Low-Income Communities: Technological Strategies for Nurturing Community, Empowerment and Self-Sufficiency at a Low-income Housing Development

by

Richard Louis O'Bryant

B.S. Computer Systems Engineering
Howard University, 1989

Submitted to the Department in Urban Studies and Planning
In Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

at

Massachusetts Institute of Technology

February 2004

Author: _____
Richard L. O'Bryant
Department of Urban Studies and Planning
October 20, 2003

Certified by: _____
Joseph Ferreira, Jr.
Professor of Urban Planning and Operations Research
Head, Urban Information Systems Group

Accepted by: _____
Frank Levy
Daniel Rose Professor of Urban Economics
Chair, Ph.D. Committee

Low-Income Communities: Technological Strategies for Nurturing Community, Empowerment and Self-Sufficiency at a Low-income Housing Development

by

Richard Louis O'Bryant

Submitted to the Department of Urban Studies and Planning
School of Architecture
On
October 20, 2003
In Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy

ABSTRACT

There are a number of historically familiar and unfamiliar forces at work in low-income communities in the United States. Recurrent forces include rapidly changing economic and demographic trends, Welfare Reform, and the increasing demand for affordable housing and a living wage. This thesis, through research-based exploration and observations of a particular information technology transfer project, considers a relatively contemporary concern known as the Digital Divide (U.S. Department of Commerce, 1995, 1997, 1999 & 2000) and examines the impacts that IT may have on low-income residents' ability to address their own challenges.

This thesis uses data collected from a two-year longitudinal study, which we called the Camfield Estates-MIT Creating Community Connections Project, in order to address the following question(s): Can personal computing and high-speed Internet access support community building efforts; and can this access to technology empower low-income community residents to do more themselves? We gain insight into the likelihood that residents who have a personal computer and Internet access in their homes will feel a sense of community, will experience an increase in their social contact with others, and will strengthen their social ties. This research also explores whether outcomes gained through in-home computing can promote an increased sense of empowerment and the capacity to independently access relevant information related to a resident's needs, wants or purposes.

Camfield Estates is a small, low- to moderate-income, housing development in Roxbury, Massachusetts with significant historical ties to its surrounding community. Camfield's residents and its leaders' developmental successes and difficulties provided a unique opportunity to observe the effects of in-home computing on project participants' ability to communicate with other participants, fellow residents and family and friends outside of the Camfield community.

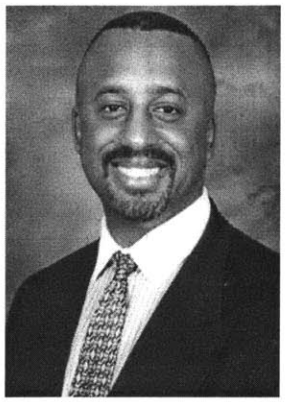
Thirty-seven participating households received a free computer and training with 20 completing follow-up interviews. The majority of participating households were single parent, African-

American and Hispanic female-headed households with related children under 18 years of age. Results indicated significant computer and Internet use and some positive correlation between frequency of in-home computing/internet use and participants feeling a part of the Camfield community. There was no evidence that in-home computer use led to family and/or social isolation. In-home computing complemented by the local neighborhood technology center (NTC) was frequently used for activities consistent with a sense of empowerment and self-sufficiency goals.

Despite the initiative's overall costs (hardware, software, training, Internet service and technical support), in-home computing appears to add a valuable dimension beyond the local NTC. Taking advantage of changing technology, improved web services, and opportunities for integration with other social services are likely to increase the potential value of in-home computing and reduce the cost and technical expertise required for future projects of this kind.

Thesis Advisor: Joseph Ferreira,
Professor of Urban Planning and Operations Research

BIOGRAPHY



Richard Louis O'Bryant

Richard O'Bryant, who was born and raised in Boston, joined the Northeastern University faculty as an assistant professor in the Department of Political Science in the fall of 2003. Richard received a Bachelor of Science in computer systems engineering from Howard University, and will receive his Ph.D. this year from Massachusetts Institute of Technology's Department Urban Studies and Planning. At Northeastern University Richard teaches the courses Science, Technology and Public Policy, State and Local Politics and Program Evaluation.

Richard's research and studies are focused on information technology and empowering low-income communities and individuals toward becoming more self-sufficient. The title of Richard's thesis is "Low-Income Communities: Technological Strategies for Nurturing Self-Sufficiency at a Low-income Housing Development." He co-managed a grant from the W.K. Kellogg Foundation for the Camfield Estates-MIT Creating Community Connections Project. The project involved the deployment of computers and high-speed Internet connectivity for the residents at Camfield Estates, a low-income HUD housing development in Roxbury, Massachusetts. His research-studied residents' use of computer information technology to empower, enhance and improve their community and lives.

Richard's professional experience includes serving as a senior software engineer at Digital Equipment Corporation (now HP-Compaq). He was one of five recipients of the 2002-2003 National Rising Scholars Award to Advance Research on Higher Education for the Public Good. Richard is a board member of the new Smith Academy for Leadership charter school in which he will be looking at best strategies for integrating technology into the educational environment. Richard is a long-time member the Concerned Black Men of Massachusetts.

Richard married his wife Lanice (Lumpkins) in 1995, and they live in Roxbury with their son, JohnRichard and Lanice's son Gregory.

DEDICATION

In loving memory of my father John

and

for my mother Cicily,
my loving wife Lanice and our son JohnRichard,
my brothers, John, James, Paul and Bruce...
thank you for your unconditional
love and support.

ACKNOWLEDGEMENTS

My God: I thank ***God*** for giving me the strength of courage and perseverance to not give up when times were difficult and to not get full of myself when times were good. "To you God be the Glory!"

My Father: ***John D. O'Bryant*** – As a child I always admired you. When we suddenly lost you in 1992 I was unsure of what life would hold for me. Early on I spent a lot time at your grave site pondering my future. One day as I was in deep thought about you and I heard you say to me "Rich stay with me and everything will be alright." Your spirit has guided me every step of the way. Thank you daddy!

My Mother: ***Cicily P. O'Bryant*** – I can't say enough about your love and support. When I received my acceptance letter to MIT and the $50,000 initial price tag, I told you, "well I can frame the letter and show I was at least accepted to MIT." You said, "You are going to MIT. Even if I have to take out a second mortgage, you are going to MIT." Thank you to you and daddy for raising my brothers and me to be good people and to treat people the way we want to be treated. I love you and thank you from the bottom of my heart!

My Family: ***Lanice*** – The day that I met you I knew there was something very special about you. During my sojourn you have been my friend, my comforter and my support. You have been there with me to laugh, to cry and to focus on the task at hand. There was absolutely NO WAY I could have done this without you. This accomplishment is as much yours as it is mine. I Love You soooooooo much with all my heart!!!

JohnRichard – It will be sometime before you are able to read these words and understand what you have meant to me through all of this. I will remember the day you were born and how good I felt forever and a day. With all the unconditional love you give I am able to stay committed to what I do and hurry back to you. Everything your mom and I do is for you. Thank you for coming into this world and making the world a little easier to face.

John, James, Paul, Bruce – It's hard to put into words what you guys have meant to me over the years. As much as wanting to make your parents proud you also want your siblings to be proud. As you all take pride in my accomplishments I also have just as much pride in you guys. I love you guys … really I do! ☺ Also love and thanks to my sister in-laws ***Bridgette, Trina,*** and my nieces and nephews ***Jabrina, Kenny, Chantel, Daunte, Shakera, DeCoursey, Christian and Conner***. ***Grant*** and ***Ayeesha*** thank you both for all of your years of love and support and for agreeing to be JohnRichard's God parents.

Antonio "Greg" – I know you thought I was going to forget you. How could I possibly do that? I will always believe with all of my heart that you are destined to do great things. Make sure you are there when the bell rings for your rendezvous with destiny and as your step-dad I will be there with you to make sure you answer.

My Mother's Side: Thank you ***Auntie Carmen, Uncle Melvin, Norma, Steve, Wesley, Aaron,*** and ***Olivia, Judy, Daniel*** and ***Ken*** for all of your love and support. ***Auntie Norma*** although I haven't seen you all in sometime, you all are always a part of me.

My Father's Side: Thank you ***Auntie Joanie, Uncle Manual, Aunt Bea and Uncle Sam***. Thank you ***Manny, Jeannette, Dion and Diamond; Maryellen, Ambrose, London and Kathleen***; ***Dr. Camille O'Bryant*** – Thank you for your words of inspiration and counsel – another Dr. in the family, ***Kathleen, Sam, Marleen, Brittney, Brandon, Theresa, Joseph*** – thank you.

My Wife (Lanice's) Side: ***Poppa Pete*** – you always keep my feet on the ground. You have helped me through this process in ways that I know you don't realize. ***Charlotte, Ruce, Roablas, Nikki, Faith, Isaiah, Roablas, Jr, Rai, Rahtamian, Tabatha, Sebastian, Ladidas, David, Lacharla, Larona,*** and ***Raldon*** Thank you guys so very much.

My Committee: ***Professor Joseph Ferreira, Jr.*** – Joe you were willing to give me the opportunity to pursue a Ph.D. and you have hung in there with me through the whole process. Thank you. ***Adjunct Professor Melvin King and Joyce*** – Mel you more than anyone has been omnipresent in my sojourn through MIT. You convinced me to come back to school and give it a try. Thank you for being there and thank you for never letting me lose focus. ***Professor Langley Keyes*** – Lang you were one of the first people to give me an opportunity through the Metropolitan Boston Housing Partnership (MBHP) when I entered the Ph.D. program. You cared, and that's all that anyone could ask. Thank you. ***Dr. Ceasar McDowell*** – Ceasar I am glad you came to MIT and I really appreciated the opportunity to work for you and with you and your unconditional support. I learned a lot from you and my experience with you I will cherish. Thank you. ***Assistant Professor Keith Hampton*** – Keith you were most supportive of Randal and I when we were first starting out. You could feel our pain as well as our excitement. Your advice and candor is appreciated.

My Project: ***Dr. Randal Pinkett*** – Randal you, my colleague, my brother, my friend have been a constant inspiration and support to me. Our partnership on the Camfield Estates-MIT Creating Community Connections Project has allowed us to work together and establish a life long friendship. I look forward to what the future holds. "Big Ups RP"! ***Professor Mitchell Resnick*** – Mitchell you committed resources through the Media Lab to our project when not many others within MIT did. Your counsel and guidance was and is greatly appreciated. ***Professor David Gifford*** – Dave you took Randal and I into your community technology efforts and gave us the opportunity explore our research interests. The opportunity and support you and ***Jeanne Darling*** gave us through the MIT Laboratory for Computer Science (LCS) will be forever appreciated. ***Dr. Jeffrey Robinson (JR)*** – Jr, you have always been a presence for our project and I am honored to have you as a colleague and friend.

Paulette Ford and Camfield Tenants Association – Paulette, you took a chance and allowed Randal and I in. Although we are partners in this technology project, I am eternally grateful for the relationships that have also developed. I look forward to our continued working relationship. ***Thaddeus Miles and MassHousing*** – Thaddeus, it can't be emphasized enough how important our professional and personal relationship is. I look for great things out of our affiliation and friendship. You made so much about our project possible. Thank you. ***Nakia Keizer Project Leader*** – "Yo Keize" I appreciate what you have done and continue to do for us at Camfield. I am honored to have you as a friend. You have added to my life like we have added to yours. ***Karie Rosa, Alex Rosa, and Arthur Jones,*** your involvement in the project is very much appreciated. Thank you. ***Wayne, Garfield, Luis, Troy, Donna and Neighborhood Technology Center Staff*** – You all were a tremendous support for our project. I don't know if we could have done it without you guys. Also, the staff at Cornu Management Company, including ***Tom Cornu, Charlie Maneikis, Miguel "Mikey" Santiago, Virginia Davis, and Tresza Trusty***. Members of the Camfield Tenants Association (CTA) Board of Directors, including ***Paulette Ford, Constance Terrell, Luon Williams, Edward Harding, Susan Terrell, Marzella Hunt, Cora Scott, Alberta Willis, Minnie Clark*** and ***Daniel Violi***. YouthBuild and ***Ken Smith***, W.K. Kellogg Foundation and ***Caroline Carpenter***, Hewlett Packard Company and ***Robert Bouzon*** and ***Camilla Nelson***, RCN Telecom Services and ***John McGeough***, ***Ken Rahaman*** and ***Walter Jasniewski***, ArsDigita Corporation and ***Dr. Phillip Greenspun*** and ***David Martin***, Institute for African-American eCulture (iAAEC) and ***Professor Bryant York*** and ***Professor Roscoe Giles***.

My Institution: ***Dr. Clarence Williams*** – "Doc" if there were such a thing as a God father for Black students at MIT it would be you. In addition to your mentorship through Concerned Black Men, you have helped to mold and guide me during my time at MIT. Your guidance, wisdom and understanding made the difference for me. Thank You! ***Steven Charles*** – Steve thanks for always making sure "Doc's" schedule could accommodate me – even when there were times when it seemed like it couldn't. ***Chancellor Phil Clay*** – Chancellor Clay your counsel, guidance and suggestions when I was first starting out brought me comfort and understanding. I truly appreciate your commitment to progress and success. ***Dean Isaac Colbert*** – Dean Colbert you have played the role for me that my dad has played for so many students. You have been the one person I could turn to and depend on when I needed sound advice and counsel as well as support to overcome financial obstacles. Dean Colbert (Ike) I am eternally in your debt. I really, really, really appreciate all that you have done for me. ***Yvonne Gittens and Sarah*** (MIT Student services) – Yvonne and Sarah you both looked out for me when my student account was doing some funky things. I appreciate all of the love and support you gave me. ***Dean Leo Osgood*** in the Office of Minority Education (OME), ***Dean Roy Charles***, Graduate Education Office (GEO), ***Daniel Sheehan*** in the MIT Information Services (IS) Department, and ***Professor Starling Hunter*** in the MIT Sloan School of Management. ***Susan Spilecki*** – Susan your editing and expertise on short notice was greatly appreciated.

Students, faculty and staff present and past at the Department of Urban Studies and Planning including ***Professor Bish Sanyal, Sandy Wellford*** – Sandy, I appreciate all of your help, supportive words and timely smiles – thank you, ***Dr. Anthony Townsend*** – Anthony, I really appreciated your support and camaraderie through the process. Thank you ***Professor Lawrence Vale, Janice O'Brien, Paula Anzer, Alice Twohig, and Rolf Engler*** (Posthumously) ***Professor Frank Levy, Professor Phil Thompson, Professor Aixa Cintron, LaTonya Green***, ***Malo Hutson (and Nicole)***, ***Duncan Kincaid, Joaquin Herranz and Jennifer Johnson, Michael Sable***. Students, faculty and staff at the School of Architecture including ***Professor William Mitchell*** and ***Professor Lawrence Sass***. The Planning Support Systems Group, present and former faculty and staff including ***Professor Michael Shiffer, Professor Qing Shen, Sue Delaney, Raj Singh, Tom Grayson, Mellone Long, Myoung-Gu Kang, Phil and Anne Thompson***. Present and past students, faculty and Staff of the Center for Reflective Community Practice including ***Dr. Ceasar McDowell***, ***Gail Cheney (and Jim)*** – your unconditional support for our project was unmatched. We really owe you Gail. ***Dr. Joy Amulya***, ***Christian Franco***, ***Ginny Berkowitz***, ***Caroline Carpenter*** – Caroline, your assistance with securing our initial funding from Kellogg was critical to our productive start – thank you, fellows present and past in particular ***Leili Towfigh*** – Leili, you represent my fondest memories of CRCP and formerly the Community Fellows Program. Thank you for being the wonderful person and spirit you are.

Students, faculty and staff at the MIT Media Laboratory, ***Carolyn Stoeber***, ***Robbin Chapman***, and the numerous undergraduate and graduate researchers who worked tirelessly on our project ***Solomon Steplight, Wei-An Yu, Megan Henry, Simon Lawrence, F. Anthony St. Louis, and Francisco Santiago***.
My Community: ***Dr. J. Keith Motley*** – Keith, I can't say enough about how you have inspired me personally and professionally. I am proud to be one of many of your mentee's. I am forever in your debt. ***Professor James Jennings*** – James you gave my academic career a start. You, more than anyone else has supported my career and been a man of your word. I can't wait to see what the future holds for our efforts to help our community. ***Rev. Dr. John Wilson*** – John, you married Lanice and I. What more can I say. Although you have left the area you continue to be an inspiration for me. Your love and support over the years has been and continues to be appreciated.

Professor Castellano Turner and past and present Trotter Institute faculty and staff including ***Muriel Ridley*** – I can't thank you enough for your years of love and support. Thank you, thank you, thank you. ***Russell Williams*** – You have taught me a lot about research and commitment. Thank you. ***Juan Evereteze*** – You were there when I started all of this and encouraged me. Thank you. ***Harold Horton***

(posthumously) – We miss you Dr. Horton. ***Eva Hendricks, Anne Gathuo, Stephaney Athey, Yvonne Gomes-Santos, Trevor Clement, Elizabeth Tinkorang, Marlene Bryant, Regina Rodriguez-Mitchell.*** Thank you all.

Professor P. Eric Abercrumbie – "Doc", you have been and continue to be a guide for me. You are the epitome of tenacity and commitment. Thank you Doc for all that you do and have done for the John D. O'Bryant Think Tank for Blacks in Higher Education on Predominantly White Campuses (JDOTT). Thank you to the JDOTT membership and family for keeping my dad's dream of a national group to support Blacks on predominantly White campuses alive. ***Dr. Na'im Akbar*** – Dr. Akbar, you said to me "Remember that you are there for reasons different than what they think you are there for. Don't let anyone deter you" – I haven't. Thank you. Dr. ***Ralph Edwards*** – Ralph, your words of encouragement continue to mean a lot. Thank you. ***Father Thomas Mayers*** and the St. Mark's Congregation – Father Mayers, your support and prayers are always appreciated. Thank you. ***Minister Rodney, Sister Lisa*** and ***Little Rodney*** – Thank you both for your spiritual support and friendship

Concerned Black Men of Massachusetts (CBMM)/Bridging Bridges family: Thank you to all of the brothers present and past including ***Dr. Edgar "Doc" Smith***, ***Dr. Clarence "Doc" Williams***, ***Ernie Washington***, ***Sandy Francis***, ***Andrew Davis***, ***Dr. Don Brown*** – Don, I learned so much from you working on Bridging Bridges. Thank you for your words of wisdom. ***Sidney Holloway*** – Sid, your mentorship and friendship in my early years of CBMM helped build my foundation. "You da Man" - Thank you. ***Bill Walker, Frederich "Luke" Johnson, Thomas "Butch" Stephens, Darren T. Wells and Alvin Cooper, Carmon Cunningham, Peter Lewis, Charles George, Earl Brown, Ipyana Wasret, Greg Gaines, Joe Burch, Ray Blount*** and other brothers present and past – you are all something very special to me. Thank you to members past and present of the PRI parent's committee including ***Teresa Allen, Jesse Williams, Connie John*** and many others. A special thank you to all of the young men of CBMM programs. ***Anthony Schofield*** – Although you are a spiritual son of mine, we don't see each other as much as we did when you were in the programs of Concerned Black Men, I still think about you often. Make sure you mentor a young man into adulthood so we will continue to help our children.

The Smith Academy for Leadership family: ***Thomas and Tammi Smith*** – Thank you for asking me to be a part of your dream for school in your grandmother's name. I see great things coming from Smith Academy. ***Bill Lahey, Scott Darling, Reverend RoAdrienne Davidson, Jacqueline Hogan, Roopom Banerjee, Ipyana Wasret, Akiba Smith Francis*** and board members yet to come – thank you all for your encouragement.

If I have forgotten anyone, it is a mistake of the head and not of the heart and I sincerely apologize.

This research was also supported by: the Department of Urban Studies Center for Reflective Community Practice and the MIT Media Lab, The W.K. Kellogg Foundation, Hewlett-Packard Company, RCN Telecom Services, Microsoft Corporation, and The Kellogg Forum on Higher Education for the Public Good National Rising Scholars Award

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

> *"Interdependence is and ought to be as much the ideal of man as self-sufficiency. Man is a social being."*
>
> –Gandhi

America's inner-city neighborhoods, in particular low-income communities, have endured a considerable amount of change and numerous challenges. The origins of these challenges, persistent poverty, societal neglect, legislative isolation and political alienation, have been and perhaps will be debated for many years to come. Federal efforts to assist low-income communities in addressing these challenges are often disjointed, politicized and discriminatory (O'Connor, 1999). The debate has fundamentally centered on whether the federal government should continue to support social programs or whether resources should be spent making individuals' and families more self-sufficient and less dependent on the government. Despite historical efforts, low-income communities have continued to remain isolated, dislocated and alienated from mainstream economic opportunities (Wilson, 1996). Generally, political discourse drives policy that reflects the sentiment of the times. A contemporary shift in political sentiment has resulted in policies with different implications for low-income communities. Public policy appears to have shifted from affecting social change to building and understanding personal capacities of the poor (Mead, 1991). Moreover, programs and initiatives that tended to support dependence on the "system" have given way to a tide of federal initiatives that attempt to inspire and promote self-sufficiency for individuals, families and communities. The advent of federal initiatives such as the family self-sufficiency program[1], empowerment zones and enterprise communities appear to have moved public policy significantly in the direction of supporting communities, families and individuals in becoming more self-sufficient. The Roxbury section of Boston is one such community that has been historically plagued by all of the statistical characteristics of social and economic blight and deterioration. Camfield Estates, a low-income housing development within Roxbury, is the single case study of this thesis and is one of those

[1] In 1996 the Federal Personal Responsibility and Work Opportunity Act was passed, which imposed time limits on receiving benefits.

communities consisting of families and individuals who are trying to become more self-sufficient.

