who would be affected by 1987 GM shutdowns.

The closing of a plant has effects on individuals, their families, their communities and the economies that once depended on the output of those plants. There are three types of effects that were focused on in the Broman, Hamilton and Hoffman book.

1. Financial consequences to workers and their families are almost inevitable. Plant closings hurt- not only workers who lose jobs but also workers who keep their jobs, but find that their sense of security is lost, and their sense of financial well-being is cast in doubt.
2. Mental health can be seriously affected by a plant closing. Mental health impact of unemployment includes increases in depression and anxiety. Losing a job does not usually make a person paranoid or catatonic, but it often leads to the panic of anxiety and the despair of depression. Because mental health effects can appear immediately, even before plants actually close, the authors expected to find the most immediate and evident of the GM plant closings in this arena.
3. Finally consequences are probable but not certain under the circumstances of plant closing. These may include effects as mild as an increase in nitpicking or strained relationships within the family. Serious effects may include such outcomes as physical abuse or divorce. (Broman, Hamilton, and Hoffman, 2001)

As a civic leader and pastor in the city of Henderson, we created a prototype of a community technology center within the church. The prototype was an effective public access site to the community and provided an opportunity to use computers for technology literacy activities.

Technology can support the work of schools in several ways including: tailoring learning experiences more sharply to learner needs and abilities; providing students with access to resources and expertise outside the school, both enriching their learning and extending the time devoted to learning, supporting more authentic assessment of a student's progress and assisting schools in managing and guiding the learning activities of their students.

As an Instructional Technologist for Vance County Schools, opportunity was given to provide training and support to teachers on aligning instructional strategies with technology. Leadership opportunities were also provided, as I served on the leadership team for the county's 1:1 Laptop Initiative sponsored by the Golden Leaf Foundation.

2.2 Problem Definition

Today, Vance County remains at a stand- still. Even though it appears the community has tried to increase access, Vance County is still weakened when it comes to content and training. There is a technological gap in our community when it comes to technology literacy training for both youth and adults. We tend to translate needs as means and resources, but this research establishes that needs are gaps between current results and desired or required ones, not a gap in resources, methods or means.

Debates around technology in the classroom have been polarized into unproductive conversations about whether computers can and should take the place of teachers. No one who supports technology in the schools believes that technology can do the job of teachers. These debates need to be reoriented toward discussions of how technology can support what teachers do, and what teachers need in order to use IT to prepare their students. Once again, the key issue is not access, but how computers are used to educate children. We must

continue to address the following specific issues: content; curriculum reform; professional development; assessment; equity; and community involvement. (Servon, 2002).

Henderson and Vance County, has an opportunity to foster the potential positive benefits of the information revolution while combating its associated problems. In this research, we identify the technological gaps that exist in low-social economic rural communities such as Henderson/ Vance County and identify the community resources and potential partnerships specifically relevant to establishing of a community technology center in a rural community.

Chapter 3

Literature Review

3.1 Digital Divide

In *Bridging the Digital Divide* (2002), Lisa J. Servon investigates the problem of unequal access to information technology (IT). The author covers subject matter that deals with redefining the digital divide as well as exploring the dimensions of the digital divide. Servon also discusses the role of CTCs with the Community Technology Movement (2002). In this book, Servon acknowledges that bridging the technology gap will require not only the innovative work currently underway at local CTCs but also the active engagement of the public sector. Servon reviews what the public sector is currently doing to close the digital divide and discusses the limits of existing policies and programs. Servon also analyzes key telecommunications concepts and policies in order to document the current policy landscape, reveal the gaps in existing efforts, and propose recommendations that would enable policy to address this issue more comprehensively. Servon devotes an entire chapter to Community Technology and Youth. Her focus on youth stems from the fact that this group stands to lose the most from being disconnected and the most to gain from obtaining access to IT. Young people who are not connected will be potentially cut off from other opportunities IT can offer. Those who are connected will have greater access to college, to well-paying jobs, and to information that will help them more fully participate in civic society.

Servon also covers the topic of Training Disadvantaged Workers for IT Jobs. She discloses that workforce development intersects in important ways with the digital divide. Workers who do not have IT skills have access to much less opportunity in the labor

market than those who do. Servon focuses on the labor market for IT workers, an how innovative programs and policies can be used to benefit both employers, who cannot fill available jobs, and disadvantage workers, who cannot find good jobs. According to Servon, "Disadvantaged" refers to those workers who have been largely detached from the labor force, who lack requisite skills, who may face discrimination in the labor market, and/or who are currently unemployed or employed in jobs that fail to pay a living wage. She shares that scholars and activists have begun to recognize that, in order for low-income communities to benefit fully form IT, the next generation of technology policy must support two additional pillars- the creation of local content and the increased technology capacity of community-based organizations (CBOs). Methods of data collection for Servon's research were: surveys, in-depth interviews, nonparticipant observations, existing program data, and expert reviews.

3.2 Strategic Planning

Strategic Planning for Public and Nonprofit Organizations (2011), by John Bryson is based on two premises. The first is that leaders and managers of public and nonprofit organizations must be effective strategist if their organizations are to fulfill their missions, meet their mandates, satisfy their constituents, and create public value in the years ahead. These leaders and managers will need to exercise as much discretion as possible in the areas under their control. They need to develop effective strategies to cope with changed and changing circumstances, and they need to develop a coherent and defensible basis for their decisions. They also need to build the capacity of their organizations to respond to significant challenges in the future.

The second premise is that leaders and managers are most likely to discern the way

forward via a reasonably disciplined process of deliberation with others when the situations faced require more than technical fixes. Bryson supports that strategic planning at its best makes extensive use of analysis and synthesis in deliberative settings to help leaders and mangers successfully address the major challenges that their organization (or other entity) faces. This book begins by defining strategic planning as a deliberative, disciplined approach to producing fundamental decisions and actions that shape and guide what an organization (or other entity) is, what it does, and why it does it. Bryson suggests that strategic planning has an important role to play as part-but only a part- of complex social problem solving. Specifically, it can be helpful for: 1) gathering, analyzing, and synthesizing information to consider its strategic significance and frame possible choices; 2) producing considered judgments among key decision makers about desirable, feasible, defensible, and acceptable missions, goals, strategies, and actions, along with complementary initiatives, such as new, changed, or terminated policies, programs, and projects, or even overall organizational designs; 30 addressing key organizational challenges now and in the foreseeable future; 4) enhancing continuous organizational learning; and 50 creating significant and enduring public value. This book is intended to help practitioners make suitable, wise, and effective use of strategic planning.

Kaufman Herman and Watters are the authors of Educational Planning, *Strategic, Practical and Operational* (1996). The authors suggest that educational planning seeks to create a learner-focused and societally relevant system, which will measurably and continuously move toward success, producing hopefully, and educational system which is deliberately designed to contribute to the kind of world we want for tomorrow's children.

The authors state in the text that most educational planning approaches target one or two aspects of a total educational system: curriculum, quality management, strategic planning, facilities, personnel, budget and finance, courses, educational technology, and/or staff development. While each of these individual pieces is important, they make their most powerful contribution when they are integrated and related. The requirement for a process to generate an "educational planning synergy" is what motivated the authors to write this book.

To relate the various elements of any educational system, including all of the conventional ones, the authors have divided the book into three major areas: Strategic Planning, Tactical Planning, and Implementation. The two levels of planning should be linked and integrated in order that implementation- what we use, do, produce, and deliver- will make a useful societal and community contribution. In addition, the authors identify how various usually independent educational efforts, including strategic planning, (total) quality management, and needs assessment can and should be integrated. This book is holistic in scope, combining the basic elements of strategic planning with the usual areas of educational planning.

This book builds upon the previous works and ideas of the authors, in addition to providing new material. Because the authors have published extensively, some of the work will be recognizable, even in updated form. This is, however, not a rehash, but rather a synthesis of what works, with the addition of new concepts and tools.

In *Strategic Management for Public and Nonprofit Organizations* (2003), Alan Steiss provides a comprehensive examination of viable strategic management practices applicable to governmental and nongovernmental organizations- exploring strategic

planning, resource management, control, and evaluation in daily operations, and the role of information management systems. This book discusses SWOT analysis, Total Quality Management, systematic innovation, Six Sigma, quality function deployment, process mapping, gap analysis, activity-based costing, cost benefit and cost-effectiveness analysis, public budgeting, change management, performance evaluation and management controls.

Robert Heath uses *Strategic Issues Management* (1997)to position issues management in the strategic planning and management efforts conducted by staff and executives in large organization. This book argues that issues management is not just one of the many communication functions, but a management function that can entail use of public policy resources to achieve harmony with key publics.

Heath explores the communication options that organizations can employ in their stewardship to address crucial public policy option's and engage in collaborative decision making. In addition to these crucial topics, this book examines crisis responses to advise managers on ways to lessen the chance of crisis.

3.3 Disadvantaged Workers

3.3.1 Plant Closing

What are the causes of deindustrialization? How it can be avoided?, Why do plant closures occur? What impacts do they have on workers and their communities? Are the existing protections adequate? If not, what new policies are needed? These are some of the questions the authors seek to provide answers to within the twenty-six chapters of *Deindustrialization and Plant Closure* (1987), by Staudohar and Holly**.** This book is unique in presenting a balanced perspective indicating both the pro-legislation and free-market approaches. Included are chapters covering: 1) an overview of deindustrialization and

plant closure; 2) impact of plant closure on firms, workers, and communities; 30 policies of management, unions, and government for dealing with the problems; 4) perspectives on plant closure from foreign countries that shed light on American solutions; and 5) assessment of state laws and proposed federal legislation.