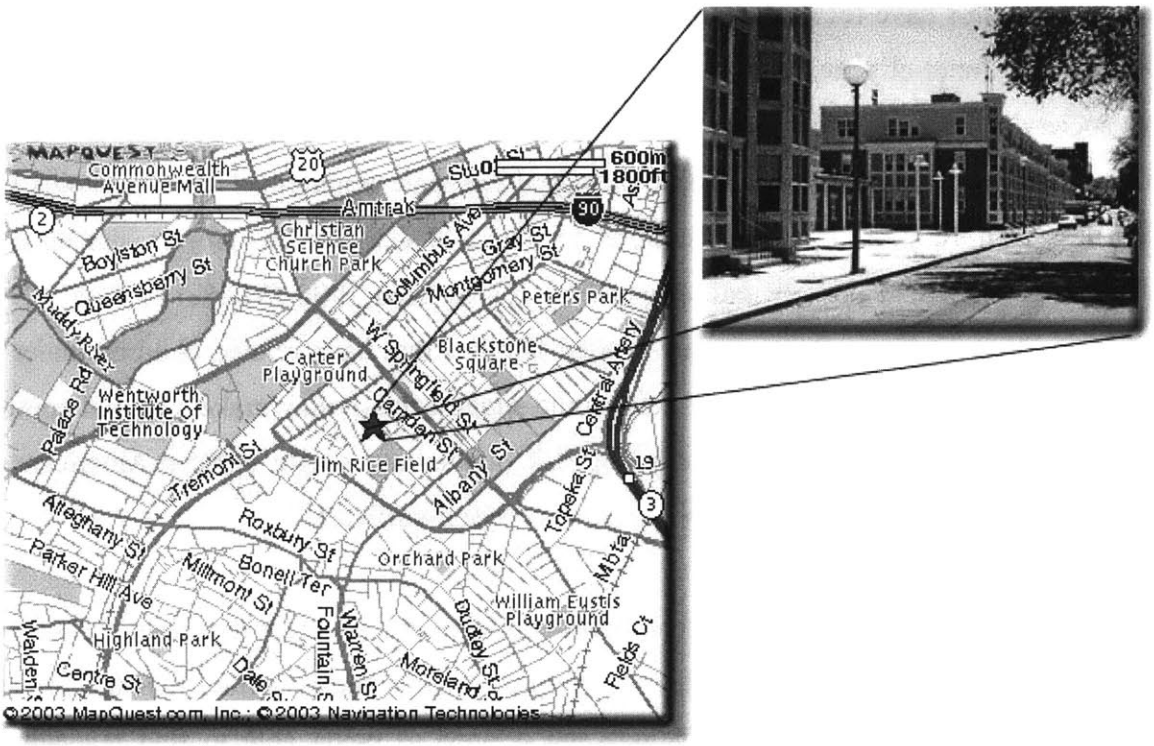


Figure 0-1: Map of the Boston area the red star indicates Camfield's location. Source mapquest.com

When the federal government passed the Personal Responsibility and Work Opportunity Act in 1996, it very narrowly defined a state of self-sufficiency as financially having enough resources to cover expenses without the need of a government subsidy. This definition, however, does not take into consideration the complexity of the challenges, such as political and social isolation, that are not resolved simply by economics. It is in the context of these challenges that low-income communities, families and individuals try to move toward self-sufficiency. This thesis raises the question: Can a personal computer and Internet access play a role as a linkage institution in supporting low-income communities', families' and individuals' efforts to build community, a sense of empowerment, and movement toward becoming more self-sufficient? I examine these issues through a research experiment we called the Creating Community Connections Project which provided a personal computer and Internet access to several dozen households in a low-income housing development of an inner-city neighborhood.

This thesis makes the argument that, as a linkage institution, in-home access to personal computing and the Internet is an efficient and resourceful method for moving low-income communities, families, and individuals toward self-sufficiency. The communities that many of the federal programs have focused on and sought to move toward becoming more self-sufficient are low-income inner-city neighborhoods that are considered the most at risk of struggling against society's challenges (Wilson, 1996). Moreover, the specific households considered most at risk are low-income single African-American and Hispanic female-headed households with children less than 18 years of age. According to the 2000 U.S. Census Boston statistics, the female-headed household poverty rate dropped by 1.2 % from 1990 (31.1%) to 2000 (29%). However, in 2000 37.4% or 9,801 female-headed families that have related children under the age of 18 were below the poverty level. This would suggest that policy makers should continue to target services toward making the most at risk population, single African-American and Hispanic female-headed households with children, more self-sufficient.

However, self-sufficiency is largely relative. Self-sufficiency has different meanings for different people under different circumstances. For the purpose of this thesis self-sufficiency for low-income communities, families and individuals are defined as being able to find relevant and important information, people, and resources without the need of assistance or outside intervention. Moreover, this thesis contends that Internet use can support a low-income community's effort to build community connections by inspiring a sense of community, social contact, and community involvement. It is worth noting that self-sufficiency is different for individuals and families than it is for the community. For the individual, self-sufficiency represents the ability to address personal needs while for community it represents the ability to address the collective community need. Finally, this thesis, in addition to observing information technology's influence on community, it also observes outcomes such as ways in which IT influences low-income community residents' behavior; why in-home Internet access is an important linkage component; and why learning curves are difficult for low-income communities despite desire and recognizable value of IT.

There is an emerging area of debate related to Internet use and its effect on community and social capital. Much of the technology and social capital discourse is based in Robert Putnam's

(2000) seminal work *Bowling Alone: The Collapse and Revival of American Community.* Putnam (2000: 283) contends that four factors have contributed to America's decline in civic engagement and social capital:

- The tension between time and money, specifically the two career families and women moving into the work force. Work creates more opportunity but less time to take advantage of the opportunities.

- Mobility and sprawl, specifically Americans moving more often can disrupt community relations.

- Technology and mass media, specifically the accelerated pace (7 years) at which television was diffused into American households.

- Generational change, specifically the aging of the more civically engaged generations and the emerging generations of the increasingly disengaged.

Putnam (2000: 171) contends that it is too early to assess the long-term effect of the Internet on social capital. This contention sets the context into which much of the community and technology debate has emerged.

This study's approach of introducing personal computing and Internet access into efforts to assist low-income communities adds this thesis to this publicly contested debate: "Does personal computing and the Internet contribute to an incomplete lifestyle that withdraws people from in-person contact and disconnects us from our families, friends and communities?" (see Hampton, 2001; Kraut, Lundmark, Patterson, Kiesler, Mukopadhyay, & Scherlis, 1998; Nie, Hillygus, Sunshine, & Erbring, 2002; Stoll, 1995). The momentum of this debate has shifted in recent years to acknowledge that family and social contact can increase with Internet use. Hampton and Wellman (2001), and even Kraut, et al. (2002), who were initially on the other side of the debate, have all argued that social relations can be extended into cyberspace and people can become more social as a result of what many call computer-mediated communication. As a result of a personal computer and Internet access, will community residents become less or more connected

with other residents, friends and/or family members? This thesis suggests that not only can a personal computer and Internet use make low-income individuals and families more self-sufficient, it can also contribute to an increased sense of empowerment, community ties, social connections, and social relations.

This research addresses the question of the role personal computing and Internet access can play in supporting low-income communities, families, and individuals in their efforts to become more self-sufficient. Can low-income communities, families and individuals use a personal computer and Internet access to address fundamental information and community needs that have traditionally been addressed by a third party individual, agency or organization? Given that this is a reasonably unique area of study, this research integrates existing theory, data collection, and analysis of social capital theories to examine what is required for nurturing self-sufficiency for low-income communities through personal computing and Internet access.

To address the community, empowerment, and self-sufficiency question at the community, family and individual level, this research examined the relationships between personal computing and Internet use, community relations, sense of community, social contact, social networks, social tie strengths, inspired learning, skill building and sense of empowerment as well as access to relevant community, family and individual information. The primary elements studied and applied to examine the role of information technology are human capital, social capital, and empowerment theory.

DISSERTATION ORGANIZATION

In Chapter One, I present a theoretical framework for applying human capital and social capital to empowerment and self-sufficiency and I explain how these components are combined in this research. This chapter includes a review of the Community Technology Model and the role of Information Technology and planning. I also briefly review research that is pertinent to this thesis, and will characterize the debate that surrounds Information Technology's influence on social isolation.

Chapter Two, "The Background and the Study: Camfield Estates," details the story behind the scenes and details how this study came about. I briefly tell the history of Camfield and its participation in the HUD Demonstration Program. Also included in this chapter is my research question. I present the steps taken to design this study and provide a detailed account of decisions made regarding the technological apparatus. This chapter closes with a review of the pre- and post-survey areas and a description of the methods used for data analysis and a review of the project's time-line.

The "Camfield Estates-MIT Creating Community Connections Project" is described in Chapter Three. In this chapter, I provide a detailed analysis of participant demographics and compare these statistics to Boston census data. I describe the procedures used for identifying and recruiting participants and discuss the rationale for not including a control group in this research design. This chapter also includes a detailed presentation of participant usage statistics findings based on web logs, and a discussion of factors that may have contributed to several respondents not completing the project.

Chapter Four, Findings: Regaining Camfield's Sense of Community, examines the extent to which the Creating Community Connections Project, personal computing and Internet contributed to an increased sense of connectedness, sense of community and actual social contact for the project's full participants. Findings support that personal computing and Internet use played a role in full participant's community communication that became less centralized upon

their return from relocation. Described later in this chapter are measures used to determine the centrality of social networks through the analysis of "betweenness" and degree centrality.

Chapter Five details my empowerment and self-sufficiency findings. Largely qualitative in nature, this data augments the findings detailed in Chapter Four. This chapter includes descriptions of self-reported increases in critical awareness and changes in behaviors and attitudes. The chapter closes with a short case study on Edward James, one of only three African American males to complete the project and my final conclusions on the findings.

I revisit participant demographics in Chapter Six and orient these statistics within the larger conceptualization of the digital divide. Also reviewed in this chapter are participant usage statistics based on populations that are least likely to engage technology. I close the chapter with a description of specific challenges encountered during the project and suggest objectives for future research.

CHAPTER ONE

THEORETICAL FRAMEWORKS

Thrust into America's collective awareness was the significant disparities in personal computing and Internet access in low-income communities. This disparity was characterized as the "digital divide"[2] (U.S. Department of Commerce, 1995, 1998, 1999, 2000). This dissertation investigates the movement toward self-sufficiency through the use of personal computing and Internet access. Unfortunately, there is a lack of significant theory concerning the use of personal computing and Internet access for the purpose of individual or community empowerment and self-sufficiency.

Efforts to define what self-sufficiency means are equally challenging. This chapter frames self-sufficiency and its discussion in a manner that is most relevant to this thesis. The issue of personal computing and Internet use has generated considerable debate over technology's effect on traditional ideals of community. Both sides of the debate fall into two camps—personal computing and Internet use encourages users to be more social; or personal computing and Internet use makes users less social.

In spite of this debate, many methods are being employed to increase accessibility and address the digital divide. Theoretically, these efforts produced the IT genre of community technology that manifested in the form of community technology centers, community content, and community networks. The role of community technology (Beamish, 1999; Morino, 1994; Pinkett, 2001), in recent years, has become the source of significant discussion, effort and modest debate. This chapter will delve into both community implications and community technology discussions within the context of this research focus.

Information technology production has changed considerably since its inception, from its early innovation of the cathode tube, to its fervent pace to create the smallest and fastest processing chip. Technological advances have resulted in processing chips that are smaller than a U.S. dime,

[2] Beginning in 1994, the U.S. Department of Commerce, through the National Telecommunications & Information Administration (NTIA), conducted four empirical studies and reported their findings in 1995, 1997, 1999 and 2000. These studies examined computer and telephone penetration rates, and Internet use by Americans based on race, income, and education data gathered from the Current Population Survey and the U.S. Census.

and able to process millions and millions of commands in seconds. As a result, the power of personal computing has increased dramatically. Users are able to run faster and larger software applications, download digitally clear audio and video, and to store massive amounts of electronic data. Moreover, small size, efficient power consumption, and lower costs have facilitated development of networking and a ubiquitous presence of computing equipment. For many, from business owners to homemakers, children to senior citizens, personal computing and Internet use has become a way of life. Relevant studies conducted on the impact of information technology on community include researchers such as Hampton and Wellman (2001) and Kraut et al. (1998; 2002). Additionally, studies of technology's influence on organizations such as businesses, corporations, and public agencies include Zuboff (1991), Orlikowski (1992), and Ferreira (1999).

A consistent and unarguable definition of community is not supported by the literature. For the purpose of this thesis, the definition of community is a series of complex relationships and networks of social relations. This definition is integrated with the common social definition of "community" which emphasizes supportive, sociable relations that provide a sense of belonging (Hampton & Wellman, 2001). Community building is defined as "strengthening the capacity of residents, associations, and organizations to work, individually and collectively, to foster and sustain positive neighborhood change" (Aspen Institute, 1997).

Finally, this chapter will pull together several theoretical frameworks to develop the elements for more practical self-sufficiency theory. Included is a description of the relevant elements: human capital (knowledge, skill, talent, behavior), social capital (individual evaluations, transaction or transfer of material resources, transfer of non-material resources, interactions), empowerment (sense of control, critical awareness, participatory behavior), and how these elements inform the self-sufficiency discussion. This chapter includes a review of the Community Technology Model and the role of Information Technology and planning. I also briefly review research that is pertinent to this thesis, and will characterize the debate that surrounds Information Technology's influence on social isolation.

THE MOVE TOWARD SELF-SUFFICIENCY AS COMMUNITY DEVELOPMENT

> *"Community development should be a much broader idea and have a more comprehensive agenda than any one class of institutions can manage (or lead) alone."*
>
> Ronald F. Ferguson & William T. Dickens, (1999)

The federal government's historical approach taken to assist low-income communities has been defined by policy. Based on my analysis these efforts are an attempt to maintain continuity in the midst of constant change. Unfortunately, it would appear that maintaining that continuity was more theoretical than actual. History tells us that community development efforts have a sordid past (O'Connor, 1999). Any concerted effort to assist low-income communities eventually had trouble, not necessarily, because it was not noble and just, but rather because efforts were beholden to the political environment of that time. That is not to suggest that there were programs that needed modification or to be abandoned; there were. Initial efforts in physical community development ran into problems because of poor oversight and gross mismanagement of federal funds. In certain cases much of the resources were diverted to the suburbs away from the cities (O'Connor, 1999) where most low-income individuals reside. However, that being said, most efforts appear to be sincerely rooted in an effort to improve conditions and opportunities for the poor. Many programs that were proposed and enacted had trouble with execution and follow through. William Julius Wilson (1996) in his book *When Work Disappears: The World of the New Urban Poor* stated that despite efforts to help the poor, low-income communities have continued to remain isolated, dislocated and alienated from mainstream economic opportunities. Federal initiatives such as the family self-sufficiency program[3], empowerment zones and enterprise communities appear to support Mead's observation of a shift in policy from influencing social change to building and understanding personal capacities of the poor (Mead, 1991).

Federal programs targeted at helping the poor have roots in the 1930s (see Figure 1-1: A timeline representation of federal program policy from 1930s to 1996.). These programs were often intended to be comprehensive, and to aid in the development of relationships between experts

[3] ibid.

and citizens, and to encourage citizen and/or resident participation. Through this process, links between poverty and place brought about the emergence of place-based reform. The New Deal under the Roosevelt Administration focused on shoring up distressed communities through job creation, public works and infrastructure construction. Additionally, the New Deal recognized the plight of displaced rural communities with the advent of land distribution, planned resettlement, and the construction of model greenbelt communities. Public housing, because of the New Deal, became the mainstay for federal assistance to low-income communities for many years. The Social Security Act of 1935 also came about during this time. This program was not place-based, but focused on regulating the federal approach to communities. The Social Security Act also sought to protect against income loss at retirement age and during unemployment, and to offer financial assistance to woman and children through what has prevailingly been known as welfare.

According to Alice O'Connor (1999) in *Swimming Against the Tide*, this set the precedent for the two-tiered structure of federal social provisions: 1) federalized non-means-tested social insurance program—income assurance and 2) localized means-tested public assistance—welfare. This era in federal provisions became the dictum for many federal programs (Urban Renewal, Area Redevelopment, Community Action, Model Cities, and Special Impact) and community development organizations (National Resource Planning Board, Home Ownership Loan Corporation) that were developed in efforts to assist low-income communities.

In the 1970s, there was an environment of retreat from community policies of the past. President Nixon's administration seemed committed to rooting out entrenched federal programs. President Carter's administration painted a bleak picture of low-income communities blaming the results on the many failed federal efforts. The public discourse, tainted with racial tension as its backdrop, began to question the approach of federal programs with growing support.

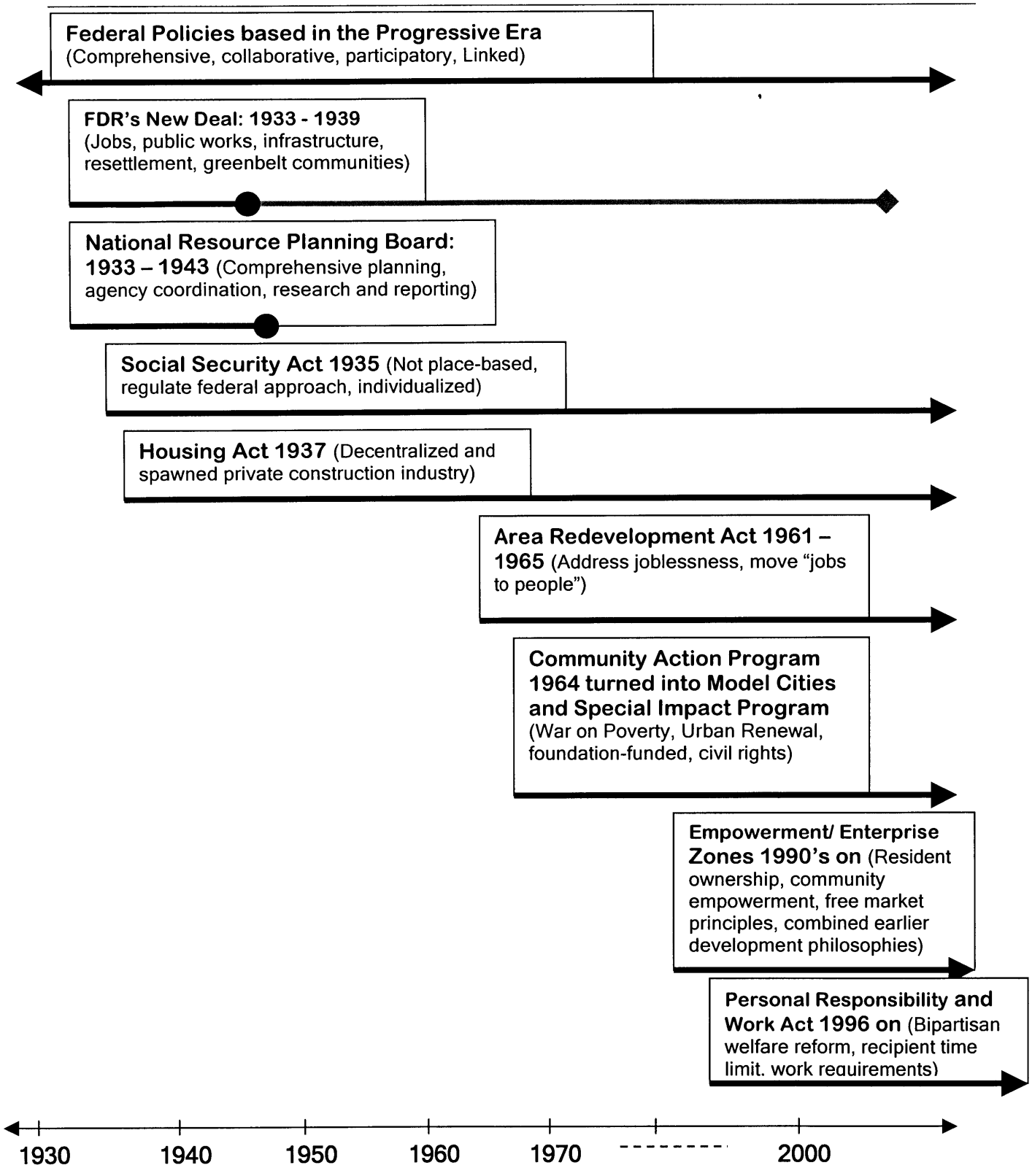


Figure 1-1: A timeline representation of federal program policy from 1930s to 1996.

The 1980s, under Presidents Reagan and Bush, Sr. ushered in the end of the New Deal era. The Community Development Block Grants (CDBG) was reduced and welfare began to diminish as the only source of direct federal assistance. Along with a reduction of federally targeted place-based funding, massive efforts of decentralization and privatization occurred. The message, which still rings loud and clear, is the end of big government.

The 1990s brought about an effort to channel the changes from the 1980s into one of the largest federal programs ever. The Empowerment Zones/Enterprise Communities Initiative was meant as a new way of doing business for the federal government. This initiative focused on offering development opportunities and other incentives to inspire investment and development within the poorest communities. Potentially, reinvestment into these communities would create job and home ownership opportunities, as well as overall economic rebirth.

During this time the Resident Opportunities and Self Sufficiency (ROSS) Program was created as the result of a merger of several programs (i.e., the Quality Housing and Work Responsibility Act, the Economic Development and Supportive Services (EDSS) program and the Tenant Opportunities Programs (TOP). ROSS has five central objectives and its primary goal seems shrewd enough: self-sufficiency. As conceived in the program it is a state in which families become free of all government subsidies as a result of employment income (Shlay, 1993). The program would achieve this ultimate goal through: 1) linking essential services; 2) providing residents with empowerment and economic self-sufficient activities; 3) providing resources for independent living for elderly and persons with disabilities; 4) providing organizational capacity building; 5) and by improving the overall quality of life.

As socially shrewd and ideologically satisfying as this program was to advocates of federal support for individuals and families in need, the initiative possessed a major flaw. The divergent realties between the government's definition of self-sufficiency and its real-life manifestation could not be reconciled. Where employment income did help move individuals and families get off the welfare rolls, this income was not realistically adequate to survive on by any means.

Mead's observations of the movement toward building personal capacity resulted in a high priority being placed on efforts to connect individuals and families with the necessary resources and contacts. Meanwhile, Wilson's observation of the "disconnects" between low-income communities and the mainstream continues to be a concern for community planners and policy makers. The ROSS program attempts to address those disconnects through its first objective of linking the residents and clients with essential information and services. The role that information technology can play in creating, fostering, and realizing those links is the central topic of this thesis.

The federal government, in particular the Department of Housing and Urban Development, narrowly defines self-sufficiency as having enough income to cover your expenses from month to month without the assistance of a subsidy. The Miller and Din (1996) model captures self-sufficiency as having some semblance of control over the basic functions and fundamentals of an individual and/or family's life. The basic functions of self-sufficiency include stability of income, education and life skills, housing stability, adequate food, safety, the availability and accessibility of needed services, relationships (social networks) and strong personal attributes (motivation, desire, etc.) (Miller & Din, 1996).

What does being self-sufficient mean in terms of today's society? At its extreme, self-sufficiency can be defined as a state in which someone or something can sustain itself without using outside resources. However, if we take that statement literally, it is impossible for an individual or a family to achieve. One can be self-sufficient by using one's own physical and mental skills to produce resources to acquire food, shelter, etc., most rely on others to produce these fundamentals for them. Each living creature on this planet is dependent upon outside resources in order to survive. Most people buy their food instead of growing it themselves. Of course, buying food means that one must have money, in order to have money, one needs employment, and consequently one becomes entwined in the web that makes being self-sufficient complex.

A greater sense of freedom and greater control of one's life is gained from being self-sufficient. As technology aims to make life easier, it also becomes important that a level of technological proficiency is present. This means that in today's information-based society that access to

information about what effects one's life can become a basic component in fulfilling the basic needs mentioned earlier. Self-sufficiency is a way of life that reduces dependency on external support in order to thrive. This is by no means an easy feat since it requires considerable self-discipline, motivation and determination, especially in today's society where some have grown accustomed to depending upon others to provide necessary resources for their basic needs.

Self-sufficiency in basic terms can be reached at different levels for each individual and/or family, which suggests that a continuum may be a better representation of self-sufficiency as opposed to its representation as an end state. Self-sufficiency for a bed-ridden individual may mean accessing information about services that can be brought to him/her, whereas to a mobile individual it may mean accessing locally available services by traveling to them. I put forward that Information technology can bridge the information access gap for both mobile and immobile individuals.

Using information technology to move toward self-sufficiency is of critical concern because of the vast array of resources that are made available electronically on the Internet. It is not that traditional methods of getting information are not feasible; however, consider when having to do a mundane task such as searching for job opportunities that the Internet provides a vehicle that is considerably faster than visiting a local agency and looking through phonebook-thick binders of employment listings. Moreover, for entry-level jobs, an Internet search may in fact be more suitable. With the paper intensive centralized method there were three obstacles to overcome: 1) getting to a local or central office, 2) conducting a job search with many other people doing the same tasks and the limitations in viewing the same information at the same time, and 3) not all agencies have the infrastructure keep employment listings current. Through technology, a central location of listings is no longer a requirement and it is much easier, and faster for employers to keep their listings relatively current. Moreover, many services allow you to post your resume, so the job search becomes a two way proposition and connection—the individual searching for employers and employers searching for individuals with particular skills, background and experience. Being able to search for essential information at one's convenience also makes the proposition of an Internet job search more time efficient. Given that this new method for job

searching is convenient, it is also complex and should not become a substitute for face-to-face interactions.

COMMUNITY TECHNOLOGY

For community-related initiatives, information technology has become known as community technology and conceptualized as community computing. The digital divide is defined as the disparity in computer and Internet access and use between various social, economic, and racial groups within the United States. Based on the statistical analysis done by the National Telecommunications and Information Administration (NTIA) its first three reports (1995; 1998; 1999) it was concluded that the divide was getting progressively wider. In NTIA's fourth report (2000) it was concluded that the divide was showing a slight decrease; however, a significant divide still remains. As a result of the concerns provoked by the digital divide, many community initiatives were established by setting up community technology at schools, community centers, libraries and churches, etc (Beamish, 1999; Morino, 1994; Pinkett, 2001), and by creating specifically designed applications and software. The increasing demands for access and the nature of the different types of access have come-up against the limited capacity of community computing centers. Consequently, efforts are now underway to augment traditional community computing efforts by bringing computers and communication technologies into the homes of low-income residents (Bishop, Tidline, Shoemaker, & Salela, 1999).

Community Technology Centers (CTCs) have played a significant role to date in helping to build capacities of low-income communities. Moreover, CTCs have established themselves as necessary institutions in low-income communities. Indications from a study conducted by the Community Technology Center Network (CTCNet) titled *Community Technology Centers: Impact on Individual Participants and their Communities* (see Mark, Cornebise, & Wahl, 1997), and research conducted by other groups call for the continued development of the technological capacity of low-income communities. This suggests that the availability of technology in the home in addition to technology centers is a critical factor. In 1998, one of the concerns raised in the CTCNet report on community technology centers was CTCs ability to sustain staff, resources and programming. Although technology in the home can be looked at as an alternative to the

technology diffusion approach of CTC's, it really should be considered as the next step along the continuum of technology capacity building. Additionally, CTCs can serve as support and a location for future training for home-based technology use.

The primary models for bridging the digital divide community technology centers, community content and community networks fall under the heading of community computing, or "using technology to support and meet the goals of a community (Beamish, 1999)." All three are necessary for the long-term success of bridging the divide. Furthermore, establishing technology in the home may be especially relevant in making a difference in supporting the technology capacity of low-income community residents.

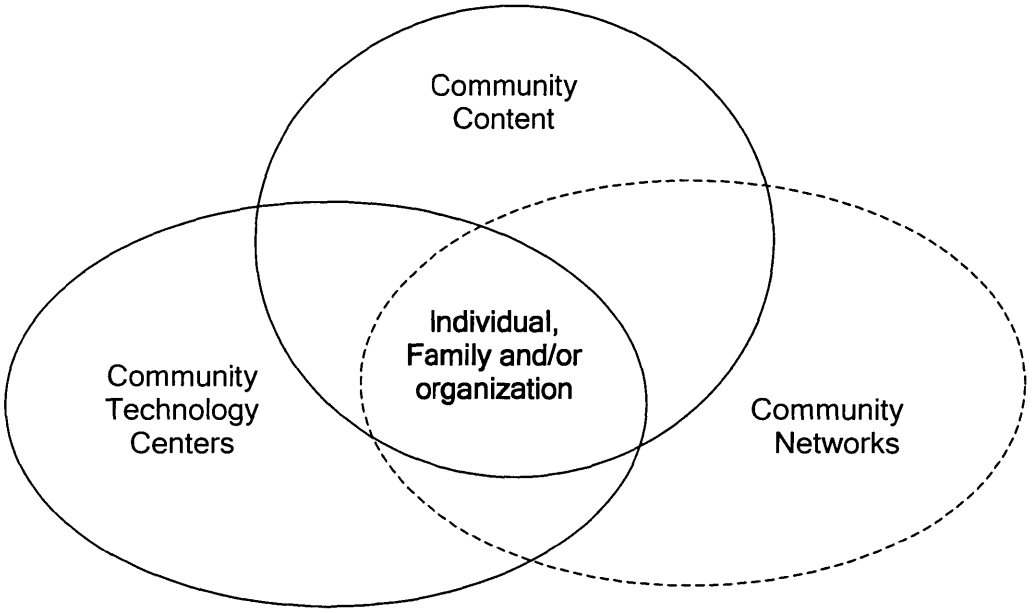


Figure 1-2: Venn Diagram, overlap of community computing models.

The circle in Figure 1-2 for community network is dotted because it is finding renewed life with the continued development of the Internet and community Intranets. Community networks become especially important with computers and Internet access in the home. "Whatever the name, we see community networking as a process to serve the local geographical community—to respond to the needs of that community and build solutions to its problems. Community networking in the social sense is not a new concept, but using electronic communications to extend and amplify it certainly is (Morino, 1994: 1)."

Defining community computing by these three categories (community technology centers, community content, community networks) is quite broad. Anne Beamish (1999), in her article *Approaches to Community Computing: Bringing Technology to Low-Income Groups,* gives more focus to community computing by categorizing it by what is seen as the missing ingredient (hardware-software-training, infrastructure, online access, relevant content) or by the targeted group (individuals, general public, schools, youth, community organizations, specific groups). These categories become helpful in explaining and contrasting different community computing efforts. Community computing, however, seems to fall short on the issue of public or private access as well as on the role it could play in assisting low-income communities.

INFORMATION TECHNOLOGY AND PLANNING

Information technology (IT) has played and continues to play a significant role in the urban planning process. Most studies around IT and planning have focused on its role in addressing issues of improved planning from the perspective of the planner. Furthermore, most studies have focused on organizations. Researchers such as Ferreira (1999), Klosterman (1997), Shiffer (1992), Hampton (2001) and others have investigated the role of technology as it relates to the planning organizations and the planning process. Moreover, there is significant research by Orlikowski (1992), Zuboff (1988), Huber (1990), Pinch and Bijker (1987) and others on how technologies effect organizations and sociological paradigms. Possible questions that arise are, "What is a possible impact of information technology on community and community building?" and "Can community and information technology be experiencing an evolution comparable to planning and information technology?" I would suggest that a very similar evolution is occurring with respect to community and information technology, in particular as it relates to community development. The evolution from the perspective of capacity building and the empowerment of the community residents, coupled with technology, has become known as community technology.

The focus of planning and information technology has evolved from the processing of data to the generation of intelligence. Information technology appears to have worked its way up the bureaucratic structure in business and manufacturing by helping low-level workers automate

mundane tasks and providing strategic intelligence for the senior members of the organization. By applying technology in ways that increase the self-acting and self-regulating capacities of machine systems, thus minimizing human intervention (Zuboff, 1991). Information technology came about as a way to automate operational tasks. Klosterman (1992) observes how concerns for planning and information technology evolved from data analysis needs in the 1960s. In the 1970s, the focus was more on integrating diverse data sets for the purpose of improved organizational management. Information technology in the 1980s presented the enhanced ability for refined executive decision-making. Finally, in the 1990's information technology provided opportunities for broader collective involvement of different aspects of problem solving.

Shiffer (1997), in his article *Managing Public Discourse: Towards the Augmentation of GIS with Multimedia*, notes the evolution of information technology in the direction of community technology and describes information technology's impact on the community planning process and public discourse. There continues to be massive amounts of data generated every day, which in its raw form can be unmanageable and un-analyzable without sufficient technological tools. With the appropriate information technology, the abundance of abstract planning data can be transformed into concepts available for human understanding and consumption (Michael Shiffer, 1997). This availability of understanding helps reduce speculation during public discourse, and empowers individuals with renewed levels of understanding of what could be occurring in their respective communities.

Public discourse regarding the environment and implementation of this environment for information sharing has four primary space-related modules to consider (see Figure 1-3):

	Same Time	Different Time
Same Place	Community Meetings	Individual Plan Review
Different Place	Human Proxies	Letter and Newspaper-based Discourse

Figure 1-3: A representation of the discourse on the implementation environment (Michael Shiffer, 1997).

- Same time – same place (everyone meeting at the same location).
- Same place – different time (individual review of plans that are accessible to the public at a central location).
- Different place – same time (information supplied to the discussion through proxy).
- Different place – different time (written letters and/or circulated periodicals).

Information technology, inclusive of the Internet, helps to address space related constrictions (see Figure 1-4). Shiffer's space-related modules show how information technology influences and avails the possibility of effectively managing public discourse. Using a technological framework, he suggests that:

- Same time – same place can be enhanced and more effectively managed through the use of what he calls collaborative planning systems (CPS). CPS combines the activities of tool usage, information access, and collaboration by utilizing graphical interfaces, associative information structuring, and computer-supported collaborative work.

- Same place – different time can be managed through media-assisted review, using tools such as geographic information systems and computer projection. Internet documents can easily be stored in repositories that are accessed, visualized and analyzed using elaborate tools and technology existing at a single location for review by participants at different times.

- Different place – same time can be much more effectively managed through tools such as video conferencing. This method minimizes the need for human proxies, although it does not entirely eliminate it (parties may require signatures or other tangible documentation).

- Different place – different time can be enhanced through tools such as electronic mail and list serves which allow for the posting of messages at different places and at different times.

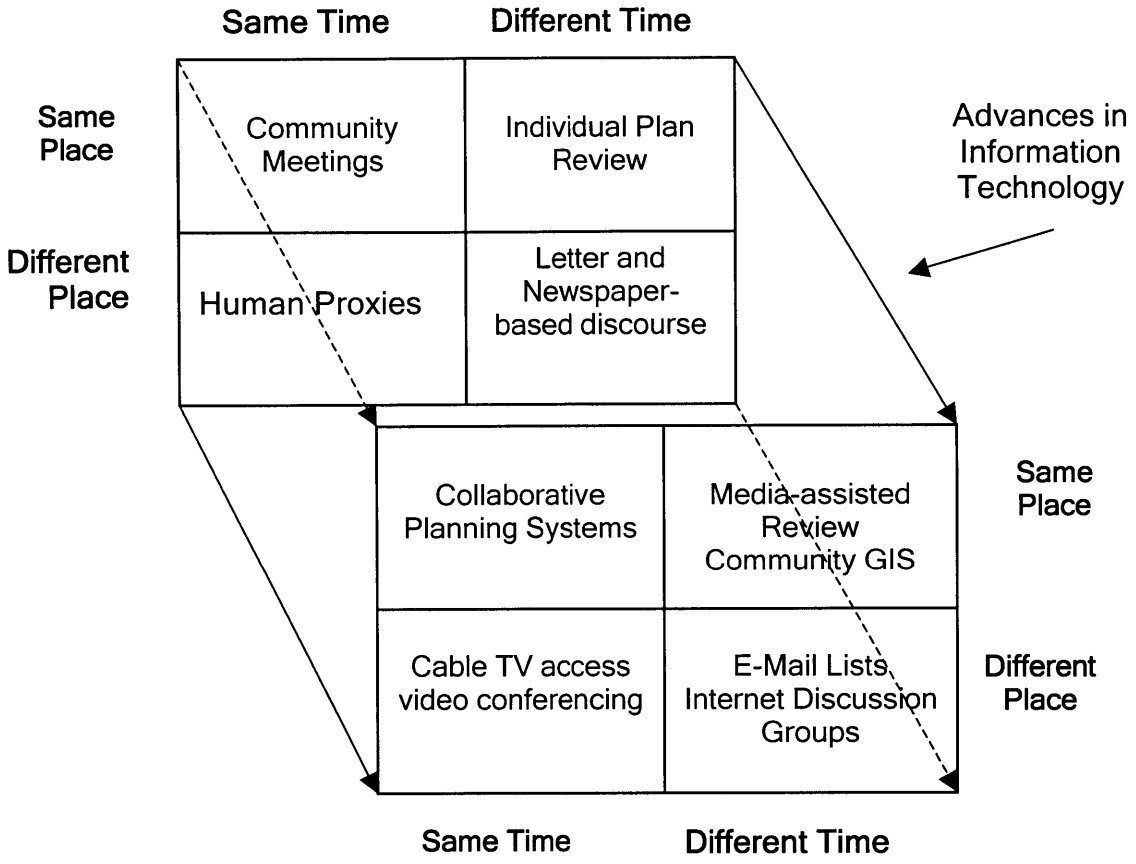


Figure 1-4: Representation of public discourse on implementation environment including information technology (Michael Shiffer, 1997).

Ferreira (1999), in his article *Information Technologies that Change Relationships Between Low-income Communities and the Public, and Nonprofit Agencies that Serve Them,* has also encouraged the information technology discussion in the direction of community technology. This article details how information technology is emerging to change relationships between low-income communities and the governing bodies (public and non-profit organizations) that serve them. With a focus around planning data such as land use and ownership data, Ferreira (1999) discusses how with technology the planning process for low-income communities changes stakeholder relationships. He suggests that low-income community planners can better express their interests and strategies using information technology. This added access to community data supports the community planners in giving their interests effective voice in public debates over plans and projects. This access however, as observed by Ferreira's (1999), is

predicated on meaningful access, usable data, and the user having the necessary skills and a certain level of sophistication to take advantage of the available tools. This would suggest that information technology has emerged as a viable tool in the community planning process when coupled with necessary skills. These aspects of IT have begun to materialize as an information process component underpinning the need for information access.

Given that information technology has emerged in communities, does it hurt community building efforts or help it?" Kraut, Lundmark, Patterson, Kiesler, Mukopadhyay, and Scherlis, in a 1998 article entitled *Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Well-Being*, found that computer mediated communication (CMC) or Internet use had a negative effect on social relations. Hampton (2001), in his thesis *Living the Wired Life in the Wired Suburb: Netville, Glocalization and Civil Society,* explores the effects that CMC has on community and social relations. His study contrasted Kraut, et al. (1998) and found that CMC had a positive effect on social relations local and distant. Moreover, his findings confirm the proposal that CMC supports the growth of social capital. Hampton's (2001) findings would suggest that information technology has the potential to play a role in community building efforts and in extending social relations. Moreover, these contrasting findings suggest that more investigation and study is needed.

RECENT SURVEY RESEARCH: THE INTERNET AND COMMUNITY DEBATE

Wellman and Leighton (1979) reviewed three arguments about the community question, is it: "lost, saved or liberated." The "lost" argument contends that as a result of the industrial revolution and the growth of bureaucratic societies, community ties have dissipated. The "saved" argument contends that despite the industrial revolution, community relations, especially connected to the neighborhood, remain an important aspect of life. The "liberated" argument contends that community has extended beyond the physical boundaries of the neighborhood. Hampton (2001) contends that in today's society, multi-stranded social ties and relations have been extended into, and facilitated by cyberspace or the Internet.

The two sides of the community and technology debate have been described as either utopian or dystopian. The dystopian proponents suggest that people become less socially connected to

family and friends, as a result of technology, while the utopians suggests that community can be developed, and people can become more socially connected to family and friends in cyberspace. Dystopian views (see Stoll, 1995; Kraut, et al., 1998; Nie & Erbring, 2000) are slowly fading as a result of research that support the argument that Internet users are becoming more socially connected with friends and family. Kraut et al. (2002) criticize this view and argued that individuals who are extraverts *are* more socially connected; not as a result of Internet use. While others who are introverts will become less socially connected, and more isolated not as a result of Internet use. In other words, the Internet neither increases nor decreases community, but rather reinforces pre-existing patterns of behavior.

Several research efforts have occurred surrounding the implications of Internet use for community and its social relations. In this next section I briefly review several studies, the study's' context, and implications for low-income communities.

STANFORD STUDIES: INTERNET AND SOCIETY & INTERNET USE: A TIME DIARY STUDY

Nie and Erbring's (2000; 2002) *Internet and Society* studies represents the strongest support for the first HomeNet (Kraut et al., 1998) study which concluded that Internet use causes a decrease in social and communal contact. The Stanford-based study surveyed 4,113 people in 2,689 households, and concluded that social isolation is on the rise. Nie (2000) stated "The Internet could be the ultimate isolating technology that further reduces our participation in communities even more than television did before it (p. 19)," and Erbring (2000) found that 26% of people spent less time talking to friends and family on the phone, 13% spent less time with friends and family, and 8% attended fewer social events. They also found that although 14% were spending less time commuting in traffic, 25% more were also spending less time shopping in stores. Finally, Nie and Erbring (2000) concluded that 16% were working more at home and 9% were working more at the office.

Although these study's findings are informative, they must be taken in context. First, many of the changes in "decreased social interaction" that they discuss lack context. The "decrease in social

interaction" is less for the stronger social interaction, such as attending social events, and more for the lesser social interaction, such as talking on the phone to friends and family. Therefore, if all three indicators, less time on the phone with friends and family, spending less time with friends and family and less time attending social events, showed an equal or reversed increased pattern, then these findings would be more concerning. With spending less time on the phone as the highest of the three indicators then it could be interpreted that users are spending less time on the phone but not as many are spending less time with friends and family or attending social events. Moreover, there is no consideration or context for the fact that for some the Internet may have become a substitute for other forms of social contact. The decrease in talking on the phone with friends and family may be a result of Internet users substituting telephone interactions with Internet interactions. Without presenting results of those who reported an increase in time spent with family and friends from Internet use, it misses the opportunity to recognize both sides of the argument.

Second, Nie and Erbring (2000) offer that users were spending less time commuting and less time shopping in stores as a positive residual of Internet use. From a community building and Urban Planning standpoint, this finding could be recognized as being more important than indicated. The fact that Internet use reduces the number of tasks that are isolated and somewhat individual in nature, means that more opportunity is available for communal activities. Although mall shopping could be somewhat more socially communal with shoppers in common space between stores, stores not in shopping malls without the enclosed common space could be less so.

Finally, Nie and Erbring's (2000) findings of increased working at home as well as the office because of Internet use is the most concerning, but not for the reasons that were presented. Increasing work time, especially if compensation is not increased, can only have a negative effect on stress levels and social participation. It is not fair to suggest that the availability of the Internet is the cause of increased working at home. I would think this has more to do with time management, labor-management relations and the distribution of labor. If Internet users are generally finding it difficult to separate their personal life and work life, then the same challenge is likely to exist in cyberspace.

Nie, Hillygus and Erbring's (2002) Internet Use: Time Diary Study conclusions, consistent with the Internet and Society study, found that Internet use decreases sociability specifically among friends and family. This 2002 study, however, approached the issue a little differently. It analyzed when and where Internet use affects face-to-face interactions. Moreover, its approach is based on the time displacement caused by Internet use. This study, also Stanford based, used data from the Stanford Institute for the Quantitative Study of Society's (SIQSS) modified time diary survey. The study surveyed randomly selected 6,146 participants between the ages of 18 and 64. Respondents were asked about their activities "yesterday," during six randomly selected hours of the day--one in each of six time blocks (strata): night, early morning, late morning, afternoon, early evening, and late evening (Nie et al., 2002). This study found that Internet use at home has a negative impact on time spent with friends and family, while Internet use at work relates to decreased time with colleagues. Additionally, Internet use during the weekends is more related to decreased time spent with friends and family than Internet use during the weekdays (Nie et al., 2002).

This second study by Nie, Hillygus and Erbring (2002) attempts to offer more context than the Nie and Ebring's 2000's' study. By assessing time displacement, as it relates to Internet use, it gives a little deeper context to the Internet use and the community debate. It does not; however address my concerns from the first study. Fundamental to Nie, Hillygus and Erbring's (2002) argument is the assumption that face-to-face human contact and interaction is the sole source of rich social contact and interaction. While face-to-face human contact and interaction is often recognized as the richest source of social contact it's not reasonable to suggest any other interaction short of face-to-face is not also to some degree rich. To consider face-to-face contact and interaction, as the only source of rich social interaction would suggest that an unexpected pleasant phone call, a card in the mail recognizing a special event, or a delivery of flowers is not rich social contact and/or interaction. The Internet has expanded options for increased social connectivity, social contact and information sharing.

Nie, Hillygus and Erbring (2002) do recognize that their study does not address the issue of the ability for multi-tasking created by the Internet. They downplay this point; however, I think it is

important. Looking beyond the assumption of the face-to-face interaction requirement, an Internet user can talk to a family member on the phone, chat on-line with a friend and send an e-mail to another friend all in one sitting. This scenario certainly does not replace the face-to-face meeting; however, it goes a long way in maintaining social ties and possibly inspiring the next face-to-face meeting.

HOMENET STUD(S)

The first HomeNet longitudinal study in 1998 reported negative effects of using the Internet on Social involvement and psychological well-being among new Internet users during 1995 through 1996 (Kraut et al., 2002). The findings presented a "paradox" because the 256 participants, from 93 households, used the Internet for communication was considered positive; however, the negative effects presented something of concern. The HomeNet study conducted a follow up with 208 of the original respondents three years later. The follow-up study found that some of the original concerns of the negative effects of Internet use on communication, social involvement, and well being had gone away. The follow-up study conducted by HomeNet from 1998-1999 involved 406 participants that had purchased either a computer or television. Contrary to the first study conducted in 1995 the 1998 HomeNet study attempted to construct this study as a true experiment using a control group. The control group was unsuccessful because it was difficult to prevent participants from engaging technology during the study. In addition, by including purchasers of televisions, they attempted to rule out change based on external events. In the analysis, they controlled for bias using a dummy variable for whether participants were recruited for purchase of a television or computer. The number of dependent variables was increased to include social involvement and attitudes towards community. The second HomeNet study in 1998 also included the effects of Internet use on extraversion and perceived social support. Both studies were longitudinal with pre- and post-test surveys.

Kraut et al. (2002) and Kraut et al. (1998) offer a comprehensive look at both the negative and positive effects of Internet use on community. The most difficult challenge for the arguments made in both studies is the inability to put a community or neighborhood context to the findings. Neither study was applied in a natural setting. Although the studies were focused on Pittsburgh, it is not clear that it was targeted at smaller defined geographic area such as a neighborhood or

multi-family dwelling. This is important because by using a neighborhood with pre-existing communal relations and interests, the findings with relation to Internet use and community may then be tied to some particular event or issue of common interest. Without context, there may be no answer to why Internet use increased or decreased during a particular time period.

The HomeNet studies and subsequent follow-ups are the best representation of why continued research in this area is essential. While the first study found that Internet use had negative effects from Internet use on social involvement, the second found study the opposite. That is not to suggest that the area is experiencing indecisiveness but rather that the area is growing and more research may support the newly developing understanding and perceptions. The fact that Kraut et al. (2002) were willing to contradict their first HomeNet study findings speaks to the balance and sincerity of their studies.