The methodologies in the readings are essentially descriptive, with both quantitative and qualitative analyses presented. The approach generally is from a social and behavior science perspective and is interdisciplinary. Among the academic disciplines represented in the readings are business, economics, law, political science, public administration, sociology, and psychology.

3.3.2 Layoffs

The Unemployed (2004), by Eli Ginzberg, is a classic study of the effect of unemployment and of the ways of relieving it upon typical families of the 1930s and 1940s. This book is a vivid and startling picture of the demoralizing influence and consequences of America's relief policies during the Depression years. The study comprises an incisive interpretation of the problem and a series of absorbing human-interest stories of representative families on relief-cases selected from experiences of relief, including the records of families from various religious groups in an exhaustive study in New York City. This book deals with what unemployment does to people. It seeks answers to questions, which beset and agitate every citizen, questions which must be answered before we can act.

Ginzberg investigates the following questions: Who were the unemployed? Did they fail to earn a living even in prosperous times? What precipitated their unemployment? When business declined, were they the first to be dismissed because they had been the

least efficient? How did they adjust to unemployment? Was it true that they preferred Relief with its regular allowance to work at slightly higher wages? What was the influence of the Relief system on the unemployed? Did the clients resent the monthly visits of the Relief investigators as intrusions upon their privacy? Did their acceptance of Relief break their morale and make them more dependent persons? Was it true that unemployment brought about changes in their thinking and feeling? Did the unemployed break with the church? Did they become radicals and join the Communists? Did they indulge in sexual excesses or take up drinking? In answering these questions the authors used an assemblage of economists, psychiatrists, social workers, statisticians and the unemployed themselves

3.3.3 Stress and Skills

In *Stress and Distress Among the Unemployed* (2001)by Broman, Clifford L., V. Lee Hamilton, and William Sydney Hoffman, the author shares the 1987 General Motors plant closings, which represented a major upheaval for thousands of workers, for the union that represented those workers, and for the communities they called home. This book tells the story of what happened to workers affected by these plant closings. More generally, it deals with the stress. The author wishes that this book were out of date and that the phenomenon of plant closings and their human consequences had ceased to be. Instead, this book chronicles what was, at the time, the largest series of plant closings by a single employer-General Motors' 1987 plant closings-but it does so in the shadow of a much larger set of closings by that same employer that occurred later. The chapters of this book are arranged in a circle. The methodology for this book was shared in Chapter Two. The main objective of the study was to estimate changes in individuals' and families' lives that

could be clearly attributed to plant closings. The authors used a prospective quasi-experimental design to examine the impact of plant closings on workers and their families.

The study compared workers from four closing plants with workers from 12 non-closing plants in the greater Detroit and Flint areas. The first phase, the gathering of baseline or "before" data consisted of face-to-face interviews with 1,597 workers that took place approximately three months before the plant closings. The second wave of large-scale interviewing occurred in 1988, involving 1288 workers, and the third in 1989, involving 1,136 workers. Finally, a small group of 30 workers who were identified as high depressed or nondepressed on the basis of the three surveys were interviewed again during the summer of 1991 in an intensive, clinical-style, open-ended format. In the study, the authors expected that workers in plants that were not closing might initially be affected-for example, the workers might appear more anxious than usual in fear that there plant may close as well.

The authors turned first to the basic outcomes of the unemployment they studied, characterized in terms of consequences for jobs and reemployment in Chapter Three, for mental health and for family life and its stresses in Chapter Four. Chapter Five dealt with how workers' characteristics influence their experience of unemployment. Chapter Six begins the discussion of mediators and moderators. Given that a stressor-unemployment-it asks the question, "how does unemployment do the damage it does?" The key mediators, according to the original Pearlin et al. (1981) model, can be expected to be financial hardship on the one hand and aspects of self-concept, particularly self-esteem and master or self-efficacy, on the other. Chapter six addresses these self-related impacts of unemployment. Chapter Seven addresses previous or concurrent negative life events,

particularly military service and combat experience. Here the authors consider the issue of carryover stress and its relationship to unemployment. Chapters Eight and Nine turn to two key categories of potential buffers: cognitive strategies for dealing with the stressor and social support, or help seeking from others. Chapter Ten draws together the strands of the model.

The bottom line is that the downsizing of the factory offers a model of the ways stress invades the lives of individuals in large and subtle ways depending upon who the person is. Under some circumstances, for some workers, job loss during downsizing makes barely a dent; for other workers, or under different circumstances, job loss savages the worker's planned life trajectory, the worker's peace of mind and spirit and the harmony of the worker's home.

3.4 Community Development

In *Urban Problems and Community Development* (1999), Ronald Ferguson and Sara Stoutland begin with a broad conception of the community development system. They demonstrate its utility through a number of examples, some of which challenge standard assumptions. They analyze the division of roles and responsibilities among participants who have particular interests and powers at various levels of the system and across various sectors. In chapter 3, historian Alice O'Connor shows that alliances in the Twentieth Century to promote the community development agenda at the federal level have been weak political coalitions, undermined by internal fragmentation, intellectual marginalization, overdependence on volunteerism, pervasive racial bigotry, and internal contradictions among national social policies. She traces the roots of present thinking to the turn of the century and identifies recurrent challenges. O'Connor concludes that basic

concepts and rhetoric among people who care about neighborhoods have been remarkably constant, including what she calls " two deceptively simple principles" that have caused a great deal of confusion when programs have been put into place. The first is that residents should participate in the activities that define and shape their communities. The second is that the agenda for neighborhood development should be comprehensive. Today, comprehensive community initiatives (CCIs), community building initiatives (CBIs), CDCs, and a host of related activities fall squarely within this century-long tradition. Sara Stoutland contends that there are three major themes in studies of CDCs: community control, comprehensiveness, and synergy. According to Dickens, one reason jobs are essential for community vitality is that earnings pay for housing. Ronald Ferguson draws implications for policymaking, practice, and research and identifies unifying themes:

- The need to link inner-city businesses and residents to opportunities in the regional economy.
- The need to build local, state, and national political coalitions that pursue social justice in the allocation of public sector resources.
- The need to develop capacities among residents and professional service providers to collaborate with one another to build solutions to local problems.
- The difficulty of building such solutions without external resources.
- The pervasive importance of networks and alliances for addressing all types of important issues (Ferguson and Stoutland, 1999).

In the book *Jobs and Economic Development in Minority Communities* (2006), Paul Ong states that the lack of meaningful employment is at the core of the economic problem

facing low-income minority neighborhoods. Labor market development is arguably the most significant aspect of community economic development because the single largest component of household income comes from employment. Ong shares that this is even true for low-income neighborhoods. The authors share that training the labor force to acquire timely, relevant, and job-appropriate skills is an absolute prerequisite for economic development. In contrast to more affluent communities, the authors point out that poor minority communities have lower levels of education and higher school dropout rates. Residents of immigrant communities may also lack English language skills and references that can testify to their prior work experiences. Ong notes that the American workplace has experienced significant computerization in recent decades. Having less access to educational resources and computers, minority workers find themselves handicapped when competing for jobs. The hurdles are not just limited education and skills. The author states that some hurdles lie in the lack of appropriate social networks that can give information about existing jobs and link job seekers to appropriate job networks. By relying exclusively on neighborhood-based social networks of friends and family, many inner-city residents have poor knowledge of job opportunities that exist in the broader metropolitan area. This book focuses on employment outcomes and understanding how the labor market functions with respect to minority neighborhoods. Ong shares how the outcomes of many programs result in the programs' inability to train workers in skills that employers demand, with resulting mismatches between jobs and available skills. Overcoming the geographic barriers that separate low-income workers from employment opportunities is the focus of Chapter 5 by Michela Zonta (2006).

This book does not pretend to offer a magic recipe that will end chronic unemployment and underemployment in communities of color. Collectively, however, the chapters, which cover diverse communities and practices, send several unambiguous messages. While the broader goal remains to improve employment opportunities through community economic development, a single strategy that "fits all" is impossible. Concrete policies, programs, and practices must be tailor-made, taking into account the particularities, needs, and skills of individual and their communities. Access and linkages emerge as keywords for the economic development of minority communities. Access to education, training programs, housing and social services are essential for workforce development and for finding and maintaining decent jobs. Linkages, in the form a alliances to and collaborations with the wider community and region, the labor movement and unions, and other inner city and suburban groups, can counteract the historic tendencies of isolation and segregation experienced by communities of color. Finally this book notes that the promise for economic development lies with complementary strategies that, depending on the context may incorporate aspects of both the formal and informal economy and ensure access to affordable housing and social services.

In the book *Jobs and Economic Development*: *Strategies and Practice* (1998), Giloth states that "Job-centered economic development" integrates approaches from the fields of economic development, employment training, social services, and community development, making access to good jobs a primary outcome. Its strategies focus on connecting disadvantaged adults and youth to family-supporting jobs in their neighborhoods, cities, and regional economies, and ensuring that those jobs are sustainable, providing the basis for long-term careers. Workable policies and practices for

job-centered economic development are vitally important to agencies responsible for implementing welfare reform and workforce policy reform. It is a key element of the emerging "new federalism" in U.S. government and therefore a development strategy critical to the future success of state and local governments.