NETVILLE STUDY: LIVING THE WIRED LIFE IN THE WIRED SUBURB: NETVILLE, GLOCALIZATION AND CIVIL SOCIETY STUDY

Hampton (2001) gives context to Internet use and community. The study was conducted with participants in a geographically defined neighborhood. There were 109 households with 62% participating in the study, 46-wired homes and 21 non-wired homes. Of the 67 participating homes, 52 respondents came from wired homes while 21 respondents came from non-wired homes. Netville was one of the first residential developments in the world to be built from the ground up with a broadband high-speed local computer network (Hampton, 2001). The Internet connection was on and available 24 hours a day and 7 days per week. This was an ideal setting to study Internet use and community because participation would not be hindered by a slow undependable Internet connection. Moreover, as compared to other survey research conducted on Internet use and community, (Horrigan & Rainie, 2002; Kraut et al., 2002; Kraut et al., 1998; Nie & Ebring, 2000; Rainie, 2000), Netville represented a natural setting for studying Internet use incorporating both survey and ethnographic data. The Netville was most consistent with the Camfield Estates-MIT Creating Community Connection Project.

The findings from Hampton (2001) show great possibilities for Internet use and social relations. Hampton found greater involvement with friends, family and neighbors was linked to computer-

mediated communication (CMC). Moreover, he found that Internet use is associated with high levels of in-person and telephone contact, the exchange of support, the growth of personal networks and increased community involvement. These findings contrast with Kraut et al. (1998) and Nie and Erbring (2000) but are supported by Kraut et al. (2002), Rainie (2000) and Horrigan and Rainie (2002). As mentioned earlier, the feature that distinguishes Netville from the other survey research studies is its inclusion of a neighborhood level ethnographic approach.

Not only did his findings indicate Internet use's impact on community involvement and social contact, he was also able to see and document first-hand why some of the effects were occurring. The other Internet use studies described here lack the context and depth of understanding of the Netville study.

The comparison to populations of similar socio-economic status was covered extensively in his research. The demographics of his sample population are one of several additional distinctions between Netville and the Creating Community Connections Project. Netville involved demographics of higher socio-economic population while the Creating Community Connections involves a lower socio-economic population. In addition, Netville was based in a suburban community, while Creating Community Connections was based in the inner-city. Netville and the Creating Community Connections Project involved populations of different levels of educational attainment. Finally, Netville targeted what is classified in terms of the digital divide as "technology haves," while the Creating Community Connections was targeted at the "technology have-nots."

PEW INTERNET AND AMERICAN LIFE PROJECT STUDY

The Pew Internet & American Life Project conducted one of the most comprehensive series of studies of Internet use and the American society to date. Studies range from how Americans use the Internet for entertainment, such as downloading music, to how Americans use the Internet to take better care of themselves. In 2000, Rainie conducted a study entitled *Tracking Online Life: How Women Use the Internet to Cultivate Relationships with Family and Friends*. This study of 1,690 American women found that e-mail is changing women's lives and improving their social circle, primarily through becoming a larger part of their daily activities. Transitioning from the

discussion of community in practical uses of the Internet, this leads into the focus of this review, how American are becoming more dependent on the Internet to address basic daily needs and functions.

Horrigan and Rainie's study entitled *Counting on the Internet*, offers the most recent survey findings conducted in December 2002 of the Internet for practical daily use. The findings from this study are based on a telephone survey conducted by Princeton Survey Research Associates of 2,092 working age adults with 1,318 being Internet users. This study found that large percentages of Americans turn to the Internet for information or services from government agencies, expect a business to have a website, and expect to find reliable up-to-date news and reliable information about health or medical conditions. The sample population for this survey was generated by a random selection of telephone numbers in the continental United States (Horrigan & Rainie, 2002).

What is most intriguing about this study is that there is increasing expectation and demand that pertinent information is going to be available on-line even among people who are non-Internet users. Among non-Internet users, Horrigan and Rainie (2002) found that those who say they would turn to the Internet the next time they need government or health information are more likely to be women, between the ages of 18 and 29, employed and non-White. This suggests that there is significant demand among minorities and women. Moreover, women, minorities and non-Internet users disproportionately representing low-income communities suggest possible latent demand for Internet access in low-income communities.

AN APPROACH TO LOW-INCOME COMMUNITIES, SELF-SUFFICIENCY AND INFORMATION TECHNOLOGY

In attempting to understand information technology's potential with low-income community efforts of self-sufficiency, it is important to understand what ingredients bind self-sufficiency, low-income communities, and information technology together. By understanding this, it becomes possible to develop a theoretical approach. To merge the self-sufficiency discussion, it is critical to have access to relevant information to make an informed decision about what is of interest to the individual.

Each of the three components of community technology discussed earlier (community technology centers, community content, community networks) encompasses a vital ingredient in the discussion of use of technology for self-sufficiency in low-income communities. A Community Technology Center's (CTC's) primary function is to assist its users in their efforts to establish and/or nurture a certain standard of technological proficiency also known as building human capital. Moreover, CTCs assist users in developing a level of comfort such that their newly developed technological ability enables them to explore new ways to use technology. Community content can be viewed as the fuel to sustained interest and utility of technology. Without relevant timely content, it is virtually impossible for technology to play a role in low-income community's efforts toward self-sufficiency. Community networks serve to enable users of technology to share relevant ideas for change and relevant information for individual and community decision-making, and to build and nurture social connections, also known as building social capital.

Finally, for all these components to come together it is important for the individual to believe that achieving these levels of understanding and technological use is in fact possible. It is important that the individual have a sense of inspiration and motivation to achieve a sense of empowerment.

TYING THE SELF-SUFFICIENCY COMPONENTS TOGETHER

In viewing self-sufficiency in terms of addressing socio-economic challenges (education, employment, housing, health and social services, community relations and connections, safety, etc.) rather than physical challenges, I clarify where the development focus should be. According to Zimmerman (2000), there are several components for enabling or empowering one to operate more self-sufficiently: 1) a sustainable sense of control over personal decisions, 2) awareness of critical resources directly related to personal decisions, and 3) the motivation to engage the community and the broader society socially, politically, and economically. To couple the information resources with the individual desire to access it requires ability and means—ability being skills (human capital) required to use the means or tools to accomplish the said goal. Moreover, for the individual to access relevant information efficiently and, once motivated, use

the information to engage the community, he/she must be able to develop social relations (social capital) to network and share information with other individuals. Tying these critical socio-economic ingredients together becomes the challenge of this theory. Personal computing and Internet access are one means to support and facilitate a move toward self-sufficiency.

HUMAN CAPITAL THEORY

Human capital is traditionally associated with workforce development. Studies of human capital are mostly done in a workplace environment because it is related to an individual's productivity in the labor market (Laroche, Mérette, & Ruggeri, 1998). Thomas Davenport (2001) proposes a method of looking at human capital by breaking it into four elements:

1. Knowledge: command of a body of facts.
2. Skill: facility, developed through practice, with the means to carry out a task.
3. Talent: inborn facility for performing a task.
4. Behavior: observable ways that contribute to accomplishing a task.

Examining technology's role in the context of these human capital elements and situated in the aforementioned self-sufficiency paradigm, what begins to emerge is how these areas can be interrelated. By developing a baseline understanding of how to use a personal computer and the Internet, the four elements can surface for the individual:

1. Knowledge: understanding what the hardware components of the computer are and how these components interrelate with the operating system and software applications;

2. Skill: developing the ability through training to use a personal computer and specific software applications for specific tasks;

3. Talent: being able to apply previously acquired knowledge and skill (academic, social, economic, etc.) to the personal computing environment;

4. Behavior: turning to a personal computer and the Internet first to accomplish tasks that were previously done without technology as well as tasks that were previously not done at all.

These four areas may or may not exist exclusively in one individual, so one way to observe these areas are in silos (see Figure 1-5). An individual may possess a combination of one or all four but for the purpose of this theory, each is looked at independently. These four areas are the nucleus for moving toward self-sufficiency.

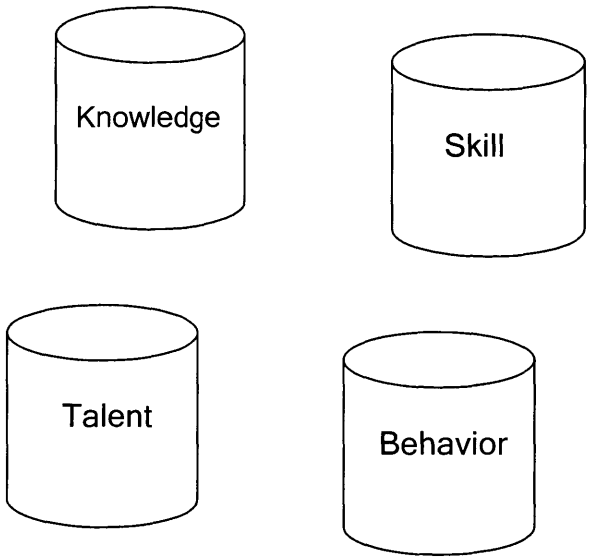


Figure 1-5: Representation of human capital.

Individuals represent the base and foundation of a community. Developing any combination of these four areas of the individual, adds to their overall lifelong learning and experiences. Laroche et al. (1998) defines human capital as the aggregation of the innate abilities and the knowledge and skills that individuals acquire and develop throughout their lifetime. Adding technological understanding is not the solution to socioeconomic challenges but rather a means of support in the enhancement of skills and abilities for addressing their challenges. By strengthening the abilities of the individual, it also directly strengthens the ability of the community and/or contributes to the development of social capital. Social capital offers an avenue through which the individual containers or possessor can be a benefit for the community as a whole as well as

the broader society. Social capital allows the community to make use of the human capital of its members.

SOCIAL CAPITAL THEORY

Human capital alone is not sufficient as a sole supplier for community development. Social capital, which represents the social bond that provides the potential for individuals to tap friends and acquaintances in times of need (see Figure 1-6), is also a means by which to measure a community's strength. Social capital represents the movement of the understanding and abilities of the individual into a realm that enhances personal relations, the community and the broader society. Social capital refers here to features of social organization, such as trust, norms and networks that can improve the efficiency of society, facilitating and coordinating actions (Putnam, 1993). Personal networks, also known as social networks, are a critical component of social capital. According to van der Poel (1993) personal networks can be delineated through four approaches—interaction, role relation, affective and exchange. For the purpose of this dissertation, affective and exchange approaches are used. In the affective approach, people, for example, name the persons with whom they have a close relationship (Van der Poel, 1993; Wellman & Leighton, 1979) or the ones who are especially important to them (Van der Poel, 1993). This approach helps to understand the volume and strength of an individual's personal networks but can be difficult in distinguishing what those strengths entail— normative, emotional, etc. The exchange approach assumes that "people who are sources of rewarding interactions will be particularly important in shaping respondents' attitudes and behavior" (Van der Poel, 1993). Moreover, social support networks can be distinguished between emotional support and instrumental support (Van der Poel, 1993). Emotional support for the purpose of this dissertation means people to whom a respondent turns for support when dealing with personal problems and instrumental support means people to whom a respondent turns for material support—monetary, sharing of products, etc. and service support—assistance with chores, watching children, checking on residence, etc. Social capital becomes the spokes in the community wheel. Personal computing and Internet access represent the physical spokes in the community wheel that is social capital. As diagramed in Figure 1-6, the human capital containers can be exploited by the community through social capital (trust, norms and social networks),

which includes social contact. Community members can make initial contact through the electronic medium, exchange information, which can precede physical contact.

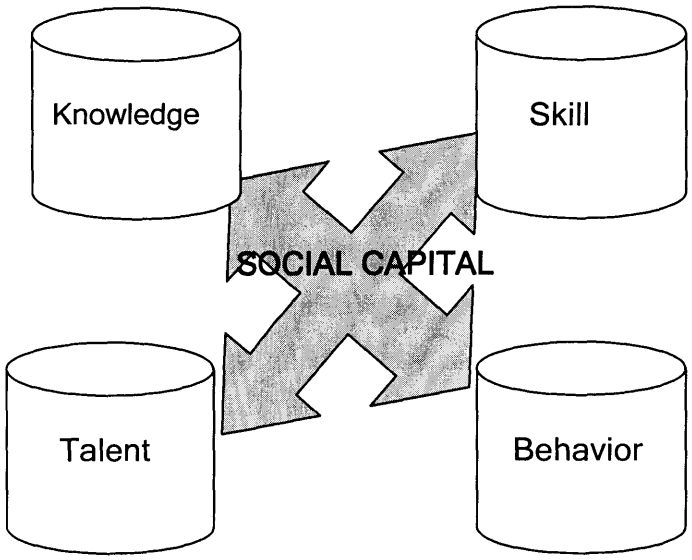


Figure 1-6: Representation of social capital's connection to human capital.

EMPOWERMENT THEORY

With the technological skills and community relations, the empowerment model bonds this theory together to nurturing self-sufficiency. Community members develop a sense of control and critical awareness that Internet access can help to facilitate goal setting and achievement. Empowerment may be seen as a process where individuals learn to see a closer correspondence between their goals and a sense of how to achieve them, and a relationship between their efforts and life outcomes (Mechanic, 1991). Human and social capital mobilization however, can be limited by personal inspiration and motivation. Empowerment offers a conceptual framework through which human and social capital are mobilized and sustained for nurturing self-sufficiency.

Community empowerment emerges from a process of the determination and inspiration of the individual. Community empowerment involves a three-stage approach, which begins with psychological empowerment of the individual (Zimmerman, 2000) and builds into what I call an

Empowerment Pyramid (see Figure 1-7). The individual's function and behavior in the empowerment pyramid is important at all stages. The empowerment pyramid, as diagrammed in Figure 1-7, is supported first by the empowerment of the individual, tied together by organizational empowerment and culminates with community empowerment.

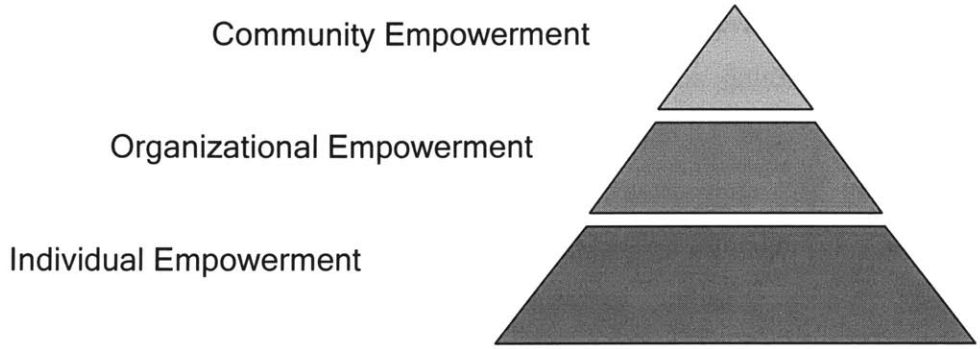


Figure 1-7: A representation of empowerment.

The focus of this thesis is on the role of technology on an individual's sense of empowerment and self-sufficiency. Empowerment can be looked at as the enabling ingredient in the self-sufficiency model. The empowering process includes learning decision-making skills, managing resources, and working with others, while empowerment as an outcome involves a sense of control, critical awareness and participatory behavior (Zimmerman, 2000). The foundation of community empowerment or the empowerment pyramid is based on the empowerment of the individual. The empowerment of the individual begins with an individual's belief that what they are trying to accomplish is in fact possible and worthwhile. For the self-sufficiency model, the empowerment model enables the development of human capital and social capital.

CHAPTER TWO

THE BACKGROUND AND THE STUDY: CAMFIELD ESTATES

The previous chapter presented theoretical frameworks for this thesis and provided analysis and the definitions of the key terms investigated in this research, which sought to gain understanding as to whether personal computing and Internet access can facilitate a sense of community, empowerment and an individual's, family's and community's ability to acquire relevant information on their own. This study took shape over several years of work that included the securing of funding and other resources, as well as the development of a strong relationship with the host community. Where possible, traditional research approaches such as a survey instrument, participatory research and ethnographic observations were used.

This chapter details the story behind the scenes and how this study came about. I briefly tell the history of Camfield and its participation in the HUD Demonstration Program. I present my research question and steps taken to design this study and provide an account of the decisions made regarding the technological apparatus. This chapter closes with a review of the pre- and post-survey areas and a description of the methods used for data analysis and a review of the project's time-line.

PROBLEM CONTEXT

Historically, America continues to be faced with a question that seems resistant to an answer: What is the best way to address the needs of its low-income communities and its residents? Solutions to meeting these needs have included legislated government programs such as the Resident Opportunities and Self Sufficiency (ROSS) Program, the Empowerment Zones and the Enterprise Communities Program. These programs were all implemented with the goal to encourage the competence of the individual, family and community to facilitate a population that is self-sufficient and less dependent on government funded services. Development of these programs used traditional approaches to low-income community building and other efforts that are often facilitated by a local social service agency or organization. These approaches are often managed by entities other than the community members themselves.

For instance, community based organizations (CBOs), social service agencies and in some instances community health centers often act as community builders and information repositories for their clients and community members at large. Members may receive community-organizing assistance to improve community relations and participation. Members may also be supplied with information about programs or services for themselves or family members such as possible housing and employment opportunities. Given the benefits of technology, traditional attitudes regarding community building and information sharing can be expanded to include interpersonal electronic access as well as direct access to information by an individual and/or family in efforts to promote community and empowerment.

Appropriately, the community organizing effort seeks to assist community members in getting to know each other and to assist in shaping their community and community related information. This dissertation seeks to answer the question as to whether a community can, with the support of technology, perform the tasks of nurturing community participation, getting to know each other, communicating with each other and becoming empowered enough to be able to autonomously identify and access information relevant to their needs, wants and goals.

RESEARCH QUESTION

This dissertation addresses the question: Can personal computing and high speed Internet access support community building; and can this access to technology empower low-income community residents to do more for themselves?

My hypothesis is divided into two parts. Part one is, low-income residents who have a personal computer and Internet access in their home have an increased likelihood to feel a sense of community, have an increase in social contact and nurture stronger social ties. The second part is, low income residents who have access to information gained through computer access in their home have an increased sense of empowerment and ability to independently access relevant information (related to their needs, wants and purpose).

DESIGNING THE STUDY

This research area actually germinated for me as a systems engineer several years ago at Digital Equipment Corporation (now HP-Compaq). Back then, I thought there was a distinct relationship between ease of access to information and one's ability to progress socially as well as economically. After entering MIT's Department of Urban Studies and Planning Ph.D. program, I met Randal Pinkett, a then Ph.D. candidate[4] in the Epistemology and Learning Group of the MIT Media Laboratory. We shared common ideas about community and technology, and our partnership as co-researchers was formalized.

The impetus for this study is a fundamental desire to understand if in-home use of a personal computer and high-speed Internet access can support low-income communities in their efforts to do more for themselves. Integrating information technology into an environment that has not traditionally engaged technology requires a certain type of sensitivity. It was not our goal to change the way a community and its residents operated, but rather to see if a personal computer and Internet use could augment, support and enhance what was already being done.

We approached this study with a belief and goal that if the proper technological resources could be made available to low-income residents, then the residents would be able nurture community, acquire relevant information and improve communication on their own without the assistance of an outside service or organization. The conceptual outcome models we developed for this project were community building, empowerment and self-sufficiency.

When we first sat down to discussed how to would approach our study we kept in mind seven primary objectives:

- Offer new computers as opposed to old or refurbished computers;
- Have the computer put into their homes;
- Provide high-speed Internet connectivity;
- Provide Internet access supported by a dedicated web portal and online community;

[4] Randall received his doctoral degree in June 2001.

- Engage participants in the design and implementation;
- Provide training and support to increase participant fluency in the use of technology;
- Raise the necessary funds for the project.

New versus old computers: The traditional approach to offering computers to low-income communities at that time was to connect with a corporation or organization that was replacing its old computers with new ones and seek to secure the old ones as contributions. We were philosophically opposed to old or refurbished computers for two reasons: 1) new computers would send a stronger message of how much we value the community and 2) for the long-term it was important that the computers not become obsolete because of capacity constraints before the end of the study. To fulfill our objective of new computers required us to either raise the funds to purchase the computers or find a hardware provider willing to donate the computers. We developed a proposal and raised funds to purchase the computers. This was important because it allowed us to select the computers we wanted and we would not have to settle for what a contributor provided.

In home versus public access: Community Technology Centers (CTCs), from the community technology model as discussed in the theoretical frameworks section, were the preferred method of introducing personal computing and Internet use to low-income communities. We were particularly interested in how personal computing and Internet use could be incorporated into a low-income community to allow residents to do more for themselves. To accomplish this, it would require access beyond the scheduled hours offered at technology centers. Moreover, we felt that much of the interpersonal communications for community and family would be better served in the home rather than in a public space. To fulfill our objective of in-home computer use would require buy-in from residents to put it in their home. This factor was important because, if users did not want the computer in their home, we could not conduct the study.

High-speed Internet connectivity: Our experiences and background as engineers and computer users convinced us that the Internet use experience is better served with a faster connection. Introducing technology into an environment that traditionally did not engage technology, we did not want the users to be discouraged or frustrated from a slow Internet connection that would

cause slow web page loads. At the time of this study, high-speed Internet service was just beginning to become available in low-income communities. Much of the in-home Internet connectivity service was at a speed of 28.8k or 56k dialup, well below the at least 200k high-speed Internet connectivity we were seeking for the project.

To fulfill our objective of high-speed connectivity we had several options, we needed to either raise money to purchase Internet service, or solicit an Internet service provider (ISP) to donate it. Similar to our rationale for wanting to deploy new computer, we chose to raise the funds so we could retain flexibility in our options. One option was to install an Ethernet. This was challenging because it would require installing a completely new wiring infrastructure, which could be costly, as well as time consuming. Another option was to use wireless technology. At the time of this study, wireless was more expensive, and it had not been fully tested for the public. A third option was to use the existing infrastructure. We could purchase from an existing ISP, or purchase a high-speed connection from the local phone company and run that service over it. We decided to purchase service from an existing ISP and use their infrastructure. If the service went down, the users would have to call the ISP and not the researchers for tech support.

Dedicated Web Portal and Online Community: In addition to deploying new computers for in-home access and providing high-speed Internet service, the final and critical element was the development of a dedicated web portal and an on-line environment that contained suitable functionality, available relevant content and appropriate utilities. Suitable functionality of the web portal would need to involve a pleasant user interface, easy access (not click intensive) to each offered website function and easily executable functions. Relevant information for the website would need to be generated from available community resources and resident input and feedback. Finally, the accessible utilities should support our goals of community building, empowerment and self-sufficiency.

To fulfill our objective of a dedicated web portal we would either need to build our own system or purchase a system from a software developer. We chose to build our own system because: 1) it enabled us to tailor it to be consistent with our goals; 2) it allowed us the flexibility to add or remove functionality, and/or utilities as we saw fit; 3) and it allowed for users to have input

based on the usability of the system. The software we intended to use to develop the system was a community-oriented structure such as ArsDigita's Community System (ACS) created by Dr. Phillip Greenspun with an open source code for flexibility and adaptability.

Respondent participation in design and implementation: We saw it as important for residents to participate in the design and implementation of the project. Additionally, we saw it as important for the long-term sustainability of the project. To fulfill our objective of participation, we sought to continually inform and receive feedback from tenant board members and other stakeholders. We also sought to set up a resident sub-committee to ensure that the interests of the residents were kept paramount in the process.

Participant training: In addition to establishing a physical infrastructure, we felt it was critical to establish an intellectual infrastructure through offering comprehensive, skill appropriate training. The intellectual infrastructure would manifest in trainings to develop basic understanding of how to use a personal computer, Internet browser and the dedicated web portal. In essence, we saw the intellectual infrastructure as important to ensure that participants used the computer and the Internet, and had a reasonably useful IT experience, because of the project.