The collection of perspectives in Jobs and Economic Development combines an understanding of today's labor market with evaluations of current approaches to poverty alleviation.

Community Goal Setting, by Smith and Hester (1982) is written to help designers and planners alleviate some of the frustrations they have had with citizen participation. And because the design and planning process, in the view of the authors, requires an active partnership of professionals with the lay citizens, community leaders, local elected officials, planning board members, neighborhood activist, and members of groups like the League of Women Voters, the authors include these individuals as part of their intended audience. For students seeking skills to make their professions more humanistic and participatory, the book provides an introduction to the philosophical, political, and theoretical issues related to participatory goal setting, as well as tested techniques and examples. Students in design, planning, environmental and community psychology, urban sociology, and anthropology and development economics should find the book a valuable reference. We try to help interested citizens understand and implement goal-based community development process. Smith and Hester stress methods that can be self-initiated by laypersons. They show that goal setting represents and orderly approach that is comprehensible and manageable within the constraints of a public agency or a private office. Practitioners should be able to select an appropriate method from those examined in

this book. They might also refer to the list of techniques and case studies for suggestions and procedures to follow in decisions concerning industrial location, land use, human resource development, balanced growth, education, race relations, housing, health, transportation, neighborhood preservation, and downtown revitalization. To that end, Smith and Hester organized the book easy reference.

3.5 Community Technology Centers

When describing the role of CTCs, Seattle City Planner, David Keyes, *Bridging the Digital Divide: Technology, Community and Public policy* (Servon 2002), stated: CTCs are stepping-stones to opportunity, equality and civic participation for youth, senior citizens, minorities, low-income people and new residents. These centers also serve as focal points for job skill development, lifelong learning and community building. CTCs may be stages for cultural activity, electronic hearings, public events and conferencing. CTCs are often part of larger programs and can be found in community centers, public facilities, non-profit agencies and schools, housing communities, and libraries. According to Keyes, CTCs provide a range of services from general access to advanced training. They usually include access to computers and the Internet and may be linked to other community network technology services such as web or email hosting. CTCs use a range of information technologies and applications to do their work.

In essence, a CTC is a community service, social action, and/or educational facility whre computers and related communications technologies are available to people who otherwise might have little or no opportunity to use or learn to use these technologies. A CTC may be an independent agency dedicated to this mission, or it may be a program within a nonprofit organization (Stone 2003).

3.6 Building Digital Communities

The Institute of Museum and Library Services developed a Getting Started Guide to Building Digital Communities (2012). This manual defines digital inclusion as the ability of individuals and groups to access and use information and communication technologies. Digital inclusion encompasses not only access to the Internet but also the availability of hardware and software; relevant content and services; and training for the digital literacy skills required for effective use of information and communication technologies. The cost of digital exclusion is great. Without access, full participation in nearly every aspect of American society- from economic success and educational achievement, to positive health outcomes and civic engagement- is compromised.

Building Digital Communities: Getting Started Guide is designed to help communities attain the vision of digital inclusion.

Chapter 4

Methodology

4.1 Rationale for Methodology

We propose an analytical community-mapping model which can be used to gather and present information on the wide variety of technology literacy resources, and that can be found in low socio-economic rural communities. As stated earlier, rural communities suffer many disadvantages that keep them from having access to technology and the information this technology allows them to access. Residents are disproportionately isolated from informal networks that carry information about good economic opportunities. This isolation helps to keep alive joblessness, financial insecurity, and undesirable living arrangements. Even for people with jobs, wages are often insufficient, political participation is weak and voter turnout is low. Communities where all these conditions coexist are in danger of becoming more and more isolated from the mainstream of society.

The technology gap has been defined as a problem of access in the narrow sense of possession or permission to use a computer and the Internet. (Servon 2002). Because the technology gap has been narrowly defined as a problem of access, policies and programs have also been narrowly focused. Servon suggests that redefining access requires shifting the primary question from who has access to, "what are people doing, and what are they able to do when they go online?" (Servon 2002). The answer to these questions are much more important than having a computer.

Planning defines what has to be accomplished to deliver useful and intended results (Kaufman, Herman and Waters 2002). It is proactive. The success of planning depends

upon using a results focus. When we use need as a verb, we are prescribing, that is imposing, a solution, method, procedure, or activity. So ingrained in our common language is need as a verb that we are always prescribing to others how they should do things, what they should use, and the way they should live their lives- a tactic of disempowerment. We disempower when we dictate to others what to do without involving them and their welfare, in the decision…we take away their choices and options.

When planning, using need as a noun- a gap between current results and desired ones-can make the difference between current results and desired ones and can make the difference between success and failure (Kaufman, Herman, and Waters 2002). By reserving the use of need to signify a gap in results, our strategic thinking and planning will yield a rational basis for identifying and selecting useful ends and then finding and choosing the best means to get there. By doing so, we avoid rushing from unwarranted assumptions like (we "need" more computers; we "need" more in-service training) to ("computers will make learners more competent in both school and life"; "in-service training will make teachers competent and successful".

Community Technology Centers (CTCs) (known as telecenters in most other countries) have emerged at an increasing pace in the last several years to deal with the digital divide. CTCs address the digital divide comprehensively and advance larger social, political, and economic goals in the process. (Servon 2002). The success of the community technology centers depends largely on how well they compliment the existing programs and addresses interest and needs currently unmet with the community. (Stone, CTCNet Start-Up Manual 2003). Therefore, a community technology center should be in direct response to an unmet community need. A needs assessment is defined by (Kaufman,

Herman, and Watters 2002), as the process of identifying gaps in results (needs), placing them in priority order and selecting the most important for reduction or elimination on the basis of what it costs to close versus what it will cost to ignore the need.

For this research, we suggest the following analytical community-mapping model that will collect, populate, organize and generate reliable data useful in determining the technological gaps that exist in low socio-economic rural communities such as in Henderson and Vance County.

4.2 Conceptual Approach

We use an analytical community mapping model designed to gather and present information on the wide variety of technology literacy resources, including public access sites, educational opportunities, community networks and many others, that can be found in a low socio-economic rural community such as Henderson, in Vance County, N.C. Vance County currently has activities including trainings, events, public access sites, organizations, projects, and other resources that strengthen its technology literacy. Although some efforts exist in this area, there are several ways in which the situation could improve. For example, there is no single place to go for this information and no easy way for citizens to find the information they need. Therefore, we propose a community-mapping model to gather and present information on the wide variety of technology literacy resources that can be found in a low socio-economic rural community, especially those that address underserved populations.

4.3 Data Gathering Methods

The proposed model consists of a needs assessment that includes a proven survey, in-depth interviews, a case study and evaluation research that will aid communities in discovering what technology literacy resources are currently available and to whom.

The purpose of the survey was to gain a basic understanding of the characteristics of organizations that provided services to underserved populations, and if they provided technology literacy services. The survey consisted of 33 questions, most of which were closed end questions concerning staff size, target population, services and programmatic uses of technology. A few open-ended questions were also asked about the mission of the organization, current challenges faced and the type of data collected to evaluate technology programs.

In-depth interviews were used throughout the research process in order to obtain a range of information. Three interviews were conducted. One with the Henderson City Manager, the other with Vance County's IT Director and the last interview was conducted with the Director of Community Technology in Seattle, Washington. The interviews were qualitative. Rather than maintaining a rigid and completely structured interview format, (Servon 2002) suggested that the interviews be shaped in part by the interviewees' responses. Giving back some of the control over the interview situation to the interviewee opens up the potential for learning more and helps to break down the interviewer/ interviewee hierarchy. Creating an interaction based on give and take made the interviewees more comfortable with interjecting, offering supplementary information and redefining issues and questions.

The city of Seattle's efforts to bridge the digital divide proved an example of how IT tools can be used to work toward larger goals such as democracy, equity and efficiency. The work underway in Seattle also demonstrates that the public sector must play a critical role in employing IT toward these broad ends through a process that includes institutionalization, coordination, and integration. The Seattle case provides a range of lessons that other cities-and states and federal entities- can learn from, such as: How to institutionalize the work of closing the technology gap, How coordination leverages existing work, and How to integrate IT goals into the public agenda.

4.4 Validity and Limitations of Data

The end result of this research is to provide an on-line or print "map" of the wide variety of relevant technology literacy activities and public access sites in a low socioeconomic rural community or provide data or the lack there of. The primary performance measure is whether people find the technology map useful. This means that they consult the map and use the information. Using the information can take many forms including contacting organizations, signing up for training, visiting the public access sites or volunteering in any of the organizations listed in the map. To find the values to these measures, it might be necessary to conduct future on-line or other surveys and to interview people in organizations.

Chapter 5

Results and Analysis

5.1 Data Used

In this chapter, we provide an analysis of the proposed community-mapping model as describe in chapter four. We also establish the level of community interest in computer literacy programs along with perceived need, among its targeted constituency, for education programs, job skills development, afterschool activities, programs for young children, recreation, elder services and business interests. Lastly, we use the proposed community-mapping model as a database of community resources listing contact information for key institutions, the potential resources from each and, if possible, the potential benefit for that institution from collaboration or partnership with other computer literacy programs. We used the following data to conduct the analysis.

- **In-depth interview**: City Manager
- **In-depth interview:** Vance County IT Director
- **In-depth interview:** Seattle Washington's Community Planner

An online survey of 32 questions was designed using Google forms. Responses were received on the back end of the electronic survey as soon as participants clicked submit. The survey was sent to suggested departments provided by the City of Seattle's Department of Information Technology's Exhibit 2-3 (Stone 2003). The departments included: Library, Housing and Homeless, Human Services, Youth, Seniors, Immigrants, Workforce Training, Arts and Cultural Organizations, Business Sector, Education (K-12)/

Higher Education, Foundations, Health, Neighborhood Organization and Community Development, Government programs, planners, and policymakers.

The survey was modified and deployed via email to 30 organizations with a return of 23 responses. The purpose of the survey was to gain a basic understanding of the characteristics of organizations that provide services to underserved populations and if they provided technology literacy services, as well as The following questions were asked from the survey.

Section Heading: Profile

1. Name
2. Company Name
3. What is your position/title or role with this organization?
4. Address
5. City/Town
6. Zip code
7. Country
8. Email Address
9. Contact Number
10. What year was your organization founded?
11. What is the mission of your organization?
12. How many paid staff-persons do you have?
13. How many volunteers?

Section Heading: Services

14. Department (Choose the department that is the best fit for your organization.)
15. What kinds of services does your organization provide?

Section Heading: Targeted Population(s)

16. Who do you serve (target populations)?
17. Which Best describes the area you serve?

Section Heading: Services Location

18. Where are your technology services/programs offered?
19. In what ways does your organization currently use technology in its programs?
20. Approximately how many computers does your organization have?
21. Does your organization have access to the World Wide Web (Internet)?
22. Are the computers in your organization used for computer literacy training or office use or both?
23. Are your computers for public access?
24. In terms of your organization priorities, on a scale of 1 to 4 with 4 being the highest, how would you rank the importance of integrating technology into your programs?
25. To what extent has technology helped your organization to fulfill its mission/meet its goals?
26. What percentage of your staff regularly uses email or access the Internet?
27. What are the biggest challenges currently facing your organization as it relates to technology?

28. How do you know whether your program(s) is (are) successful?
29. Do you collect information to measure success?
30. What kind of information do you collect to measure the success of your program?

Section Heading: How Long Have You Worked in Vance County?

31. How long have you worked in Vance County?

Section Heading: Thank you

32. Who asked you to complete this survey?

For this research, we reviewed a case study of the City of Seattle that was conducted by Lisa Servon and her research team. Seattle, more than any other city, has responded to the new socioeconomic arrangements of the information age by working to become a technology literate city (Servon, 2002). The City of Seattle has institutionalized its commitment to technology literacy, coordinated its IT work with other public goals, and integrated IT into its mission and into the broader functions of city government. Seattle is an important example because public sector and grassroots initiatives have both been strong and complementary.

Seattle's efforts to bridge the digital divide provide an example of how IT tools can be used to work toward larger goals such as democracy, equity, and efficiency (Servon 2002). The work underway in Seattle also demonstrates that the public sector much play a critical role in employing IT toward these broad ends, through a process that includes institutionalization, coordination and integration. The Seattle case provides a range of lessons from which other cities, states and federal entities can learn.

5.1 Analysis of In-depth Interviews

5.1.1 In-depth Interview with the City Manager of Henderson, N.C.

We conducted an in-depth interview with the Henderson City Manager, Ray Griffin. The City Manager is the chief executive officer of the City who is appointed by and serves at the pleasure of the City Council. Henderson operates under the Council-Manager form of government pursuant to NC General Statutes. Some of the duties of a city Manager include: 1. Coordinates and manages the activities of all city departments; 2. Administers the financial and budget process for the city; 3. Scrutinizes and analyzes processes on improving operational efficiency and cost effectiveness 4. Manages services related to acquisition of real property for city purposes; including leases, property inventory and disposal; 5. Suggests various policies to the City Council and implements Council Policy; 6. Evaluates City programs; and 7. Investigates, delegates, and resolves, if possible, issues brought to this department's attention regarding city services or processes (http://ci.henderson.nc.us).

Prior to our interview with Griffin, I reviewed the City of Henderson's mission statement and 2012-2014 Strategic Plan. Strategic planning is the process of identifying long-term organizational goals, strategies and resources. A strategic plan looks beyond day-to-day activities and focuses on a horizon that is three, five, ten or more years in the future. Strategic planning starts with a Mission Statement that reflects the organization's vision, purpose and values. Mission statements usually focus on long-term challenges and goals, the importance of the organizations stakeholders and a commitment to the organizations role as a corporate citizen (Rosenblatt 2014). According to the City of Henderson's website, the Vision Statement is as follows: *To be a vibrant, safe, progressive*

and prosperous community in which citizens are actively engaged in governance and community activities. The City of Henderson's Mission Statement reads as such: *To provide value added services in a customer friendly, cost efficient and effective manner resulting in a safe and prosperous community.* We reviewed these statements, because the vision and mission statements tell what the organization or government is about, and why it exists, as well as, what it hopes to accomplish.

Information Technology (IT) has brought about fundamental changes throughout society. It has instrumented the shift from an industrial age to a network age. Up until the closing of Harriett Henderson Yarns in 2003, and J.P. Taylor, Henderson, had been known for its tobacco and textile industry. We now live in a society in which the production, acquisition and flow of knowledge drives the economy and in which the Global Information Network represents key infrastructure. It also affects the construction of and response to social problems such as poverty and inequality. Community technology helps ensure that people are not deprived of opportunities because of a lack of personal resources while at the same time fostering community development and connectedness, all of which reciprocates the vision and mission of Henderson.

After introductions, the City Manager and I began to engage in meaningful conversation around the subject of community technology. I informed him, that I reviewed the Vision and Mission Statements of the city, and that I had also located the 2012-2014 Strategic Plan. I asked Griffin three open-ended questions.

1. Could the use of technology in the community help to fulfill the vision and mission of the City of Henderson?

2. On the subject of community technology, what actions has the City of Henderson made to put technology into the community?
3. What challenges does the City of Henderson face as it relates to community technology?

Griffin shared that he supported the use of technology, and that it is a powerful tool as it relates to education, business, globalization and civilization. He talked about how the times have changed, and how technology has become a necessity for many in fulfilling day-to-day operations. Griffin stated that the use of technology is very important in the overall scope of the city's vision and mission. When asked about actions taken to put technology into the community, He stated that not many if any community technology initiatives have been planned for or implemented within the city. Griffin passionately explained that the challenge the city faces when encouraged to review initiatives- like technology in the community-he is limited by the "two C's". He shared that the two C's are competence and capacity. He shared that competence encompassed skill sets while capacity involved manpower, resources and facility. The city manager stated that he had no staff that could train other staff members or volunteers, nor did the city have the money or facility, at this time, to sponsor any initiative of this kind. When asked for suggestions on how to move forward with such an initiative, Griffin said that I or anyone else wanted to spear-head this kind of initiative, they should work with the leadership of the school system. He stated that Vance County Schools possessed the competence and the capacity. He shared how the location of the schools in rural communities could serve as community technology centers. "They have the staff, facility, infrastructure and the computers" (Griffin 2013).

5.1.2 In-depth Interview with the IT Director of Vance County

We also conducted an in-depth interview with the IT Director of Vance County, Mr. Kevin Brown. During the interview we asked Brown questions that involved his prior work history, education, current role and responsibilities, and if there were any community technology projects currently in progress that supported the mission and vision of the City of Henderson, and if there were projects being planned for future execution? As it turns out, Brown was unaware if the city or county owned a strategic plan. He shared that he had no staff and was directly responsible for the day-to-day operation of the technology management for the various county departments. He shared how his responsibilities ranged from server installations to help desk calls. He was, in fact, a "one man department", because of funding restrictions. In conclusion, Brown said, that computer literacy is very important and should rate very strongly as top priority of departments that provide services throughout the county. He also said that, for example, "On many occasions I answer calls from the accounting department in regards to simple spreadsheet task. Small computer literacy inabilities like this, handicap not only the service that is provided, but also the department, and ultimately the county as a whole. Brown concluded, that he could definitely see the need of a Community Technology Center and would love to be a part of the planning (Brown 2013).

5.1.3 In-depth Interview with the Community Planner of the City of Seattle

Lastly, we conducted an in-depth interview with the Community Planner of the City of Seattle, Mr. David Keyes. During our review of literature, we discovered that David Keyes was vital and key element of the City's commitment to universal technology literacy. Keye's

position was created to encourage and foster collaborative relationships among the city's community technology actors, as recommended by Servon (2002).

Keyes was contacted via phone and was very personable and eager to answer any question that we needed to ask as it related to community technology. We asked him three open-ended questions: 1) "How has the City of Seattle become so successful in their community technology initiatives?" 2) "How were they able to get local officials engaged in the intervention of the technology gap problem?" 3) "How did the City of Seattle go about creating a database of the public information that the Seattle citizens requested, and how did they make the important information available and easily accessible to the citizens?"

Keyes stated that the city's success has its grassroots in responding to the strong tradition of neighborhood-based planning and service delivery, as well as, to the commitment on the part of community technology actors and community leaders to represent the needs of those residents that have been left behind in the City's recent economic growth and prosperity. This kind of commitment has translated into an early awareness that the ability for all Seattle citizens to be able to use and access IT, is vital to ensure a democratic, just, and economically sustainable city, and local officials must therefore actively promote equitable access to IT (Keyes 2014).