To fulfill our objective of participant training we sought to build a basic computer-use training curriculum. We also sought to involve residents in the development of the training program through the resident committee. The training involved basic computer use, such as how to use the Windows operating system, software applications, web browsers, and the dedicated web portal, etc. Residents also received targeted training workshops for specific on-line activities.

Fundraising: We saw raising funds for the project as critical to maintain a measure of autonomy from our academic institution in efforts to facilitate and maintain our, "from the ground up approach." Additionally, our project was unique when compared to other graduate research projects because of our additional approach of intervention coupled with resident participation. To accomplish this we felt it was necessary to collaborate with a philanthropic institution that shared our interests.

To fulfill our fund-raising objective we developed and circulated a proposal clearly describing what we were trying to accomplish, and how it would benefit the community. We narrowed down a list of institutions to a subset interested in similar projects and efforts seeking to work with low-income communities and information technology. In order to accomplish all seven objectives, we would have to identify a low-income housing development to work with and that shared an interest in our overall goal of using technology to support a sense of community and to enhance individual and family empowerment.

The next section describes the story behind the study and how we implemented its design. It also explains the steps taken to answer the research question and test the hypothesis.

THE BACKGROUND

SETTLING ON CAMFIELD ESTATES AS A RESEARCH SITE

In the spring of 2000, Randal Pinkett and I sat with Professor Dave Gifford from the Programming Systems Research Group at MIT's Laboratory for Computer Science in the community conference room at Mission Park. This housing development consisted of 750 low-income housing units in Roxbury, a section of Boston, Massachusetts. We had just concluded a meeting with a Mission Park resident representative, the Mission Park Computer Learning Center director, and several Cornu Management staff members. After several months of discovery meetings to determine the potential for placing personal computers and establishing high-speed Internet access in the homes of Mission Park residents, we had come to a crossroads. Professor Gifford, Randal and I, discovered that there were going to be significant infrastructure-related, and political challenges in implementing the research project at this site. Some of these challenges were factors related to environmental realties, such as the development having two cable TV service providers, which also offered high-speed Internet service and both companies were running their own wiring through the development. Neither of the companies was willing to compromise on the price of their Internet service or allow us to use their infrastructure for the project. Taking into consideration that the local phone company, Verizon, offered fiber optic to the property, we considered running our own wiring for Internet service; however, the residents were resistant to unpleasant aesthetics that more wiring would bring. By the conclusion of this meeting, Professor Gifford made it clear that we should not hold up our academic interests any longer and recommended that we seek an alternative research site.

During this time, I working as a Research Associate at the William Monroe Trotter Institute at the University of Massachusetts at Boston, I was part of the team of evaluators on the HUD/MassHousing Demonstration Disposition[5] or "DemoDispo" Program. Camfield Estates, a 102 unit low-income housing development, was one of eleven low-income housing developments participating in the DemoDispo Program. Camfield Estates was the first of the

[5] The Housing and Urban Development (HUD)/MassHousing Demonstration Disposition Project is a $200 million pilot project targeted at rehabilitating or rebuilding physically deteriorating HUD owned, low-income housing developments. Once renovated, development ownership would be transferred to residents in the form of homeownership opportunities.

DemoDispo participants to have its construction completed by the start of our study (for more information on the DemoDispo evaluation see Jennings, with, Evereteze, O'Bryant, Williams, Kim, & Colon, 2002).

As the opportunity to work with Camfield became apparent, and based on our unsuccessful attempt at implementation at Mission Park, we had developed criteria for identifying a potential research site. The three primary ingredients we were looking for were: 1) the development should have a strong committed tenant association, 2) have ownership of the wiring infrastructure, and 3) the development should be connected with a local community technology center (CTC). Although Mission Park did not work out, we recognized from that experience that having the tenant association's consistent input and feedback was important. The roadblock we experienced with the Internet service providers at Mission Park was an important lesson for us in shaping our future plans to implement technology at another site, having control of the wiring infrastructure would make the development less beholden to external service providers and increase residents future technological options. The Computer Learning Center staff at Mission Park played a crucial role in the planning and providing support to our efforts and it apparent that the long-term sustainability of a technology initiative, at a low-income housing development, required one site technical support. Fortunately, Camfield Estates had all three key ingredients, a well-organized tenant Association, ownership of its coaxial wiring (that went into every unit), and an onsite technology center.

WELCOME TO CAMFIELD ESTATES

Figure 2-1: Image of Camfield Estates (interior courtyard).

Camfield Estates, originally Camfield Gardens, was built in 1971. By the late 70's and well into the 80's Camfield experienced many of the troubles that plagued low-income communities—deteriorating properties, absentee landlords, problem tenants and an increase in drug related crimes. These troubles contributed to the deterioration of not only Camfield's physical environment, but also Camfield's cherished community relations. After organizing themselves in the late 80s and early 90s, Camfield residents chose to participate in the DemoDispo Program. While the Camfield property was being rebuilt, residents were all relocated throughout the greater Boston area for nearly two years. The relocation forced the previous form of resident-to-resident communication to become more centralized. The main form of communication between relocated residents was funneled through the Camfield Tenant Association and circulated via newsletters, phone calls and regular meetings.

Camfield residents began returning to their newly developed town-homes in the spring of 2000. Residents soon found that the community relations they had remembered had gone through a dramatic change. Because of the relocation, interpersonal relations and connections had dramatically declined. The new layout of development also influenced interpersonal relations because it did not lend itself to a chance passing in common areas as old tenement layout had.

The new townhouses had separate front door entrances and stoops. Unless residents made a special effort, given this new layout, there was a slim chance they would run into their next-door neighbor, and an even slimmer chance of running into residents housed on the other side of the development. This new layout was described to the researchers as a "defensive design." In essence, Camfield was now a gated community, giving it the appearance of an open development; however, it is nearly impossible, because of strategically positioned gates, to cross through the development. In contrast to Camfield's new layout, past designs of public housing were characteristic of a maze of tenement buildings that provided no restrictions on access (see Bauman, Biles, & Szylvian, 2000 for a comprehensive discussion on failures of public housing design). This design left housing developments open for increased foot traffic by outsiders and provided the ideal hiding spot from the occasional police chase that would sometimes end at the perimeter of the complex maze of buildings. The defensive design was intended to eliminate foot traffic and eliminate the property as a place to run through or to hide, thus increasing safety and security of the development. The defensive design's influence on resident interaction was an unanticipated consequence of its objective to safeguard residents and the development.

At the time we introduced the Creating Community Connections Project, the residents were faced with the challenge of how they would rebuild their old sense of community and a sense of control of their environment. Personal computing, Internet use and an on-line community would become one method by which some Camfield residents would be able to address this challenge.

The Camfield Tenants Association President and board were, overall, very supportive of the Creating Community Connections Project. We first broached the idea of the project with MassHousing's Director of Public Safety, Thaddeus Miles, in an attempt to be sensitive to the formal and informal community protocols. Mr. Miles helped us to understand the governing structure of Camfield as an entity and its relationships, the internal/local Camfield community culture, and the culture surrounding Camfield. He also informed us of key members of the Camfield community and as well as key members of MassHousing. The on-site technology center at the time was used primarily by the youth at Camfield. Mr. Miles saw the Creating Community Connections Project as a great opportunity to get adult residents at Camfield engaged with personal computing and Internet use.

We attended several meetings at Camfield with just board members to discuss the particulars of the project. These meetings also helped us get to know each of the board members and familiarize us with the Camfield community. At the first general meeting we were scheduled to present at, the project was upstaged by some very pressing community concerns related to the DemoDispo project and construction. Observing instances such as this crisis meeting and similar occurrences proved to be enlightening in terms of exposure to not only how much Camfield residents cared about their own homes, but how passionately as a group they were committed to Camfield in general. After witnessing the intensity of the residents' commitment and after discussions with the board members at this meeting, it was decided that residents might not be particularly interested in a new program while they were still working out the details of the new construction at the development.

Consequently, we were rescheduled to present at the next general meeting in August 2000. There we discussed the project and offered residents the opportunity to sign up, and answered general questions about the project. Another smaller meeting was scheduled with interested residents to respond to specific questions about the project. The residents, after having suffered the failures of new initiatives in the past, responded to the project with guarded optimism and less than half of the available units signed up in the first round. Residents who wanted to sign up to participate in the study could do so at the CTA staff office, inside the technology center and at the Camfield management office. The approach taken was meant to inspire and increase resident participation. At special meetings for those who officially signed up and others who were interested attended, we fully set up a computer to let them see and touch the machine they would get for participation.

After identifying Camfield Estates as our research site, we began to develop a detailed plan for accomplishing the seven implementation objectives within the context of Camfield Estates and a design for studying the role of personal computing and Internet use at a low-income housing development and the role that it can play in the lives of its residents.

The first objective we tackled was securing funding. At the outset, we proposed a budget that included a much larger housing development and provisions for 750 computers, Internet access

and basic computer use training totaling nearly $2 million. We sought programmatic as well as hardware support from non-profit businesses and corporations such as the Technology Goes Home Project, the Technology Opportunities Program (TOP), Seedco and the Non-Profit Assistance Corporation, Apple Computers, Hewlett-Packard (HP) Digital Village Foundation, Microsoft Corporation, Kellogg Foundation, and many others. We even sought guidance from Dr. James Cash, a Professor at Harvard's business school. Our first attempts at garnering support yielded no results. After identifying Camfield Estates as our desired location, with the assistance of Professor Ceasar McDowell of MIT's Center for Reflective Community Practice, we scaled back the breadth of our proposal to be more consistent with Camfield's 102-unit development. We also scaled back our proposal budget to $250,000. In the spring of 2000, the Kellogg Foundation, interested in projects introducing technology into low-income communities, committed $200,000 to fund our project. As a result, the name of the project as it was funded became the Camfield Estates-MIT Creating Community Connections Project. After securing the funding, we moved onto the other objectives, those of securing the appropriate hardware, software and Internet access. The details of the project with some overlap with the study are discussed in the next chapter.

IDENTIFYING THE HARDWARE AND SOFTWARE INFRASTRUCTURE

Hardware

As previously mentioned, we explored two hardware options for personal computing at Camfield Estates: a client-server network using either using the existing infrastructure or installing a dedicated Ethernet network with the online community based on a local server or standalone personal computers connected via the Internet with an online community based on a server connected anywhere on the Internet.

For the client-server network, we considered the Sun Microsystems using the SunRay1 shown in Figure 2-2. The SunRay1 is a plug-and-work device that processes only user input and screen output. The SunRay1, is commonly known as a "dumb" terminal connected to a high-powered back-end server. What was very attractive about this setup was its "smart-card" technology and what they called the "web-top." The "smart-card" technology allows accessibility to personal

desktop settings and files at any Sun Microsystems terminal with similar technology anywhere in the world via the Internet. Due to management and upgrading costs along with ease of use concerns, we decided against this option.

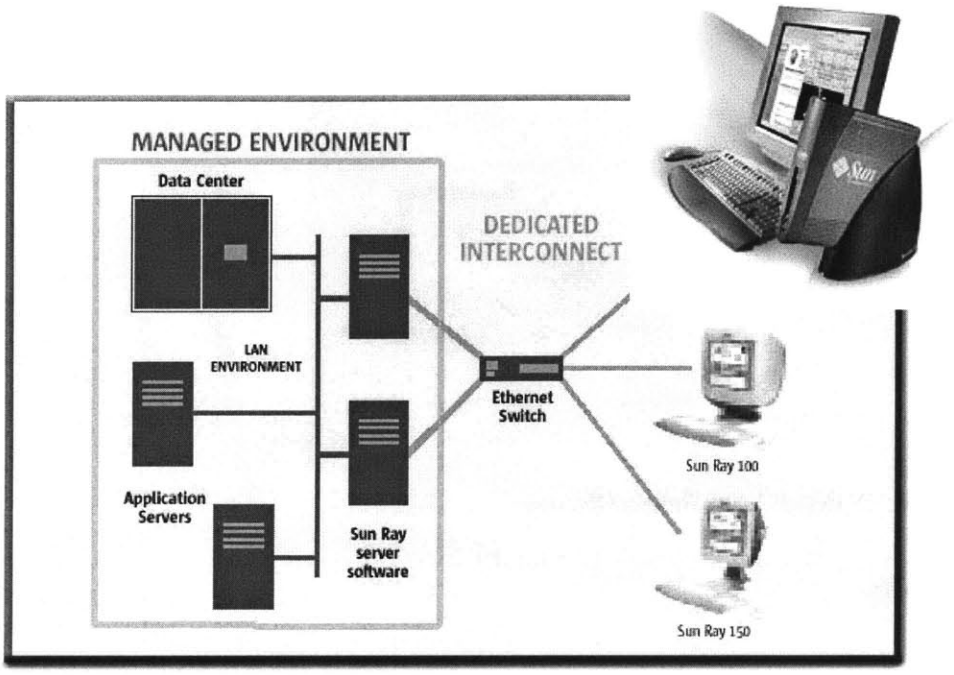


Figure 2-2: Topology for Sun Microsystems Client-Server (Courtesy Sun Microsystems).

For the standalone personal computers, we considered several different brands of personal computers including Apple Macintosh. For ease of use, we preferred the Macintosh computer; however, the Apple salesman did not go below $500 per machine, which was above our budgeted $330 per machine. Our philosophy was to purchase new equipment rather than used or rebuilt machines. Whereas the capacity of new machines can become outdated relatively quickly, old or rebuilt machines are often obsolete at the time of purchase. Our concerns with used or rebuilt machines were that they could potentially be outdated much faster than new machines. This concern was important, because we were using high-speed connectivity and an online community, both of which required that the machines chosen comply with capacity and functionality requirements.

We ultimately settled on the HP Brio BA400 to support the community network (see Figure 2-3). The HP Brio BA400 came with a 10Gig hard drive, 64 Mb of RAM, a 500 MHz chip, an installed network card, and a 17" color monitor. In addition to a Windows 2000 operating system, the web browser that came with the Windows 2000 operating system was the Microsoft Internet Explorer.

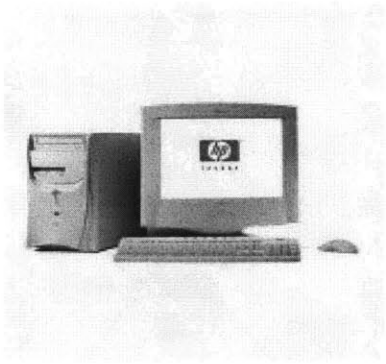


Figure 2-3: Image of HP Brio BA400. Source HP.com

Hardware trade-offs

There were many technological options available. We eventually had to forgo some technological functionality for ease of use, and upgrade efficiency and long-term benefits from acquired skills. From a management standpoint, the Sun Microsystems client-server design would have been much easier to implement. However, although its user interface has improved considerably over the years, it was not as easy to use as the Windows or Macintosh interfaces. Although the SunRay1 terminal was modestly priced, the cost of the Sun data center and high-powered servers were priced more for the public and business sector than the private sector, making it cost prohibitive for a low-income community technology initiative. Finally, for participants to be able to upgrade their systems as well as acquire support, the Sun Microsystems setup and servers are significantly more expensive than the personal computers.

The Camfield Estates Neighborhood Technology Center (CENTC) provides technical support for the Camfield residents. Although we preferred the ease of use and relative ease of peripheral connectivity of the Macintosh, the Windows operating system was the platform used at the technology center. Moreover, the Windows operating system was more widely used at the time

by the general public, as well as by many offices and educational institutions. For the skills, that Camfield users acquired through the project to be easily transferable to the technology center, educational and/or business environment, the Windows based PC became a more practical computing choice.

IDENTIFYING THE METHOD OF INTERNET ACCESS

We looked at several Internet connectivity options, such as dial-up at 14.4k, 28.8K or 56K or 10 Mbps cable modem access. Although dial-up was readily available at the time, it was not our preferred mode of Internet connectivity. We also considered Digital Synchronous Lines (DSL) and 802.11 wireless technology but both at the time were expensive and therefore not feasible.

After discussions with a local cable service provider, we were able to negotiate two years of cable modem Internet service for $20 per month per unit. Camfield owned the coaxial infrastructure and therefore there were no additional installation costs for the cable modem setup (see Figure 2-4). The service provider's connectivity speed to a set of users such as all of Camfield was 10 Mbps upstream/ 27 Mbps downstream. The next section details the steps taken to create the web portal and functionality of the on-line community.

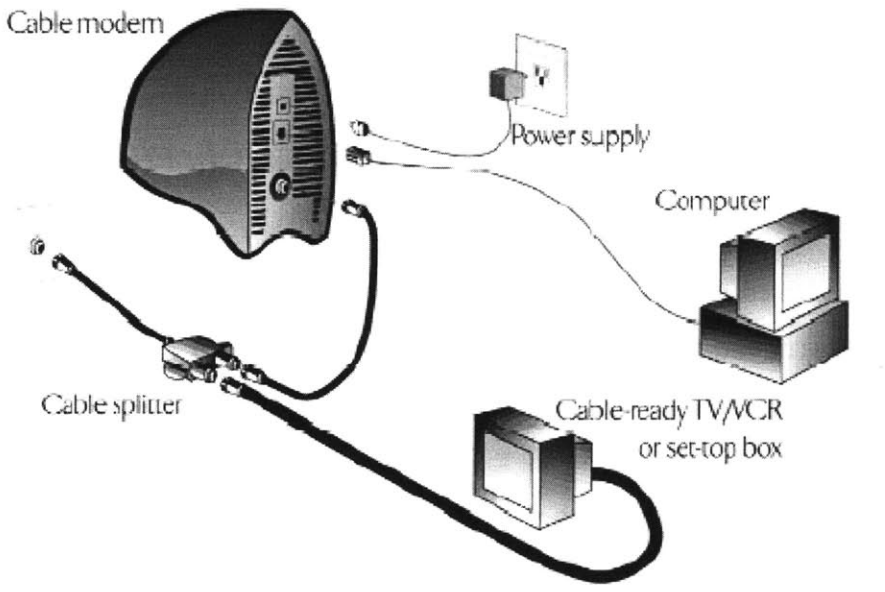


Figure 2-4: Cable modem, TV and Computer Topology (Courtesy of RCN Telecom Services).

CREATING AN APPROPRIATE WEB PORTAL AND ONLINE COMMUNITY

> *"Technology mediates communications between people, changes social space, and alters roles and relationships in society"*
>
> Douglas Schuler, (1996).

The on-line community and web-portal was named the Creating Community Connections (C3) System[6]. On-line communities can be either publicly accessible systems or proprietary (usually password protected) systems. The C3 system, is a password protected system designed to specifically support asset- and information-based community building, empowerment and self-sufficiency (for a more comprehensive discussion of this system and rational for particular functionalities see Pinkett, 2001).

Camfield Estates residents, through the C3 system and Internet access, would have the capacity to extend and amplify their community networks electronically. The Camfield estates website has the capacity to provide resident profiles, e-mail list-serves, discussion groups, calendar utility, chat room and file storage. The dedicated on-line community at camfieldestates.net had capabilities that were geared for Camfield residents to be able to communicate, discuss issues and share files. Moreover, users were able to view profiles of other residents and post important dates and events. This functionality was intended to support personal connections to other residents and to support exchange of important information.

THE CREATING COMMUNITY CONNECTIONS SYSTEM (C3): FUNCTIONALITY AND SPECIFICATIONS

The C3 system was accessible by Camfield users through both Microsoft Internet Explorer and Netscape web browsers and an Internet connection. The C3 system contains several functional modules that support Intranet and Extranet communications as well as Internet communications. The modules included links to state and local police departments, links to publicly elected officials including the president of the United States, links to news sources (newspaper, television, radio), news and announcements, organization and business database, geographic

[6] This system was created and designed by co-researcher Randall Pinkett.

information system (GIS) maps, job and volunteer opportunity postings, surveys and polls, online resumes, personalized web portals, and site-wide search capabilities.

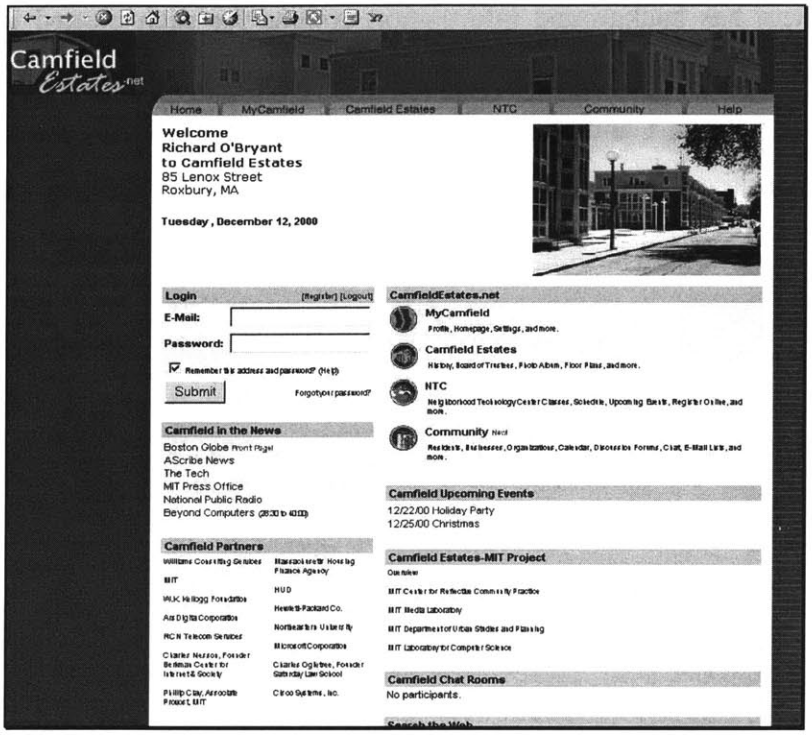


Figure 2-5: Screen capture of Camfield website. Source Camfieldestates.net

The C3 system[7] was adjusted based on Camfield residents' feedback, and the system was tailored to address participant suggestions and interests. The C3 system was built using ArsDigita's Community System. The ArsDigita Community System (ACS) is implemented as a SQL-based-data model built on the Oracle 8i RDBMS. The open-source TCL-based (scripting language) connects the ACS data model to the web through the free, open-source web server AOL Server 3.0. The C3 system runs on a Redhat Linux operating system-based machine and is accessible by Camfield residents via the Internet. The Linux-based machine is also running an Oracle Enterprise server.

[7] At the date of this thesis, this system was still running and being used by residents at Camfield.

The C3 System[8] also includes a GIS component using ArcIMS, an Internet map serving system, to geographically represent the location of businesses, organizations, churches, housing, schools, etc. located within an approximately 1.5 mile radius of Camfield Estates (see Figure 2-8). Moreover, the system has background information options for each plotted location. ArcIMS runs on a Windows NT based machine separate from the C3 System and its function is transparent to the end users, Camfield residents (see Figure 2-6). The ArcIMS[9] GIS function, although we got it working, was rendering maps very slowly. This function is currently off-line for improvements.

[8] For a more detailed description of the C3 System and its supporting technology see Randal Pinkett, doctoral thesis at MIT titled *Creating Community Connections: Sociocultural Constructionism: And An Asset-Based Approach To Community Technology And Community Building In A Low-Income Community*, 2001.

[9] ArcIMS, an Environmental Systems Research Institute (ESRI) product, provides the foundation for disseminating high-end geographic information systems (GIS) and mapping services via the Internet. ArcIMS enables users to integrate local data sources with Internet data sources for display, query, and analysis in an easy-to-use Microsoft Explorer or Netscape Web browser.