Keyes responded to the question of local official engagement by noting that the request for public intervention into the technology gap problem has come from Seattle's citizens, who expected early on both that important public information be available on the Internet and that all citizens should be able to easily access this information. The city, in turn, has responded to these expectations with action. Keyes also noted that, "Seattle is also

an extremely community-oriented city". (Keyes 2014).

Lastly, in response to questions three, David Keyes shared that in 1996, the city established the Citizens' Literacy and Access Fund (CLAF), thereby boosting Seattle's commitment to narrowing the digital divide. He added that, the first CLAF project was to develop a Technology Resource Map, a directory of technology initiatives across the city. "Although several CTC's (Community Technology Centers) existed when CLAF was established, these initiatives lacked visibility and coordination (Keyes 2014). The Technology Resource Map publicized existing sites and facilitated coordination between technology initiatives. The City of Seattle Department of Information Technology currently lists 118 community technology sites on its website.

5.2 Analysis of Survey Results

We designed an electronic survey using Google forms. The survey questions were gathered from a proven survey used with the City of Seattle and modified for a more rural low- socioeconomic community like Vance County. The purpose of the survey was to gain a basic understanding of the characteristics of organizations that provide services to underserved populations, and if they provided technology literacy services, as well as, a few opened-ended questions were also asked about the mission of the organization, current challenges faced and the type of data collected to evaluate technology programs.

The survey was sent via email to suggested departments provided by the City of Seattle's Department of Information Technology's Exhibit 2-3 (Stone 2003). The departments included: Library, Housing and Homeless, Human Services, Youth, Seniors,

Immigrants, Workforce Training, Arts and Cultural Organizations, Business Sector, Education (K-12)/ Higher Education, Foundations, Health, Neighborhood Organization and Community Development, Government programs, planners and policymakers.

The survey was deployed via email to thirty organizations with a return of twenty-three responses. The effective response rate was, therefore, 66.0 percent, based on 20 of which were useable. Two of the participants answered the survey twice. It can be determined that the relatively high response rate demonstrates the strong interest among organizations in Vance County in learning more about community technology.

5.2.1 Analysis of Survey Responses

Section Heading: Profile

Question 2: Company Name (Below are the list of organizations that responded to the survey.)

Org1. NC Guardian ad Litem Program, **Org2**. Granville Vance District Health Department, **Org3**. ACTS of Vance County, Inc, **Org4.** Infinite Possibilities, Inc, **Org5**. City of Henderson, **Org6**. Beyond Challenges LLC, **Org7**. Vance-Granville Community College, **Org8**. Community Partners of Hope Inc, **Org9**. Kerr Tarr, **Org10**. Henderson DWS, **Org11**. Community Workforce Solutions, **Org12**. Vance County Schools, **Org13**. Vance County Senior Center, **Org14**. Henderson Vance County Chamber of Commerce, **Org15**. Abria's Chase Foundation, **Org16**. Division of Rehabilitation Services, **Org17**. Community Link, **Org18**. The Salvation Army, **Org19**. Equipping Faith Church

Question 3: What is your position/title or role with this organization?

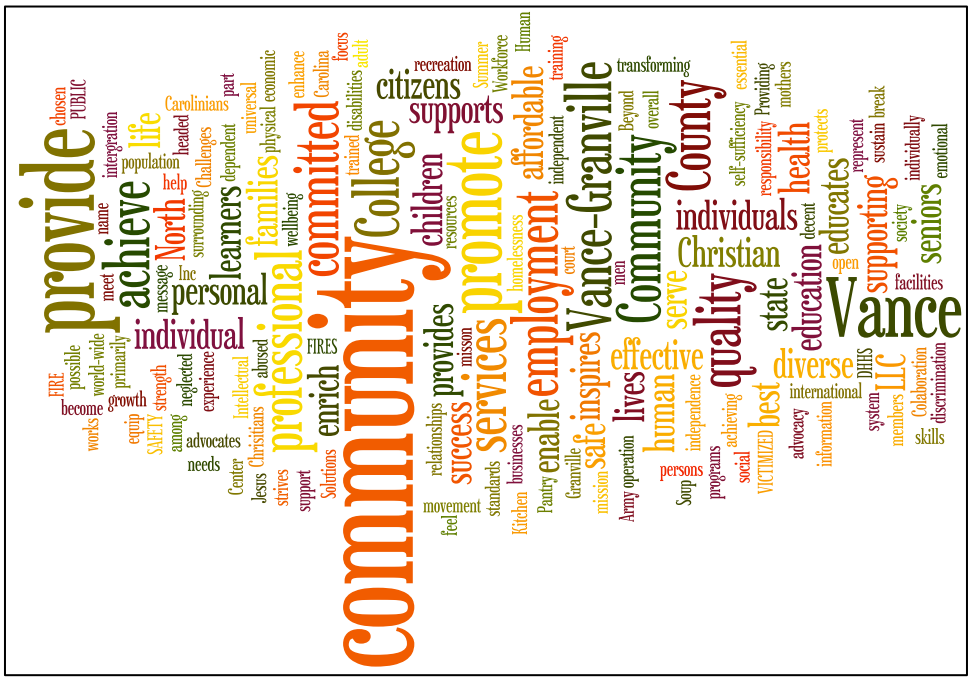
Table 1: Position titles

Organization	Title
Community Workforce Solutions	Business Enterprise Director
Infinite Possibilities, Inc	Chief Executive Officer
ACTS of Vance County	Executive Director
Equipping Faith Church	Senior Pastor
Beyond Challenges LLC	CEO Quality Management
Abria's Chase Foundation	Founder
Kerr Tar	Office Manager
The Salvation Army	A/Captain
Vance-Granville Community College	WIA Director
Division of Rehabilitation Services	Unit Manager
Community Link	Housing Coordinator
Vance-Granville Community College	Coordinator of Human Resources Development
Vance County Senior Center	Administrative Assistant
Vance County Schools	Director of Technology
Granville Vance District Health Department	Public Health Educator
Community Partners of Hope	Director of Operations
City of Henderson	Recreation/Parks Director
NC Guardian ad Litem Program	District Administrator
Henderson Vance County Chamber of Commerce	Office Manager
VGAP	Drop Out and Bullying Prevention Coordinator

Position titles of those that responded to the survey were those of middle to top level management positions.

Question 11: What is the mission of your organization?

Figure 1: Common themes in mission statements

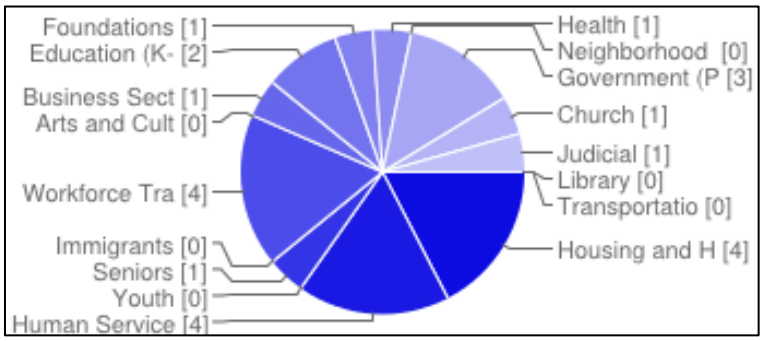


A Wordle was created with the data from Question 11 to show similarities among the mission statements of the organizations that responded to the survey. A Wordle is a fee online application used to generate “word clouds” form text that you provide. The clouds give a greater prominence to words that appear more frequently in the source text. (www.wordle.net)

Community was the most recognized theme in the mission statements of the organizations that responded to the survey.

Question 14: Department

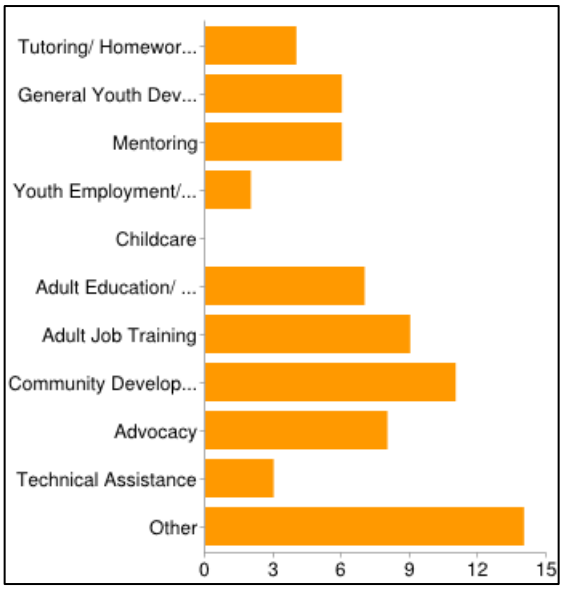
Figure 2: Departments



	0	0%
Library		
Housing and Homeless	**4**	17%
Human Services	**4**	17%
Youth	**0**	0%
Seniors	**1**	4%
Immigrants	**0**	0%
Workforce Training	**4**	17%
Arts and Cultural Organization	**0**	0%
Business Sector	**1**	4%
Education (K-12)/ Higher Education	**2**	9%
Foundations	**1**	4%
Health	**1**	4%
Neighborhood Org./ Community Developers	**0**	0%
Government (Programs, Planners, Policy Makers)	**3**	13%
Church	**1**	4%
Judicial	**1**	4%
Transportation	**0**	0%

Question 15: What kinds of services does your organization provide?

Figure 3: Services

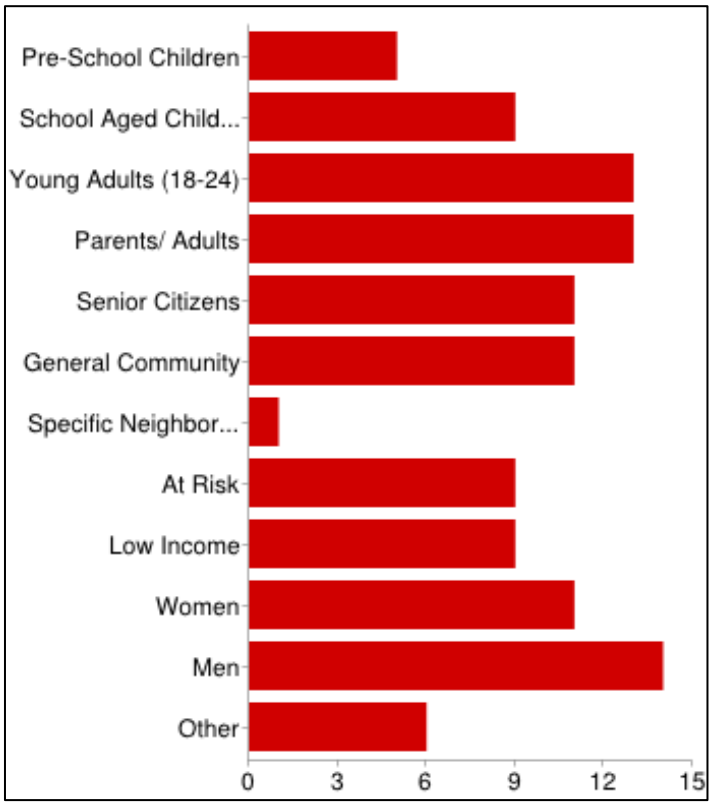


Tutoring/ Homework Assistance	**4**	6%
General Youth Development	**6**	9%
Mentoring	**6**	9%
Youth Employment/ School to Career	**2**	3%
Childcare	**0**	0%
Adult Education/ Literacy	**7**	10%
Adult Job Training	**9**	13%
Community Development	**11**	16%
Advocacy	**8**	11%
Technical Assistance	**3**	4%
Other	**14**	20%

Section Heading: Targeted Population(s)

Question 16: Who do you serve (target populations)? Check all that apply

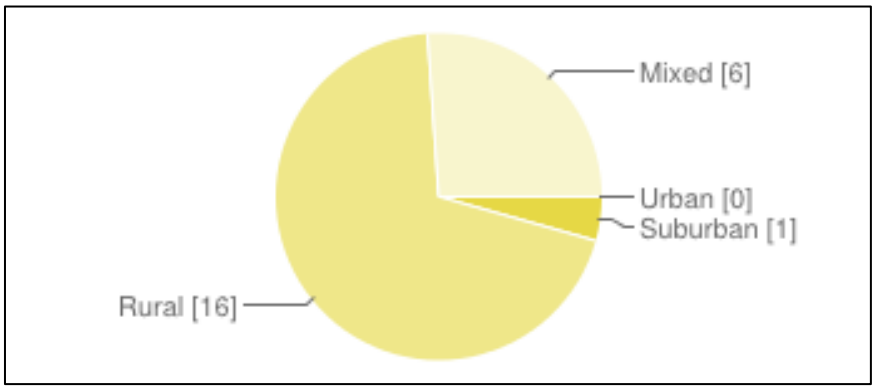
Figure 4: Targeted Populations



Pre-School Children	**5**	4%
School Aged Children (5-17)	**9**	8%
Young Adults (18-24)	**13**	12%
Parents/ Adults	**13**	12%
Senior Citizens	**11**	10%
General Community	**11**	10%
Specific Neighborhood(s)	**1**	1%
At Risk	**9**	8%
Low Income	**9**	8%
Women	**11**	10%
Men	**14**	13%
Other	**6**	5%

Question 17: Which best describes the area you serve?

Figure 5: Service Area

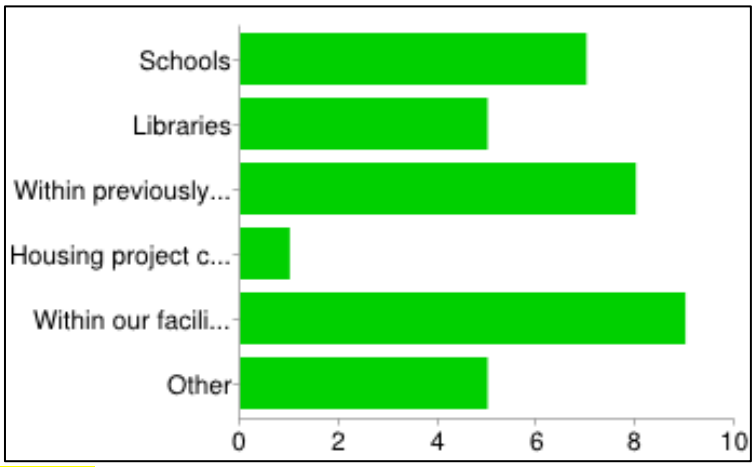


Urban	**0**	0%
Suburban	**1**	4%
Rural	**16**	70%
Mixed	**6**	26%

Section Heading: Services Location

Question 18: Where are your technology services/programs offered?

Figure 6: Service Locations

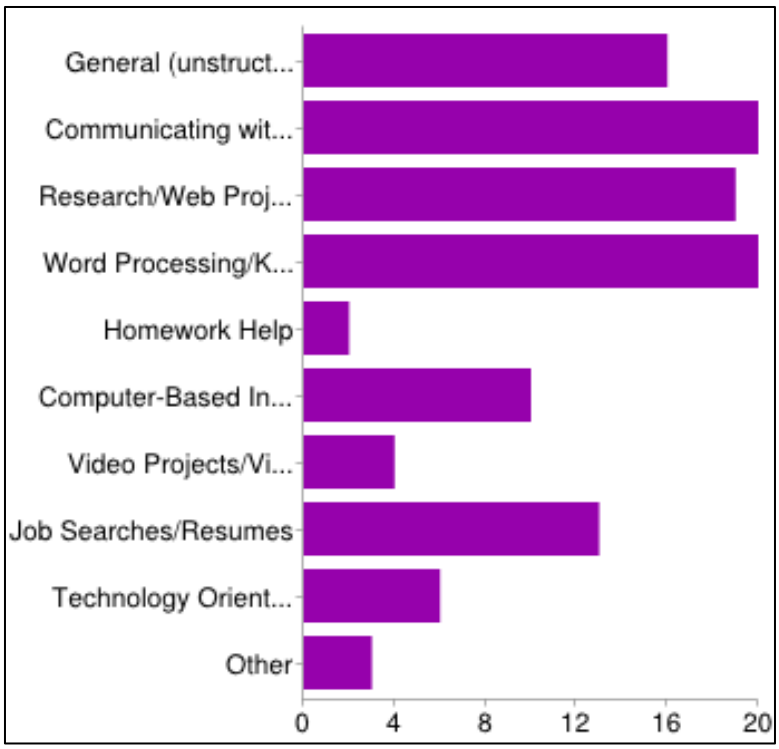


Schools	**7**	20%
Libraries	**5**	14%
Within previously existing community-based organizations	**8**	23%
Housing project communities	**1**	3%
Within our facilities	**9**	26%
Other	**5**	14%

Section Heading: Technology Usage

Question 19: In what ways does your organization currently use technology in its programs?

Figure 7: Technology Usage



General (unstructured) Computer Access	**16**	14%
Communicating with others (email)	**20**	18%
Research/Web Projects/Online Resources	**19**	17%
Word Processing/Keyboarding Skills	**20**	18%
Homework Help	**2**	2%
Computer-Based Instruction	**10**	9%
Video Projects/Video Production	**4**	4%
Job Searches/Resumes	**13**	12%
Technology Oriented Business	**6**	5%
Other	**3**	3%

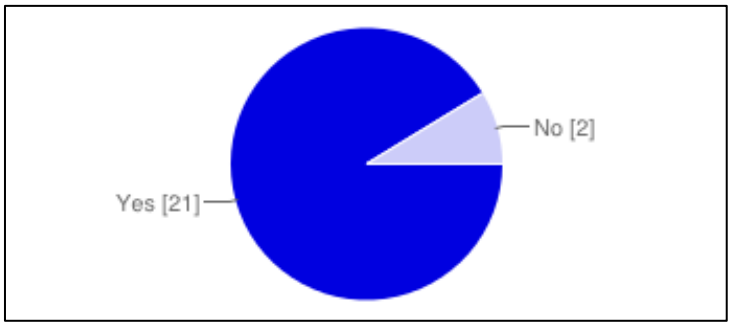
Question 20: Approximately how many computers does your organization have?

Figure 8: Number of Computers in Organizations

40	40 +	Numerous	2	1
30	5	4	9	8
17	Many	15	6000	90
40 + laptop access				

Question 21: Does your organization have access to the World Wide Web (Internet)?