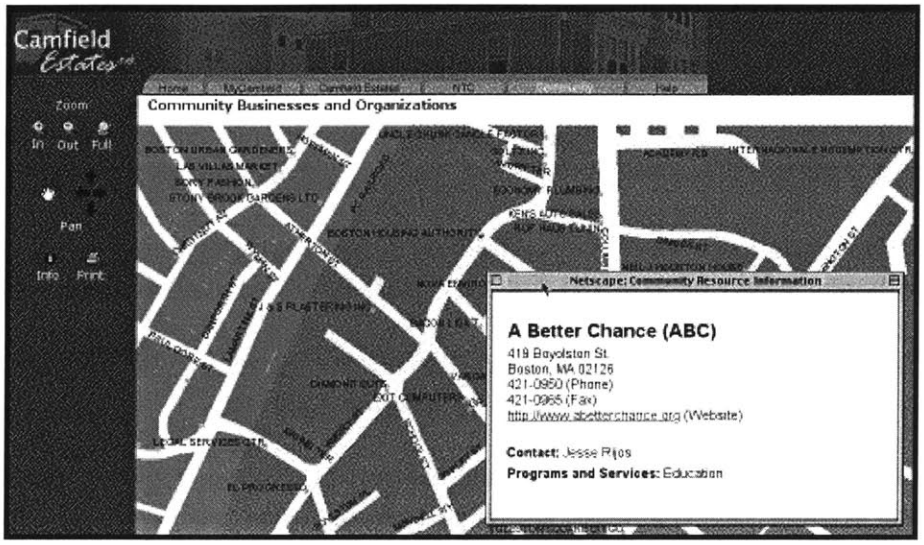


Figure 2-6: Screen capture of Camfield Website GIS Module. Source Camfieldestates.com

The ArcIMS function is one way to create customized maps showing the location and features of community assets. The Windows NT platform was selected to run ArcIMS per a suggestion made by the technical staff at MIT's Department of Urban Studies and Planning Computer Resource Laboratory (CRL) to configure ArcIMS on a Solaris machine. Realizing that Solaris and Linux are both a part of the UNIX environment, we decided not to install ArcIMS on the Linux machine, but rather on the Windows NT machine.

BUILDING THE INTELLECTUAL INFRASTRUCTURE (HUMAN CAPITAL)

In addition to the physical infrastructure (the computer and physical Internet connection), the project offered an intellectual infrastructure through a mandatory eight-week basic computer training course and several non-mandatory, but targeted workshops. Participants who could demonstrate some degree of basic technological proficiency were allowed to test-out of the required eight-week training course. The eight-week training course in succession included:

- Introduction to the Windows Operating System: overview of the icons, menus, and toolbars associated with Windows.

- Working with files and folders: how to create, delete, copy, backup, move and rename files and install software.

- Maintenance and troubleshooting: how to conduct scan disk and defrag, use the task scheduler, change Windows settings, and use anti-virus programs.

- Introduction to Internet Explorer 5.0: brief history and definitions of the Internet and World Wide Web, and review of icons, menus, and toolbars in Internet Explorer 5.0.

- Navigating the Internet: review of Internet address rules, how to use search engines, store bookmarks, subscribe to a web site, view browser history and surf the Web.

- Advanced file use: how to download files off the Internet, understand cookies, and work with temporary Internet files created by Internet Explorer.

- E-mail: overview of icons, menus, and toolbars in Outlook Express. How to configure an e-mail account, set up and use message rules, send and receive e-mail, manage incoming and outgoing messages, use Outlook Express address book and send e-mail attachments.

- Working with the hardware: how to set up a computer, connect printer and other peripherals.

Participants also received mandatory training on the Creating Community Connections (C3) System which included how to use the Camfield website, in addition to training on how to explore the functionality and use specific components. The C3 System is based on the principles of sociocultural constructionism[10] (Pinkett, 2001) and is a database-backed web system designed to establish and strengthen relationships among community residents, local businesses, and neighborhood institutions (e.g., libraries, schools, etc.) and organizations. This is accomplished through features of the system such as e-mail list-serves, online chat rooms and personal profiles that enables residents to use to stay abreast of Camfield activities, as well as, outside community resources and events.

Monthly workshops were also conducted; however, participation in these workshops, unlike the basic proficiency-training course, was not required. These workshops were specifically designed

[10] Sociocultural constructionism is a theory, expanded by Dr. Randal Pinkett, which argues that "individual and community development are reciprocally enhanced by independent and shared constructive activity that is resonant with both the social setting that encompasses a community of learners, as well as the culture of the learners themselves."

to address and provide the necessary skills to participants who wanted to learn how to search for specific information on the Internet. The topics of these workshops included:

Educational services	How to search for online resources for college and other related information and on-line test taking strategies.
Financial services	How to conduct online banking and investing, how to shop on-line and use retail services, such as price comparisons and delivery services.
Government services	How to search for and identify government support services and programs.
Housing services	How to conduct housing/apartment searches and gather information on home improvements projects.

These workshops were conducted at the technology center and between six and eight families had one or more members attend each voluntary workshop over a four to five week period. Feedback from workshop participants indicated that the workshops were helpful and the skills learned were useful.

The majority of this training was done trough the Camfield Estates Neighborhood Technology Center (CENTC)[11]. The CENTC is a partnership between Camfield Estates Housing Development, Academy Homes II Housing Development, and the MassHousing. The original

[11] Neighborhood technology centers, more commonly known as community technology centers (CTCs), have been used for some time as a place-based approach to addressing the digital divide. The primary goal of CTCs is accessibility. Technology centers are setup in and around communities, and local residents come to the centers to get training, use the Internet and in some instances socialize. From a public policy standpoint, some studies show that the CTCs are an attractive model for a number of reasons (Bishop et al., 1999). They are a cost effective way of channeling limited resources and it's a more effective method of controlling accountability of those resources. CTCs offer a centralized way to technically support community technology initiatives and in some cases serve as support for existing social service networks and other. Moreover, CTCs have been the focus of numerous studies relating to computer access and computer use and effectiveness (see Beamish, 1995; Beamish, 1999; Ellis et al., 1998; Mark et al., 1997; Melchoir et al., 1998).

goal of the CENTC was to provide residents of both housing developments with access to state-of-the-art computer technology in a safe, nurturing environment. In addition to providing access, the CENTC is also committed to the enhancement and development of technology-related skills that enable residents to compete in the labor market.

The CENTC has a unique support structure (see Figure 2-7). MassHousing is the primary funding agency; it developed a community-based process to decide what happens with the center. The Camfield Tenants Association (CTA), in existence more than 20 years, has played a significant role in decisions made in relation to the CENTC. The technology contractor and consultant, Williams Consulting, works very closely with both MassHousing and the CTA to ensure resident involvement in structuring and maintaining the NTC programs and curriculum. All of the partners meet regularly, both formally and informally to communicate about the CENTC and its delivery of technology.

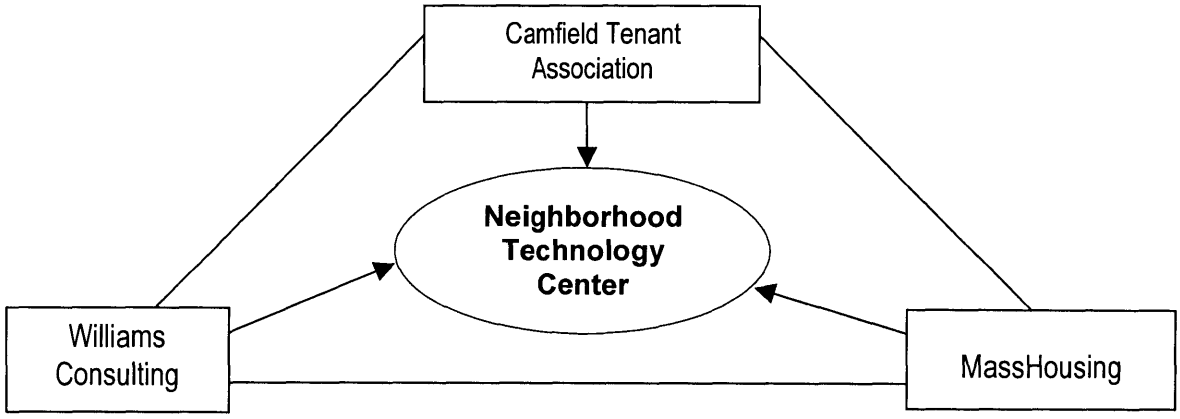


Figure 2-7: Representation of the Camfield Estates Neighborhood Technology Center's support structure.

For the Creating Community Connections Project, the CENTC staff played a critical role in administering the training to the project participants. The staff also performed several system installations and follow-up training reinforcement. As we had originally identified as an important criteria for a research site, the CENTC staff continues to play a role in providing technical support for all Camfield residents.

The community technology model (community content, community technology center, community networks) developed at Camfield over time. Internally and externally relevant catalogued information and content became available on-line. The Neighborhood technology center became an integral part of the Camfield community and through the C3 system and Internet access, an electronic community network became available for Camfield residents.

After completing the eight-week training course and/or having successfully completed the test-out requirement, participants were given a personal computer to place in their home and were set up with two years of high-speed Internet access.

BUILDING FROM THE GROUND UP THROUGH COMMUNITY CONTENT

Community content can be viewed along two axes: personal versus social information and latent versus evident resources. Personal versus social is viewed as information that is personally relevant such as that related to health, educational, employment, etc., vs. information that is socially relevant to the community in general such as tenant association information, community events, etc. Latent versus evident resources is viewed as dormant resources such as informal skills, un-announced opportunities, etc. versus apparent resources, such as formal job skills, community postings of opportunities, local businesses, organizations and publicly available resources.

Camfield's community content was mapped using the asset mapping model and methodology similar to Kretzman and Mcknight's, *Building Communities from the Inside Out: A Path Toward Finding and Mobilizing a Community's Assets* (1993). As mentioned earlier, during the early months of 2000, we met with the Camfield board members, and residents to nurture understanding and trust in the Creating Community Project. A resident led committee, supported by MIT researchers, was formed during the summer of 2000 to conduct general asset mapping of all the organizations, institutions (e.g., libraries, schools, etc.), and businesses within an approximately 1.5-mile radius of Camfield, as shown in Figure 2-8. At the time, approximately 757 businesses, 178 organizations, 67 churches, and 29 schools were captured.

Through the C3 system and the availability of general resource information, the process of building community, empowerment and self-sufficiency was initiated. The pre-survey informed the asset mapping process for Camfield Estates. As residents completed the required training, inclusive of learning the C3 system, it also registered them as users on the system. The registration process included entering their formal and informal skills as well as their areas of interest. Given this information, residents could now use the C3 system to identify neighbors who could perform plumbing, babysitting, web design, etc. or neighbors who were interested in learning these skills. Moreover, residents could also now share interests with other residents.

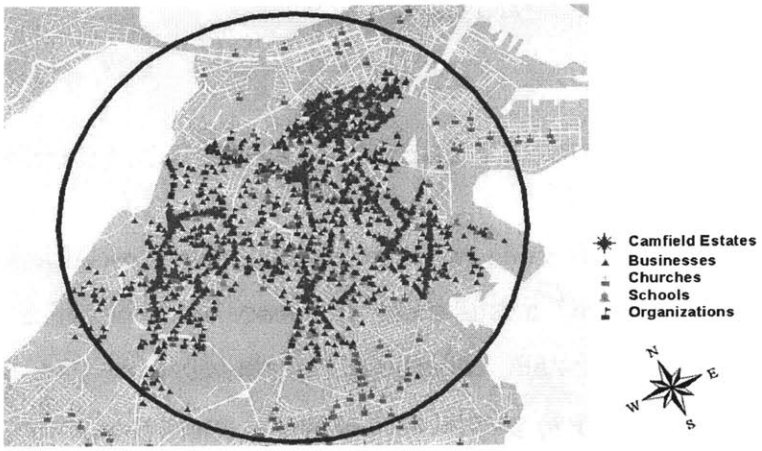


Figure 2-8: Map of the Camfield's catchment area.

THE STUDY

SURVEY RESEARCH DESIGN

We decided to incorporate a mixed methods approach into our research design. A mixed-methods approach allows various competing methods to be triangulated, thus increasing the validity and credibility of results (Gaber & Gaber, 1997). This approach allowed the capture, not only of the breadth of the study through the quantitative result, but also the depth of the study through qualitative results. The quantitative data was gathered through informed consent; pre- and post-face-to-face survey interviews conducted by the co-researchers of the project and trained research assistants over a twelve to fourteen month period. The survey instrument included closed and open-ended questions, which took approximately two hours to complete. The interviews were relatively informal, were usually conducted in the participant's home. All

respondents received and signed Informed Consent (see Appendix A). The informed consent disclosed to participants' that their Internet activities would be logged, but kept strictly anonymous. Web logs of participant Internet access activities were analyzed in addition to statistics gathered regarding hits to the Camfield Estates website. Some of the data gathered derives from direct observations of community meetings and other resident gatherings. Additional targeted qualitative information and responses was gathered on family uses and the mentor relationship that developed between a participant and the co-researchers.

With the assistance of Professor Keith Hampton, then a Ph.D. candidate at the University of Toronto and now MIT Professor, we designed and developed the survey instrument. Our consultations with Professor Hampton proved useful given that he was conducting a study on IT and social networks in a wired community in Canada (see Hampton, 2001).The pre-survey not only satisfied our research interests but it informed the Creating Community Connections Project. In addition to our research interests, the post-survey also informed the future direction of technology at Camfield Estates.

The survey instrument covered a number of areas and for the purpose of this study, items on the pre- and post-surveys capture data on community, empowerment, self-sufficiency and participant demographics. The pre-survey instrument contained questions regarding computer experience and exposure to computers (i.e., skill level), which was only collected at time one. The post-survey data was collected in follow-up interviews in the fall of 2001. Measures included participant responses and experience with computer use, Internet use, and feedback on to the Camfield Estates-MIT Creating Community Connections Project. The complete survey instrument is attached in Appendix B. The next section is a brief outline of the survey areas:

PRE-SURVEY ITEMS

Computer Experience and Training Interests Items: questions were designed to gain insight and understand a participant's previous technology skills and abilities. This instrument was generated in part from *Blacksburg Electronic Village (BEV) Community Survey* (Kavanaugh & Patterson, 1999).

PRE- AND POST-SURVEY ITEMS

Community Interests and Satisfaction Items: these items were designed to capture both quantitative, and qualitative data related to community interests and community satisfaction. These measures were generated in part from Rothenbuhler (1991) and Stamm's (1985) measures of community involvement.

Social Networks Items: These items included measurement of tie strengths at Camfield Estates by asking questions about visits to others, interaction with other residents on a regular basis and whether respondents recognize the names of his/her fellow residents. Also included were measurements of the modes of communication used to say in contact, such as telephone and e-mail. These measures were generated in part from *Netville Wired Suburb Survey* (Hampton & Wellman, 1998) and the *Building Social Capital in Public Housing Survey* (Saegart & Thompson, 1994) and the *Social Capital Community Benchmark Survey* (Minicucci, 2000), and the *Who's That? Survey of Neighbors in Southeastern Michigan* (Resnick, 2000).

Awareness of Community Resources Items: included in these items are measurements of awareness of internal resources such as skills and abilities of other residents, and awareness of external resources such as local organizations, businesses, and agencies. These measures were generated in part from *The Neighborhood Study Questionnaire* (Briggs, Mueller, & Sullivan, 1997).

Community Involvement Items: measures included questions about political involvement, volunteerism and organization membership. These items were generated in part from Rothenbuhler (1991) and Stamm's (1985) measures of community involvement.

Empowerment Items: these items included both quantitative and qualitative measurements regarding one's sense of control, critical awareness, participatory behavior and a sense of empowerment. These items were generated in part from the Mastery Scale (Pearlinm, Lieberman, Menaghan, & Mullan, 1981) and the Powerlessness Scale (Neal & Groat, 1974).

Self-sufficiency Items: included both quantitative and qualitative measurements regarding a respondent's ability to use technology to perform tasks independently was generated in part from *A New Approach for our Communities: Long-term Self-sufficiency a Practiced-Based Anti-Poverty Analysis* (Miller & Din, 1996).

Demographic Items: included a respondent's gender, ethnicity, age, martial status, household members, education and employment status, etc. These measures were generated in part from *General Social Survey* (Smith, 1998).

Post-Survey Areas

Computer and Internet Use Items: these items were designed to measure how participants used their computer and how the computer was integrated into their life.

Camfield Estates - MIT Creating Community Connections Project Feedback Items: included in this area were measures to capture participants' responses to project experiences.

The surveys were conducted at either the participant's residence or the Camfield Community Center. The pre-survey instrument was test-piloted on at another nearby housing development. Some of the original language we used in the pilot instrument was very academic and as a result, the responses received from the test pilot, some of the language was adjusted and several questions were added.

We administered a Spanish version of the survey; however, the translation of some of the terms, such as empowerment did not translate well. Although a Spanish version was produced, there were literacy challenges to overcome with Spanish-speaking participants. A CENTC staff person, who is bilingual, conducted the Spanish speaking interviews.

TARGET POPULATION

By virtue of agreeing to participate in the Camfield Estates-MIT Creating Community Connections Project, participants were also agreeing to participate in the research aspects of the

project. Due to Human Subjects Review restrictions, our target population was limited to adults (at least 18 years old), any Camfield resident who met this criteria, was eligible to sign up for the study, attend the training and the workshops, and receive a household computer. At the start of the study, only 69 of the 102 units at Camfield were occupied. Participation descriptions and categories are described in detail in the next chapter.

DATA ANALYSIS METHODS

The quantitative data was analyzed using SPSS 11.0 for Windows, UCINet 5 for Windows, Krackplot 3.0: An Improved Network Drawing Program Connections and the Webalizer. SPSS was used to conduct comparative means paired-samples T tests of some of the pre- and post-results. The UCINet and Krackplot tools were used for analysis of social network data and generation of Krackplot diagrams. Moreover, UCINet social network analysis tools allowed for conducting density tests, centrality tests, and development of tables and charts. The analysis of qualitative data involves examining both descriptive and explanatory responses. The Webalizer, (a free software), was used to analyze the web logs generated by participant households' Internet use.

QUALITATIVE METHODS

The qualitative methods used for this project included open-ended survey questions. Open-ended questions were also included in the pre- and post-surveys as discussed earlier. The qualitative data was compiled in separate electronic Word files with questions and responses grouped for analysis and coding.

Qualitative data was gathered during interviews and informal discussions with Camfield residents, project participants, MassHousing representatives, and the project team members. Most of these interactions were conducted face-to-face and several interviews were conducted over the telephone. In some cases, requests for clarification of comments made during interviews were conducted via e-mail or telephone. These interviews were audio recorded, transcribed, and coded.

Direct Observations

Direct observation of the Camfield environment was conducted through out the project. Observations took place at Camfield Tenants Association (CTA) board meetings, CTA general meetings, and CTA sub-committee meetings, during scheduled and unscheduled activities at the Camfield Estates Neighborhood Technology Center (CENTC) and during social events at the development. Field notes regarding observations and project related data were transcribed and coded. The following section describes the project's overall mission and the methods for data analysis and summary for the project's time-line.

PROJECT'S MISSION AND GOALS

The Camfield Estates-MIT Creating Community Connection Project and the website www.camfieldestates.net went online in the fall of 2000. The project's successful implementation in the community required the coordinated efforts of the MIT, community leaders, neighborhood residents, researchers, service providers, and the funding community.

The stated mission and goals of the project were:

- To promote a stronger, healthier community at Camfield Estates.
- To establish greater levels of empowerment and self-sufficiency among residents at Camfield Estates.
- To create connections between residents at Camfield Estates, local organizations, neighborhood businesses, and other community members.
- To enable residents at Camfield Estates to be the creators and producers of their own information and content on the Internet.

In addition and equally important to accomplishing our research goals of understanding the relationship between technology, community building, empowerment and self-sufficiency, the project was very mindful to create a useful resource for the community. Moreover, we purposely sought to build the necessary physical and intellectual infrastructures at Camfield so that

residents could take full advantage of their new technological resource long after the project ended.

Project Timeline

The life cycle of the project is outlined and described in more detail in the next chapter. The phases and corresponding timeframe for this study in the context of the Camfield Estates-MIT Creating Community Connections Project were as follows:

- Spring 2000 to Fall 2000: We began the project by developing relations with the Camfield tenant association, Camfield residents, and the Neighborhood Technology Staff. With the assistance of an established project team the pre-survey was designed, test piloted and administered. Data captured from the pre-survey helped guide the training design.

- Fall 2000 to Winter 2000/2001: Participants either tested out of, or participated in the required basic computer and C3 system training. Deployment of the personal computers and Internet service occurred.

-

- Spring 2001: Participants were offered additional workshops that were designed based on pre-survey responses.

- Fall 2001: Post-survey conducted and analysis of post-survey data, comparative analysis of pre- and post-survey data, and evaluation of the successes and challenges of the project.

- Spring 2002: The Camfield website continued to log participant usage and activity.

- Fall 2002 to Spring 2003: Marked the end of the study (November 2002) and MIT's financial commitment through the Kellogg grant. Wireless antennas were installed on the roof of the Camfield Neighborhood Technology Center to support high-speed connectivity beyond the life of the study.

SUMMARY

My goal in approaching this research was to study and observe in a natural community setting the impact of the introduction of community technology and its potential influence on challenges in low-income communities. Early experience with Mission Park became invaluable for our approach to Camfield Estates. Early efforts to find a suitable venue taught us the importance of a strong tenant association, ownership by the residents or development of the internal wiring infrastructure and a relationship with a local community technology center. We sought a low-income housing development because it would most likely contain a population least likely to have adopted personal computing and Internet access in the home, and it would likely be representative of the demographics at the widest end of the digital divide. The opportunity to work with this population validated our decision to use a grassroots approach for involving users in the overall development of the project. We saw this approach as important for resident buy-in and the long-term success and sustainability of the project.

The development of relationships became fundamental in approaching the establishment of the research site in a low-income community, in addition to securing the appropriate technology and Internet service. As observed by much of the digital divide discussion, low-income communities are less likely to engage technology than other communities are.

Previous experience prepared us for the research road ahead. This project given its timeline, research design and combined approach of administering a survey and deploying IT was very aggressive at the time. We approached this research from the perspective of achieving four goals (to promote community, to establish empowerment and self-sufficiency, to create connections, and to enable residents to create on line content), and recognized that the implementation of an intellectual infrastructure was as equally important as providing high-quality computers and a dynamic on-line community environment.

I hope that as social service agencies envision approaches to encourage empowerment and self-sufficiency, and that public policy makers begin to fully recognize and entertain the potential

influence of IT on building human and social capital in low-income communities and in its residents.

CHAPTER THREE

THE CAMFIELD ESTATES-MIT CREATING COMMUNITY CONNECTIONS PROJECT

The last chapter provided background information and insight into the workings and rationale of this study's procedures and apparatus for collecting data over the two-year project period. As one could imagine, given the complexity and scope of the research design, there was a considerable amount of data generated from the survey instrument, interviews, direct observations, web logs, and review of historical documents. In this chapter, I describe the procedures used for identifying and recruiting participants and discuss the rationale for not including a control group in this research design. This chapter also includes a detailed presentation of participant usage statistics findings based on web logs, and a discussion of factors that may have contributed to several respondents not completing the project.