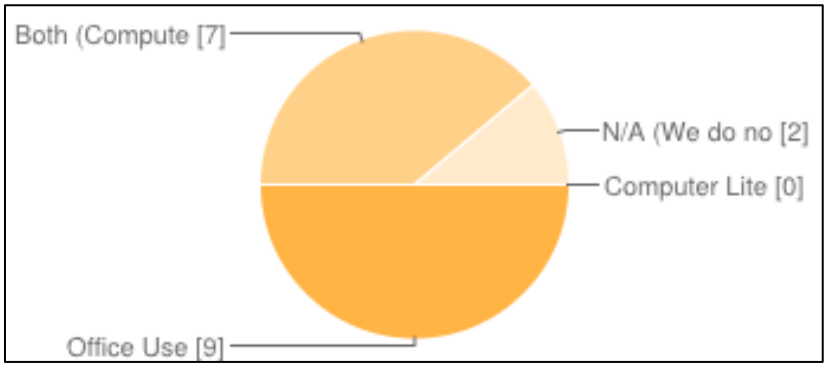
Figure 9: Internet Access



Yes	**21**	91%
No	**2**	9%

Question 22: Are the computers in your organization used for computer literacy training or office use or both

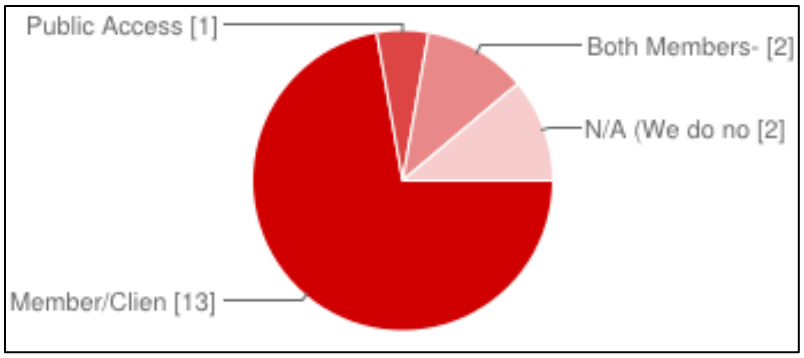
Figure 10: Computer Usage



	0	0%
Computer Literacy Training		
Office Use	**9**	50%
Both (Computer Training/ Office Use)	**7**	39%
N/A (We do not have computers)	**2**	11%

Question 23: Are your computers for public access?

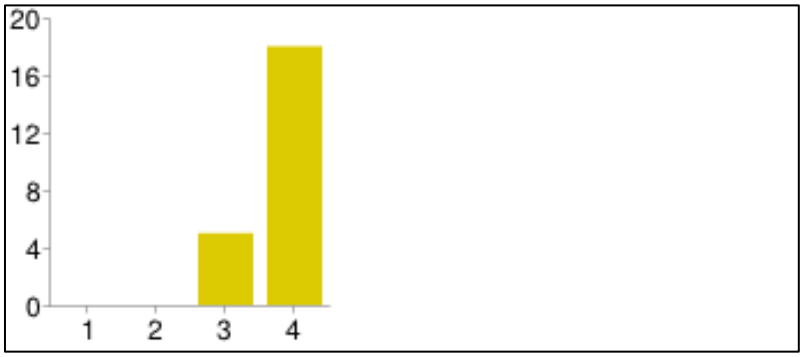
Figure 11: Public Access



Member/Client	**13**	72%
Public Access	**1**	6%
Both Members-Clients/ Public Access	**2**	11%
N/A (We do not have computers)	**2**	11%

Question 24: In terms of your organizations priorities, on a scale of 1 to 4 with 4 being the highest, how would you rank the importance of integrating technology into your programs?

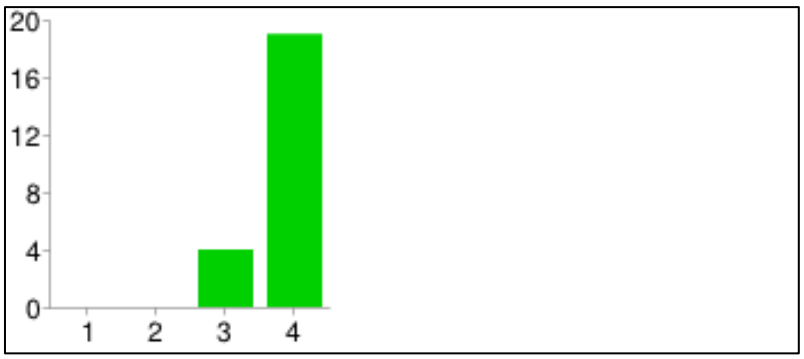
Figure 12: Importance of Technology in Programs



1	**0**	0%
2	**0**	0%
3	**5**	22%
4	**18**	78%

Question 25: To what extent has technology helped your organization to fulfill its mission/meet its goals?

Figure 13: Technology and Mission



1	**0**	0%
2	**0**	0%
3	**4**	17%
4	**19**	83%

Question 26. What percentage of your staff regularly use email or access the Internet?

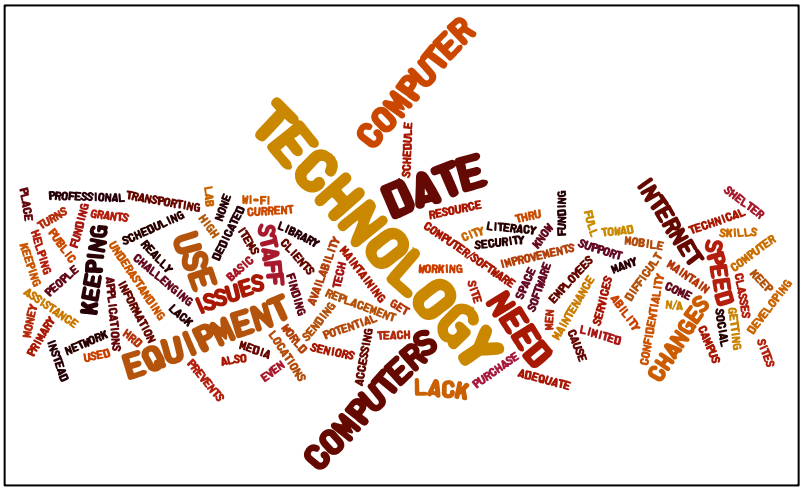
Below are the percentage rates of the organizations use of email or access to the Internet.

100% 15% 99% 100% 80% 98% 75% all 90% 75%

The responses to this question shows the wider variance in percentage of staff usage of email or the Internet.

Question 27: What are the biggest challenges currently facing your organization as it relates to technology?

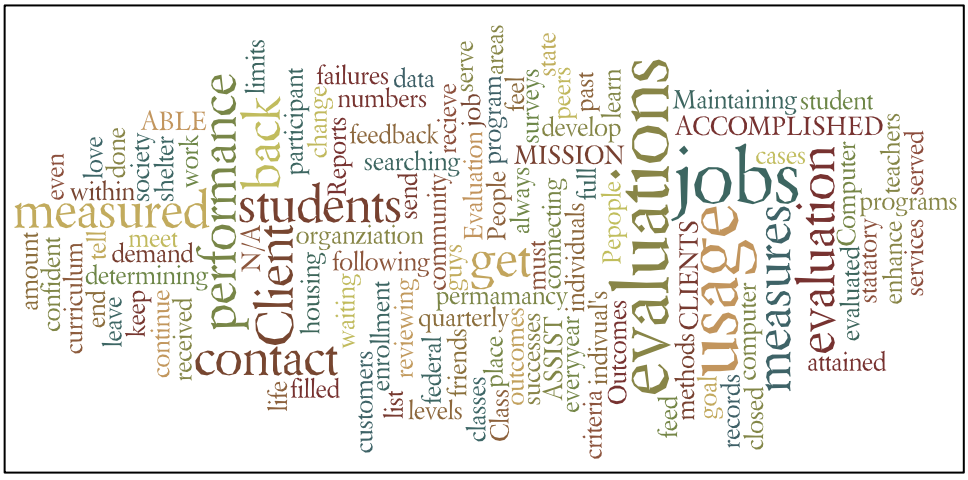
Figure 14: Technology Challenges



Challenges with technology within the organizations are all centered on technology itself and the many aspects and parameters connected with the technology in their organizations.

Question 28: How do you know whether your program(s) is (are) successful?

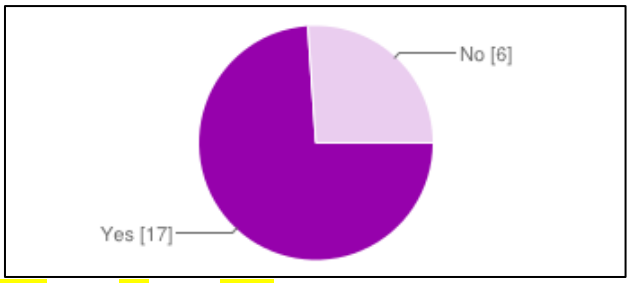
Figure 15: Evaluation Strategies



There are many types of evaluations used to measure success with in the programs.

Question 29: Do you collect information to measure success?

Figure 16: Do You Collect Information to Measure Success?