CAMFIELD ESTATES DEMOGRAPHICS

To get a sense of the make-up of Camfield I take a look at its demographics and compare them to Boston. This will give us a sense of whether the Camfield population is representative of Boston. This demographic analysis will also tell us if the Camfield community is representative of the at-risk and digital divide population discussed in Chapter One. Camfield, had 69 of 102 households occupied in the summer of 2000, it is located in a predominantly in Lower-Roxbury, which borders the South End of Boston. The Camfield community is 20% White as compared to all of Boston which is 49% White (see Figure 3-1). According to data provided by Camfield's management company, (Cornu Management) Camfield Estates is predominantly African-American community (78.3%) as compared to Boston's demographics (20.3%). Camfield's surrounding neighborhood is in the midst of dramatic demographic change. Having lived in the community for more than ten years, I have witnessed the residents going from largely low-income Black and Latino families to mostly single White college students. Understanding Camfield demographics in the context of what is happening in their surrounding community, which some call gentrification is important for the broader implications of this study.

RACE

The latest digital divide report (2000) found that although significant inroads with underserved communities of Blacks and Hispanics have occurred, there remains a large gap between White Internet users compared to Blacks and Hispanics. "Internet use rate (%) In August 2000, Whites (50.3%) continued to be the most likely to use the Internet, followed by Asian American/Pacific Islanders (49.4%), Blacks (29.3%), and Hispanics (23.7%) (U.S. Department of Commerce, 2000)." Camfield being majority African-American with some Hispanic residents, sets the context for the potential relation this study can have to the digital divide.

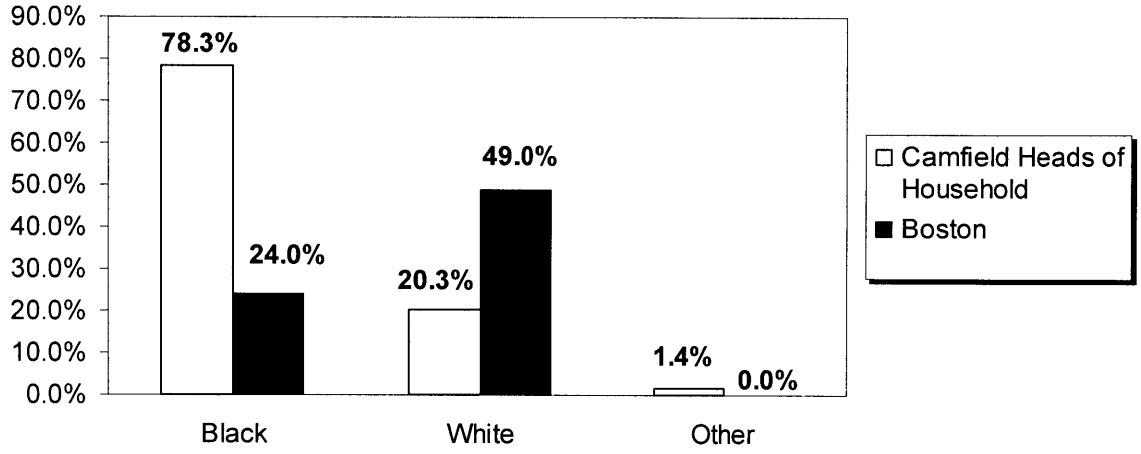


Figure 3-1: Camfield Estates race of the head of household compared to Boston.[a]

As compared to Boston, Camfield's Hispanic household heads account for 27.5% of the population, while 14.0% of Boston head of households are Hispanic. The majority (72.5%) of Camfield heads of household are non-Hispanic, as compared to Boston's non-Hispanic (86.0%) heads of household (see Figure 3-2).

[a] Camfield Estates statistics are based on Cornu Management data (2000), source for Boston statistics is the Boston Redevelopment Authority (Policy Development and Research, 2002).

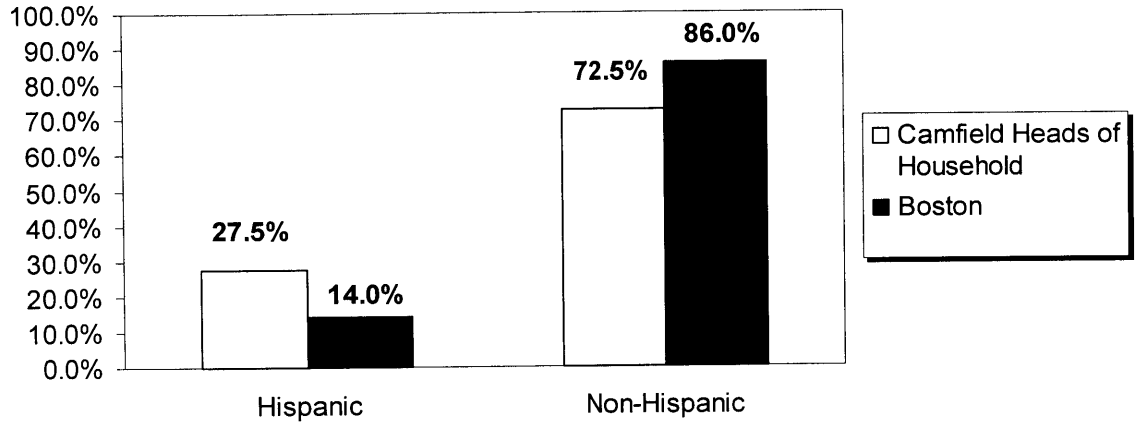


Figure 3-2: Camfield Estates ethnicity of the head of household compared to Boston. [a]

RACE AND GENDER

The latest digital divide report (2000) states that the divide between male and female Internet users in America has disappeared. "In December 1998, 34.2% of men and 31.4% of women were using the Internet. By August 2000, 44.6% of men and a statistically indistinguishable 44.2% of women were Internet users" (U.S. Department of Commerce, 2000). The gap between Black men and women is also small, (2.6%) as well as for Hispanic men and women (2.0%). However, the gap between White female Internet users (49.9%), and Black (30.5%), and Hispanic (24.7%) female Internet users remains. The gap between White male Internet users (50.7%) and Black (27.9%) and Hispanic (22.7%) male Internet users also remains. The gap for Black and Hispanic females is troubling however; the fact that Black and Hispanic males are even further behind is equally concerning. I suspect that part of the reason might be that Blacks and Hispanics may not understand the relevance of the Internet to their daily lives.

The gender population breakdown of Camfield females (55.9%) and males (44.1%), as compared to Boston females (51.9%) and males (48.1%), are nearly similar. As shown in Figure 3-3, Camfield's female population by percentage is slightly higher than the male population as compared to Boston.

[a] Camfield Estates statistics are based on Cornu Management data (2000), source for Boston statistics is the Boston Redevelopment Authority (Policy Development and Research, 2002).

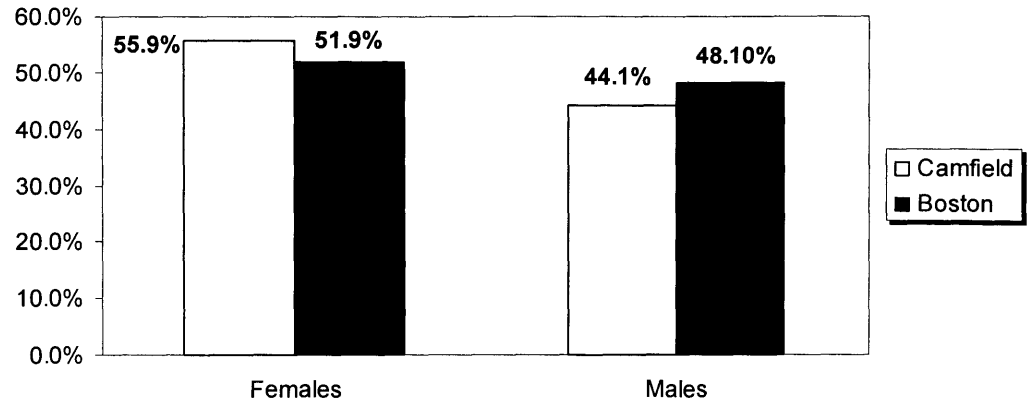


Figure 3-3: Gender of Camfield Estates residents compared to Boston. [a]

The target population of the Creating Community Connections Project was working age adults because, the human subjects guidelines was much stricter for youth (under 18 years of age). Additionally, the Camfield community leaders were interested in getting the adult residents more involved with technology. In 2000, there was increased Internet use among all age groups as reported by the latest digital divide report. As in the other categories, Blacks and Hispanics are behind in Internet use for all age groups. The 2000 report also found that when Internet use, based on age, was coupled with participation in the labor force there was a dramatic difference among all age groups. "Those in the labor force were more likely to be Internet users. Their Internet use rate was 58.4% compared to 39.3% for those not in the labor force in August 2000 (U.S. Department of Commerce, 2000)." However, regardless of labor force status Black and Hispanics were still well below the national average. This I would imagine is because of a lack of understanding of the relevance of the Internet for Blacks and Hispanics. Camfield has a considerably younger population with 48.4% of Camfield residents being between the ages of 0 and 22 years old compared to Boston. As shown in Figure 3-4, except for ages 55 to 69, Camfield percentages are less for all other age categories. Ages 50 to 54 for Camfield (4.8%) are less than Boston (5.0%).

[a] Camfield Estates statistics are based on Cornu Management data (2000), source for Boston statistics is the Boston Redevelopment Authority (Policy Development and Research, 2002).

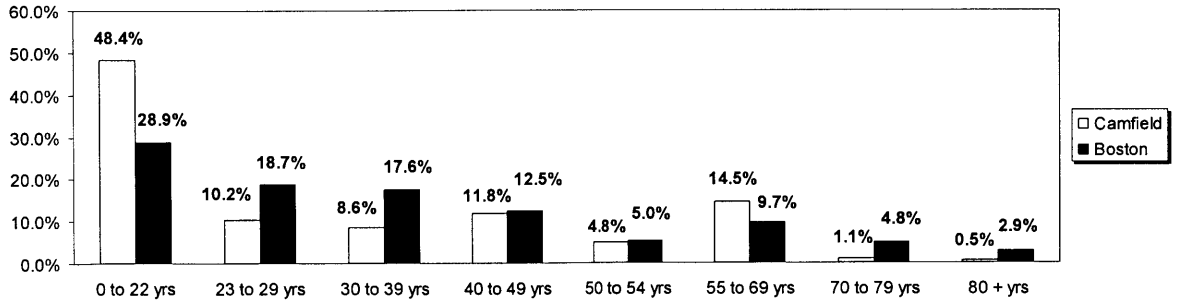


Figure 3-4: Age of Camfield Estates residents compared to Boston. [a]

FAMILY SIZE

The number of family members in the home was an important consideration for the project. Placing a personal computer and Internet access into the home, given different needs can have an effect on family dynamics. Another consideration for family size is that many single mothers find evening childcare can be a barrier to participating in training programs. To help reduce the potential barrier that evening childcare may have presented the project offered training at more convenient times based on respondent feedback. The breakdown of family sizes ranging from one to six members of the household reveals that a majority of both Camfield and Boston households contain three or fewer members (see Figure 3-5). As compared to Boston, however, Camfield has a sizeable percentage (26.0%) of families with more than three family members.

[a] Camfield Estates statistics are based on Cornu Management data (2000), source for Boston statistics is the Boston Redevelopment Authority (Policy Development and Research, 2002).

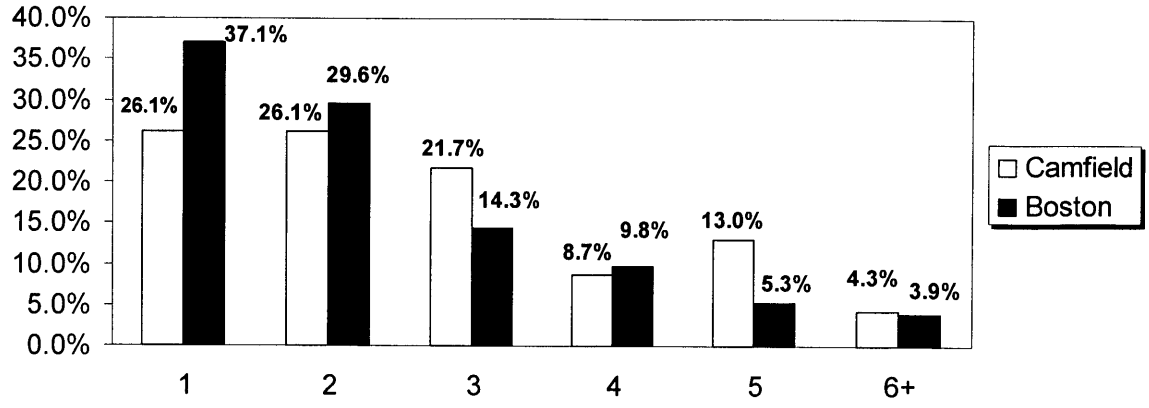


Figure 3-5: Camfield Estates household size compared to Boston. [a]

INCOME

Income appears to still be a strong determinant as to whether a person uses the Internet. "Only 18.9% of individuals who lived in households with annual incomes of less than $15,000 were Internet users in August 2000. In contrast, 70.1% of people who lived in households where the annual income was greater than $75,000 reported using the Internet (U.S. Department of Commerce, 2000)." This would suggest that persons with the available money are more likely to purchase a computer and Internet access. I suspect the cost of the computer and Internet service is a barrier for some. I do not believe that cost is the only explanation for the differences in Internet use among these income brackets. If this were the case, then other technologies such as cell phones, DVD players and high performance audio systems would not thrive in low-income communities. I think there is something else at play, as to why computer and Internet use is low among low-income brackets. Low-income residents have little to no discretionary funds. They spend their limited resources on items that they perceive as critical to their day-to-day lives like the cell phone. This would suggest that if low-income community members could understand how a personal computer and Internet access would fit productively into their day-to-day perhaps they would contribute resources toward this. Camfield Estates is a low- to very low-income community according the U.S. Department of Housing and Urban Development standards. The

[a] Camfield Estates statistics are based on Cornu Management data (2000), source for Boston statistics is the Boston Redevelopment Authority (Policy Development and Research, 2002).

breakdown of annual household incomes at Camfield Estates ranges from $2,000 to $30,000[12]. Compared to all of Boston, Camfield has a significantly higher percentage of families in the lower income brackets (see Figure 3-6). Camfield represents the ideal setting to find out if given the understanding, training, and skills, and then will low-income residents use a computer, and invest the time and energy to use it regularly.

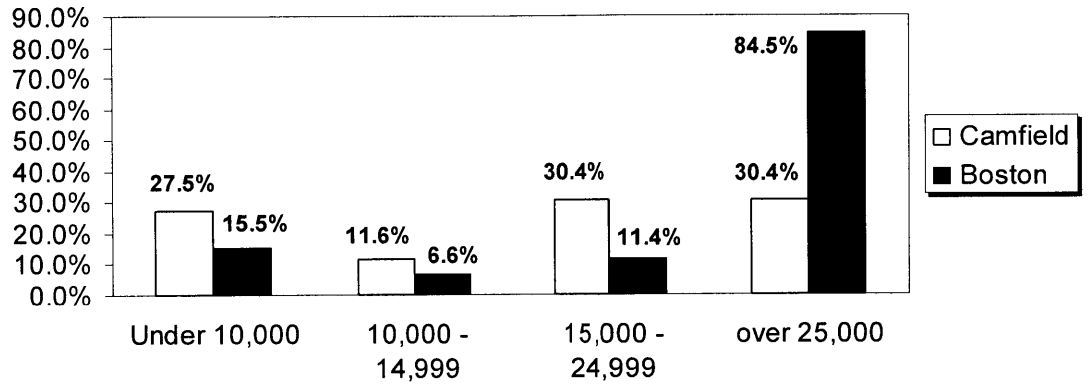


Figure 3-6: Distribution of household income at Camfield Estates compared to Boston. [a]

SUMMARY

Camfield Estates demographics differ from Boston along race/ethnicity, age, family size, and household income. Only the gender distributions for Camfield and Boston were not different. Chi-square tests (see Table 3-1) conducted, determined whether Camfield and Boston's distributions for race/ethnicity, gender, age, family size, and household income were significantly different. For each of the variables, I indicate the p-value associated with the relevant chi-square statistic. In general, Camfield demographics are significantly different from Boston demographics at levels of significance of $p < 0.05$.

[12] Census data did not present income levels below $10,000.

[a] Camfield Estates statistics are based on Cornu Management data (2000), source for Boston statistics is the Boston Redevelopment Authority (Policy Development and Research, 2002).

Table 3-1: Chi-square tests of differences between Boston and Camfield demographics.

	X^2	Degrees of Freedom	$P < .05$	$P < .01$	P-Value
Race	259.77	2	*	*	0.000
Ethnicity	28.15	1	*	*	0.000
Gender	1.19	1			0.275
Age	53.85	7	*	*	0.000
Family Size[a]	13.01	5	*		0.023
Income[a]	54.86	5	*	*	0.000

[a] Unit of measure is Household

Compared with Boston, Camfield Estates is lower-income community and has a higher concentration of minorities. Camfield Estates also has more youth, and ages of seniors are younger than Boston, in addition to having larger family sizes. However, the demographic characteristics of Camfield are similar to the populations identified in the digital divide literature.

PARTICIPANT SELECTION

In each of the following participation categories, the individual who signed up was considered the household representative and was most often[13] the head of the household. Participant representation fell into three categories: prospective participant, participating household, and full participating household. A prospective participant is a household representative who signed up for participation, signed an informed consent, and completed the pre-survey. Participating households are represented by an adult member, usually the household head, who completed all of the standards for participation such as having met the basic or specialized training requirements and received a personal computer and high-speed Internet service. Full participating households are those with a household representative who satisfied all of the participating household conditions and completed the post-survey and received at least one year of relatively uninterrupted high-speed Internet service. The Creating Community Connections Project overall had 59 out of 69 households categorized as prospective participants, 37 out of the 59 households categorized as participating households and 20 out of the 37 participating households categorized as full participating households (see Figure 3-7).

[13] In some instances, the representative who participated was a spouse, (not head of the house) or an adult child.

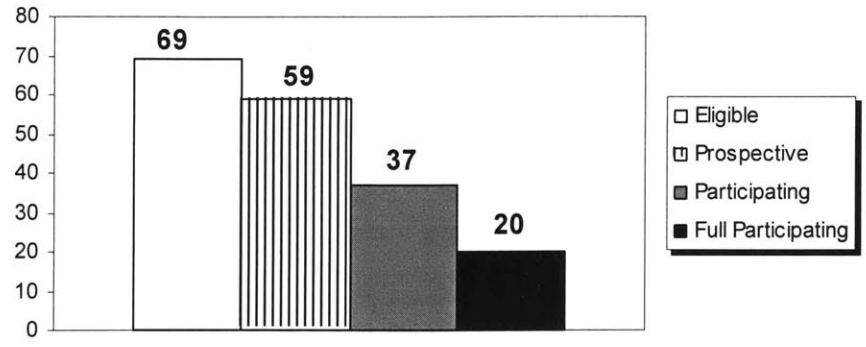


Figure 3-7: Bar graph representation of the number of respondents and category of participation.

Overall, out of the 59 households classified as prospective participants, 22 did not move beyond the prospective participant stage and as a result were not used in this analysis. Of the remaining 37, 32 prospective participants signed up to participate in the project's first round, with 26 participating household representatives and interested family members completing the first round of training in November of 2000. Six prospective participant representatives from the original 32 prospective participants were unable to participate in the first round due to scheduling conflicts and personal reasons (see Figure 3-8). These six prospective participant household representatives were moved into a second round. In the first round, seven prospective participant household representatives from the original 32 families, classified as participating households, did not complete the post-survey because they were either strictly Spanish speaking or the bi-lingual interviewer was unavailable, or they experienced serious extended Internet service interruptions, and/or they were generally unavailable for the post-survey. Nineteen participants from the first round eventually became full participants.

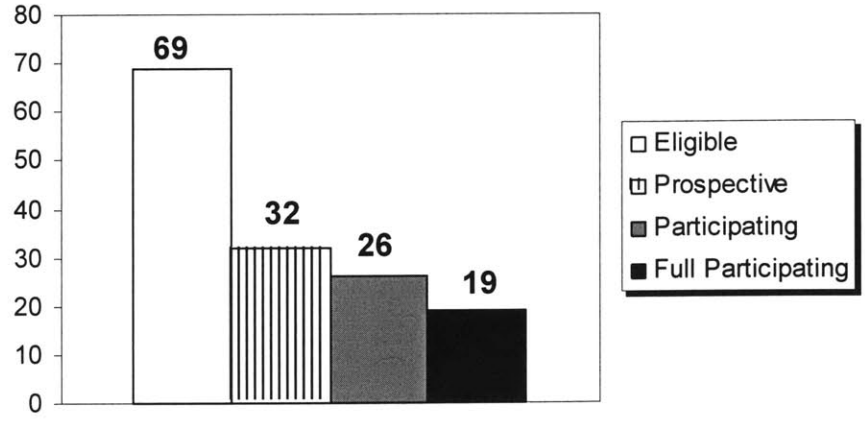


Figure 3-8: Bar graph representation of number of first round respondents and category of participation.

A second round of recruiting was conducted early in January of 2001 with an additional eight households out of 43 eligible households signing up. Because of this disappointingly low turn out in the second round, a follow-up recruitment effort for the second-round was conducted, resulting in 19 more household representatives who signed up, bringing the number to 27 (see Figure 3-9). Challenges occurred with second-round participating household representatives almost immediately. Participation in the mandatory training was sporadic at best, with 16 prospective participating household representatives not completing the basic and/or specialized training. Eleven of the remaining second-round prospective participants transitioned to participating households with one becoming a full participating household.

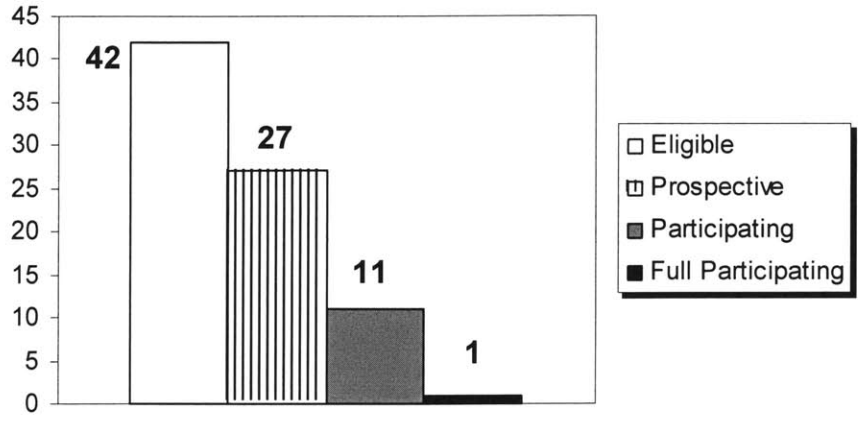


Figure 3-9: Bar graph of number of second round respondents and category of project participation.

The numerous challenges (some not related to the project[14]), that surrounded participant recruitment and participation included, no shows and sporadic training attendance, overall attrition and some survey irregularities. Most of the statistics in this chapter refer to a data set of 37 participating households and a subset of 20 full participating households[15]. The final breakdown of participation categories is displayed in Table 3-2.