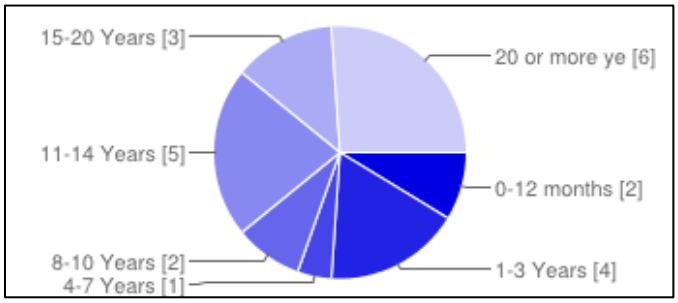
Yes	17	74%
No	6	26%

Question 30: What kind of information do you collect to measure the success of your program?

Figure 17: Success Data

Section Heading: How Long Have You Worked in Vance County?
Question 31: How long have you worked in Vance County?

Figure 18: Years Worked in Vance County

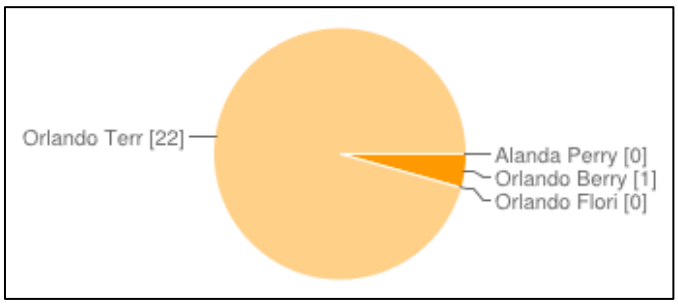


0-12 months	2	9%
1-3 Years	4	17%
4-7 Years	1	4%
8-10 Years	2	9%
11-14 Years	5	22%
15-20 Years	3	13%
20 or more years	6	26%

Section Heading: Thank You

Question 32: Who asked you to complete this survey?

Figure 19: Who Asked You to Complete Survey



Orlando Berry	1	4%
Orlando Florida	0	0%
Orlando Terry	22	96%
Alanda Perry	0	0%

Question 32 was asked to ensure the respondents recognized and were able to remember who asked them to complete the survey for future research purposes.

5.3 Analysis of Case Study

5.3.1 City of Seattle

The Seattle Case Study provides a range of lessons that other cities, states, and federal entities can learn from. The following broad lessons have been pulled from the Seattle case.

5.3.1.1 Work to close the technology gap must be institutionalized.

Attentive policy makers recognize that digital equity is intimately tied to their economic and community development policy goals. Including these goals as part of government's mission helps to ensure that the issue will not be overlooked. In some cities, such as Seattle, local officials recognize the importance of ensuring access to IT for all of the region's residents. They also understand that the issue is more than a problem of access but rather also entails tackling the training and content components of the problem. Seattle has institutionalized its commitment by creating specific government programs, a permanent community technology planner position, and initiating a process to move beyond the rhetoric toward the formulation and achievement of measurable goals. Servon suggests this is an important component of CTC development. (2002).

5.3.1.2 Coordination leverages existing work

In many cities, community technology efforts are fragmented. This fragmentation results partly because community technology efforts typically grow up as a set of unrelated grassroots initiatives. Seattle's first task- creating the Technology Resource Map- made all of these efforts visible, and made it easier to create linkages among them. The map also enabled the city to recognize and build on existing capacity rather than duplicating efforts (Servon 2002)

5.3.1.3 IT goals must be integrated into the public agenda

The digital divide issue does not fit easily into any one policy sphere, but rather cuts across a range of local government departments including education, economic development, and housing. Seattle's story illustrates the way a community technology planner can work across local government departments. The creation of this position gives community technology greater legitimacy in the region, with other policymakers and with potential funders (Servon 2002).

5.3.1.4 Let a thousand flowers bloom

The public sector approach has been one that fosters local innovation as well as collaboration, creating an environment of inclusion. Seattle city government has taken a very active role in the local community technology movement. However, the way it has done this has been to support and strengthen what works and to fill in existing gaps rather than trying to change or dictate. Seattle's approach has been flexible and participatory rather than autocratic.

David Keyes, in his role as community technology planner, has done a great deal of listening to directors of CTCs about the challenges they face and to citizens about their ideas regarding IT. His planning approach has been participatory, communicative, and focused on equity. As a result, the city has been able to balance strong support with decentralization, enabling creative, neighborhood-focused solutions to the problem to flourish (Servon 2002).

5.4 Significant Findings and Observations

Judging from the data, Vance County has several organizations that serve underserved populations. With a common theme of "community" in their mission statements, these organizations have created a vast variety of services that they offer their targeted populations. From the data, we can note that there was a strong representation from the community in the departments of Housing and Homeless, Human Services, and Workforce Training. The strongly represented department areas then validate the representation of the top four services offered. The high percentile services include: adult education/literacy, adult job training, community development, advocacy and other. According to the data these services are mostly offered to adults and senior citizens. Therefore a gap is left in the youth age group, ages pre-school to 17. Judging from the data, organizations in Vance County serve mainly those living in rural areas. Their technology services or programs are offered mainly within previously existing community-based organization, within their own facilities or in local schools.

According to our research, organizations currently use technology in their programs for word processing and keyboarding, to communicate with others via email, to conduct job searches and for research. Computer ownership among the representing areas vary in number and 91% of the computers have access to the Internet; however, 50% of the computers are used for office use only, and 39% use their computers for office use and computer training, while 11% do not have computers and 0% use their computers solely for computer literacy training. Judging from the research, of the organizations that have computers, 72% only allow their clients or members to use them, while 11% allow both membership use and public access, and a daunting 6% allows 100 percent public access to

their computers. Our data show 78% of the respondents rank technology as very important in their programs, and 83% say that technology strongly helps their organization to fulfill their goals and missions.

According to our research, there is a strong usage of technology in the responding organizations, as it relates to using their computers for email correspondences and/ or accessing the Internet. Challenges with technology seem to all involve the need for computers, computer literacy, technical assistance, funding and sustainability. All respondents have various strategies for measuring success within their programs. Twenty-six percent of the respondents have worked in Vance County twenty or more years. Ninety-six percent of the respondents were able to establish who requested that they complete the survey. This is important for contacts for future research.

In regards to government and policy makers, our data show that the mission for the City of Henderson is to be a vibrant, safe, progressive and prosperous community in which citizens are actively engaged in governance and community activities. Though this is the vision, judging from our data, policy makers are not recognizing that digital equity is intimately tied to their economic and community development policy goals. Our data indicates that our community technology efforts are fragmented, and the community's efforts are not visible to the community nor is there linkage among them. The data provided in this research reveal the lack of a permanent community technology planner position responsible for brokering relationships, matching organizations with resources, and encouraging collaboration among existing efforts. In reality, not all cities will have the resources and support for a community technology planner; however our research

indicates that this position has the ability to connect organizations to each other and to promote partnership which in turn aids overburdened government leaders.

As we have illustrated, the digital divide issue does not fit easily into any one policy sphere, but rather cuts across a range of local government departments including education, economic development, and housing. A community technology planner can work across local government departments. In order to make progress on the issues that our data uncover, policy makers must understand the potential of IT to help them solve the problems they are already trying to solve.

Earlier in our research, we identified the proposed end result to provide an on-line or print “map” of the wide variety of relevant technology literacy activities and public access sites in a low socio-economic rural community or provide data of the lack there of. According to our data, this research provides data of the lack of a wide variety of relevant technology literacy activities and public access sites.

Chapter 6

Conclusions and Future Research

In this thesis, we proposed an analytical community mapping model designed to gather and present information on the wide variety of technology literacy resources, including public access sites, educational opportunities, community networks and many others, that can be found in a low socio-economic rural community such as Henderson or provide data or the lack there of. A needs assessment was conducted that included a proven survey, in-depth interviews, a case study and evaluation research. This instrument was very successful in our research and will aid other communities in discovering what technology literacy resources are currently available and to whom.

Our research was performed in Henderson, North Carolina, and our data was gathered from various organizations in the community that served underserved populations. It was our goal to provide an on-line or print "map" of the wide variety of relevant technology literacy activities and public access sites in a low socio-economic rural community. Our data supports that a relevant "map" could not be provided due to the lack of technology literacy resources that are available in Vance County.

Community technology has become a tool of both individual and community empowerment. The technology we have today enables people to take care of their own lives, allowing a richer experience. Rather, technology allows for greater self-expression, self-directed learning, and opens up new pathways for community interaction. New technology will continue to develop in response to and in anticipation of our needs, and our communities have a responsibility to ensure that these technologies are accessible to all community members.

Judging from our data, we concluded that Vance County has several organizations that serve underserved populations. However, there is a gap in computer literacy service to youth in the community, and there are no organizations that use their computers solely for computer literacy training. Our findings also reveal that Vance County community technology efforts are fragmented, and the community's efforts in this area are not visible to the community nor is there linkage among them. Finally, as a result of our data, we were not able to produce an effective map of relevant technology literacy activities in Vance County, as there were no activities or programs to report.

Our recommendations, as a result of our research are as follows: 1) To submit a proposal to the policy makers of the city of Henderson to include community technology into their economic and community development policy goals. 2) To propose a Community Technology Planner position to the City Council. 3) Create a community forum to discuss community technology needs in Vance County.

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