Table 3-2: Breakdown of participation categories.

Category	N	Signed up	Pre-Survey	Post-Survey	Training	Computer	Internet Service[16]
Eligible	69						
Prospective	59	✓					
Participant	37	✓	✓		✓	✓	✓
Full Participant	20	✓	✓	✓	✓	✓	✓

[14] Some project participants experienced significant interruption in Internet service due to billing discrepancies relating to other services provided by the Internet service provider.

[15] For the remainder of this thesis participating households will be referred to as participants and full participating households will be referred to as full participants.

[16] Although participating and full participating households both had Internet service, some of the participating households experienced serious service disruptions lasting more than two months.

The process of participant advancement and categorization was developed as the project went along. As shown in Figure 3-10 the flow of participation was based on completion of specific components of the project.

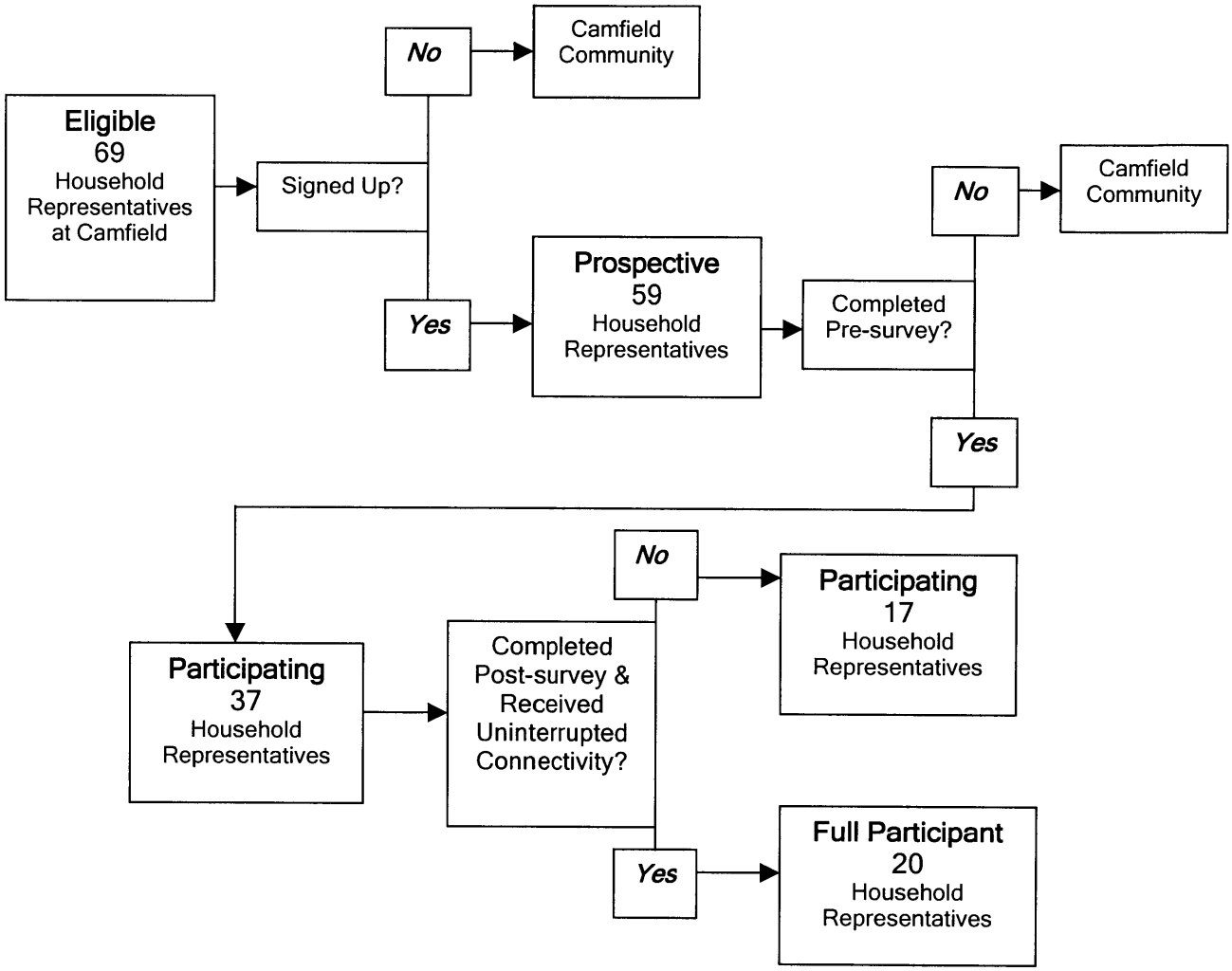


Figure 3-10: Flow chart of participant advancement and category of participation.

LACK OF CONTROL GROUP

After considerable deliberation, we made a philosophical, as well as a practical decision, not to have a control group for this study. Philosophically it was felt that it would complicate efforts and make the co-researchers ethically uncomfortable in not affording all the residents at Camfield Estates the opportunity to participate in the project equally and receive a free computer

with Internet access (see Denzin, 1989 for detailed discussion on ethics). Additionally, it would have been extremely difficult to have a control group at the site; this would mean that we would somehow have to prevent some residents (a control group) from participating in the project while their next-door was a participant. At the time this study was conducted, we were hard pressed to find a similar research project, in a similar setting and population that utilized a control group. Professor Hampton's Netville study was the most similar to our research. His de facto control group came about because not all of the new homes at Netville were wired; therefore, he did not have to assign participants to a control group and was still able to compare data collected on wired homes versus non-wired homes.

Camfield as a community had survived the desolation and alienation associated with public housing. In consideration of this communities' re-growth and its sense of community (i.e., collective responsibility and sharing of resources), limiting the services given and/or access to IT training and a free computer, while giving other residents the opportunity to participate could potentially have a negative impact on any achieved communal balance. Moreover, as Kraut et al., (2002) found in their follow-up study, the time coupled with the abundant availability of technology at school, work, and library, etc., made it extremely challenging to keep a control group from using a computer and the Internet over the life of their study. Given the small size of Camfield, the sensitive balance of the community's inter-relations, and the impracticality of trying to prevent control group members from coming into contact with technology, we decided not to include a control group in our research design. However, the results of this study are compared with the experience of other studies of low-income community computer usage.

CREATING COMMUNITY CONNECTIONS PROJECT DEMOGRAPHICS

The comparison of Boston and Camfield revealed that Camfield was not representative of the Boston population; however, it is representative of the population identified in the digital divide reports. Participant demographics reveal that respondents were representative sample of the Camfield community. The participants and full participants are all a subset of the Camfield community. The race demographics of the project is representative of Camfield Estates with full participants (80%) and participants (89.2%) being predominantly African-American, Non-

Hispanic (see Figure 3-11). Both full participants (85%) and participants (73%) had higher female, than male representation (see Figure 3-12).

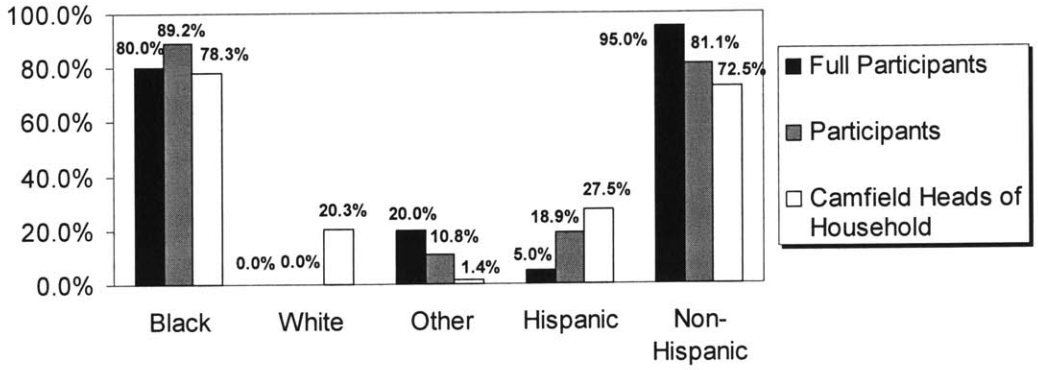


Figure 3-11: Race and ethnicity of respondents by participation category.[17]

Chi-square tests were conducted on project participant demographics (see Table 3-3 and Table 3-4) to determine whether project participant and Camfield Estates' distributions for race, ethnicity, gender, age, family size, and household income were statistically similar.

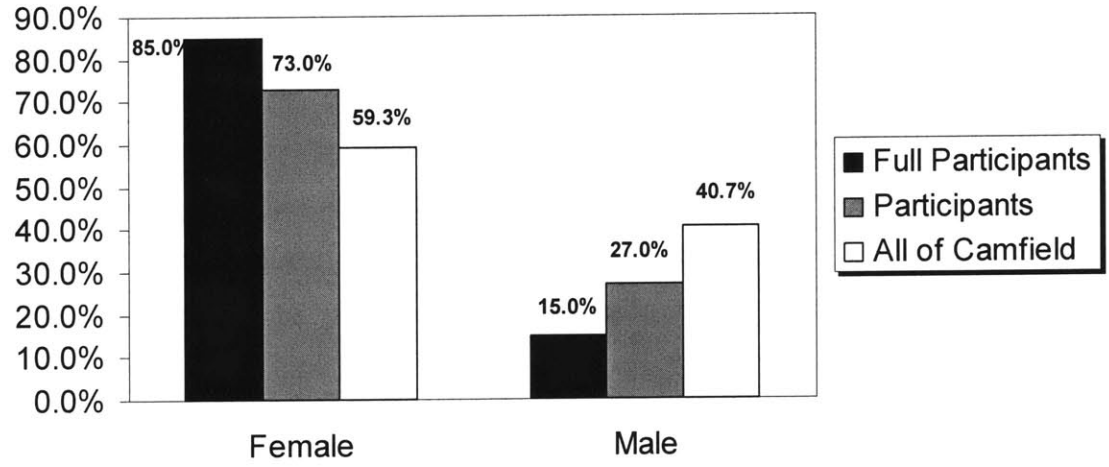


Figure 3-12: Gender of respondent by participation category.[18]

The family size of full participants and participants was evenly distributed above and below three family members. These percentages are somewhat dissimilar to all of Camfield, where the majority family size is three members or less (see Figure 3-13).

[17]Full participants, n = 20; participants, n=37 and Camfield head of household, n=69.
[18] Full participants, n = 20; participants, n=37 and All of Camfield, n=186.

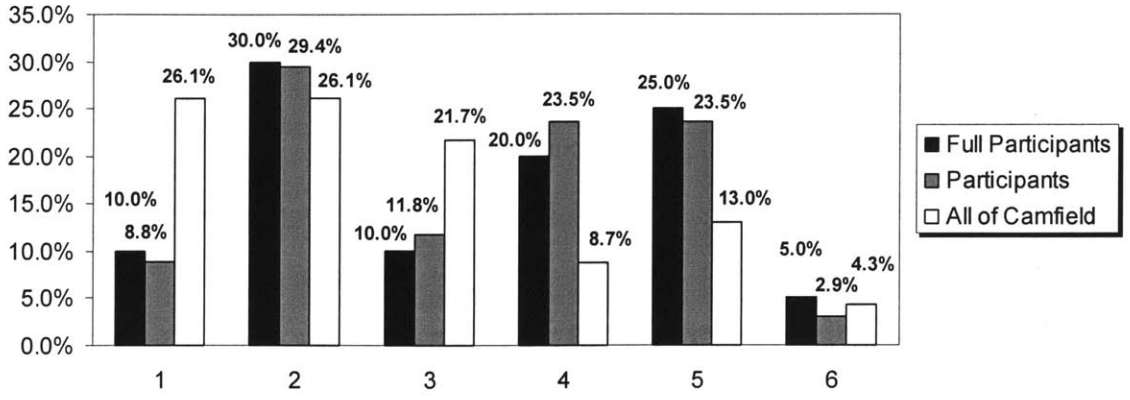


Figure 3-13: Respondent family size by participation category. [a]

Household incomes of full participants and participants were evenly distributed between less than $10,000, and $30,000 and up per year, as shown in Figure 3-14, with 10% not responding to the income question.

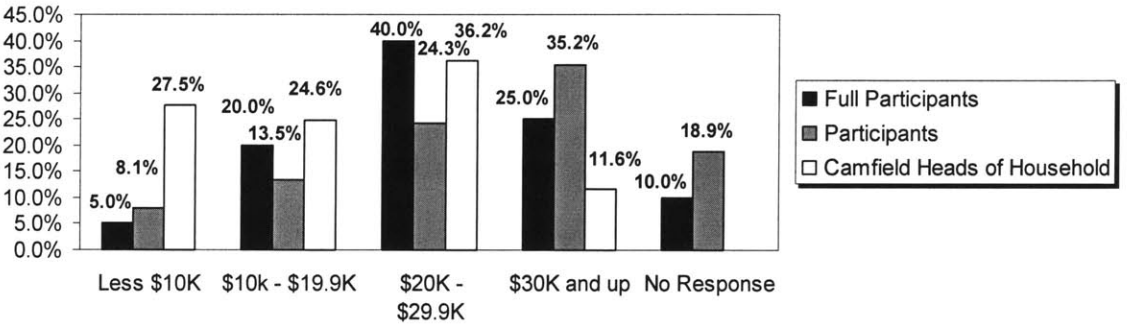


Figure 3-14: Respondent household income by category of participation. [a]

The age of full participants and participants fell mainly between ages 40 and 69 (see Figure 3-15). This could be attributed to the focus on adult heads of household in the Camfield in the project. Moreover, MassHousing saw the project as an important vehicle for engaging working age adults with Information technology.

[a] Full participants, n = 20; participants, n=37; and Camfield head of household, n=69.

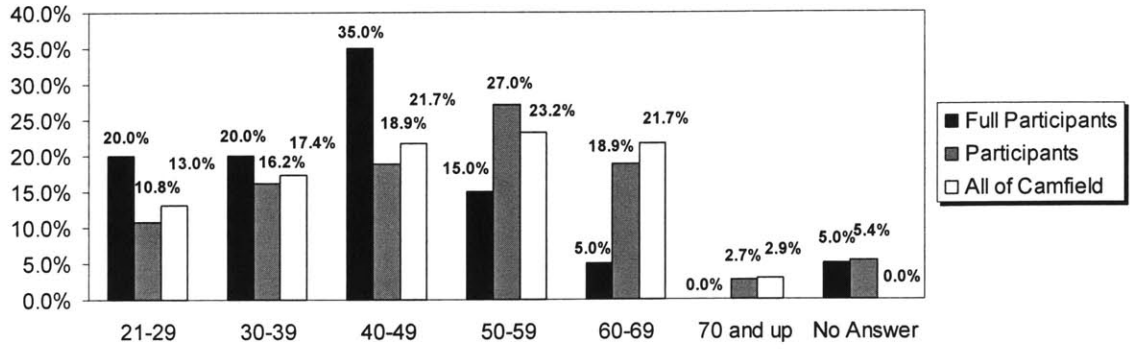


Figure 3-15: Age of head of household by category of participation. [a]

The distribution of full participant, and participants' education percentage levels were evenly distributed between completing high school or GED to post-graduate degree (see Figure 3-16). Most full participants minimally completed high school and were single (see Figure 3-17).

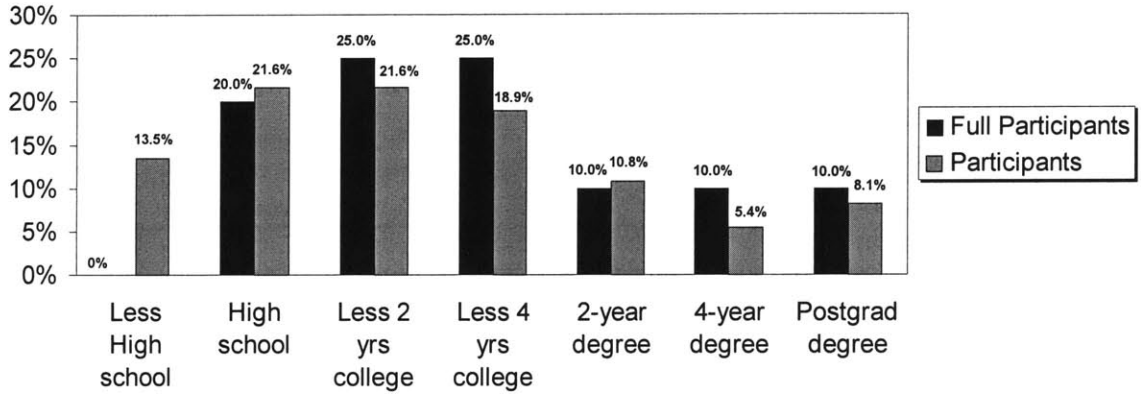


Figure 3-16: Respondent level of education by category of participation. [a]

[a] Full participants, n = 20; participants, n=37; and Camfield head of household, n=69.

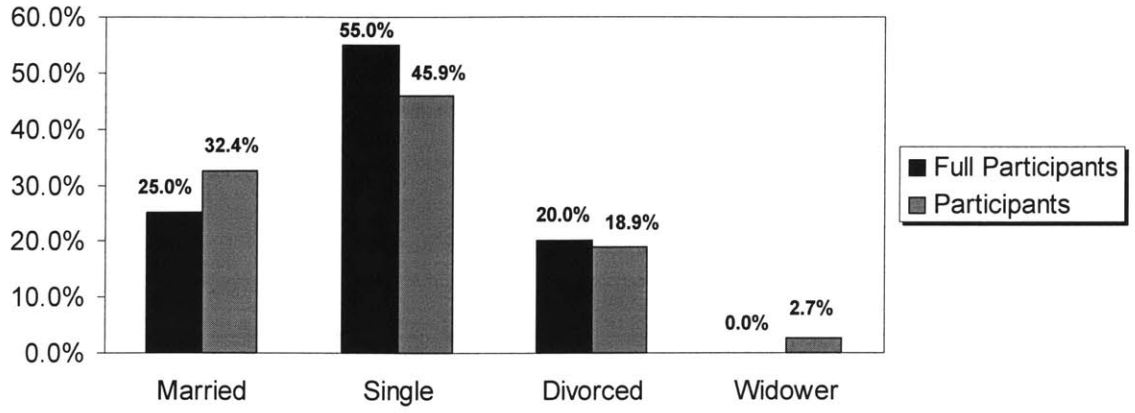


Figure 3-17: Respondent marital status by category of participation. [a]

Chi-square tests (Table 3-3) were conducted to determine whether project participant distributions were different from Camfield in general. For each of the variables, I indicate the P-value associated with the relevant chi-square statistic. The participating household demographics of race, family size and income were different from all of Camfield demographics at levels of significance of $P < 0.05$. The age of participants not being different is most likely attributed to the requirement that participants must be at least 18 years of age. Not shown in Figure 3-15 and not used in the chi-square comparison, is the high percentage (42%)[19] of Camfield residents that are under the age of 18. The difference in income is interesting because it appears, as shown in Figure 3-14, that the larger percentage of participating households' annual incomes are above $20,000, where for all of Camfield the larger percentage is below $20,000. What makes this statistic interesting is that it is consistent with the digital divide (2000) findings that computer and Internet use is higher among the higher income brackets regardless of race. The difference in race between participating households, and all of Camfield can be attributed to no White residents (20.3%) participating in the project. Gender not showing a difference may be attributed to a higher percentage of females (59.3%) to males (40.7%) for all of Camfield, which might help to explain the higher percentage of females (73%) to males (27%) for project participation as shown in Figure 3-12.

[a] Statistic based on 2000 Cornu Management data.

Table 3-3: Chi-Square tests of differences between Camfield and respondent demographics.

	X^2	Degrees of freedom	P < .05	P < .01	P-Value
Race[a]	30.45	2	*	*	0.0000
Ethnicity[b]	1.37	1			0.2414
Gender	2.87	1			0.0905
Age	0.66	6			0.9951
Family Size[c]	14.84	5	*		0.0111
Income [c]	26.18	5	*	*	0.0000

[a] Race is defined as Black; White, or Other
[b] Ethnicity is defined as Hispanic or non-Hispanic
[c] Unit of measure is Household

To conduct a chi-square test (see Table 3-4) of the full participants to participants, the participants (n=17) that were not full participants (n=20) and were isolated for independent comparison. For each of the variables, I indicate the p-value associated with the relevant chi-square statistic. Based on this chi-square test the ethnicity, age and gender demographics of full participating and participating households are significantly different at levels of significance of $p < 0.05$. The differences in ethnicity, Hispanic full participants (5%) and Hispanic participants (29%), can be attributed to some participants being strictly Spanish speaking. We had difficulty in getting adequate translation for post-surveys causing those participants to not become full participants.

Table 3-4: Chi-Square tests of differences of participant (n=17) and full participant (n=20) demographics.

	X^2	Degrees of Freedom	P < .05	P < .01	P-Value
Race[a]	0.851	2			0.6533
Ethnicity[b]	5.594	1	*		0.0180
Gender	5.589	1	*		0.0180
Age	14.35	6	*		0.0259
Family Size[c]	0.613	5			0.9874
Income[c]	10.15	5			0.0709

[a] Race is defined as Black; White, or Other
[b] Ethnicity is defined as Hispanic or non-Hispanic
[c] Unit of measure is Household

The differences (see Figure 3-18) for age may be attributed to some of the elderly participants needing additional follow-up training and support beyond what was provided. The need for additional support may have caused some to become less engaged over time.

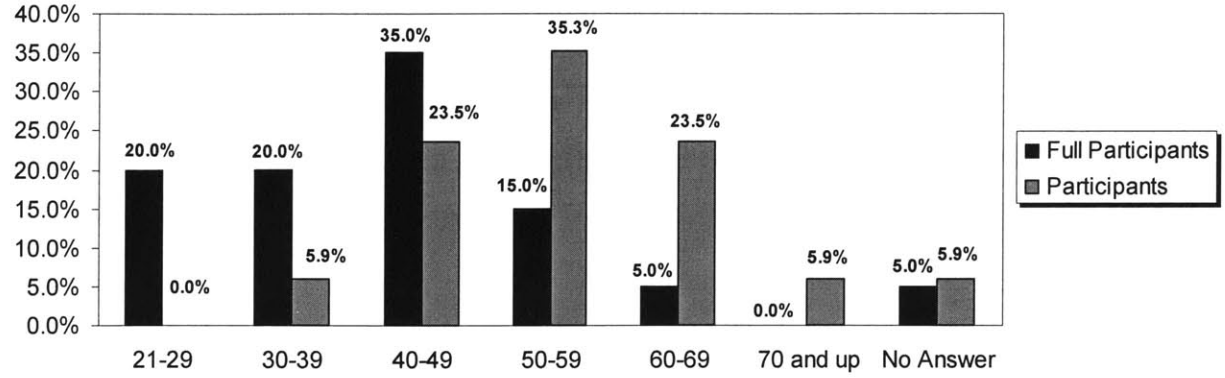


Figure 3-18: Comparisons by age of participants (n=17) and full participants (n=20).

The difference (see Figure 3-19) for gender of full participants and participants is interesting. There were more females than males among participants as well as full participants. Among full participants there were 70% more females than males. Why female full participants, are so disproportionately high compared to male full participants would require more investigation. One possible explanation is that the general adult population at Camfield is mostly female (see Figure 3-3). However, the gender difference in Figure 3-3 does not explain the especially large difference between male and female full participants.

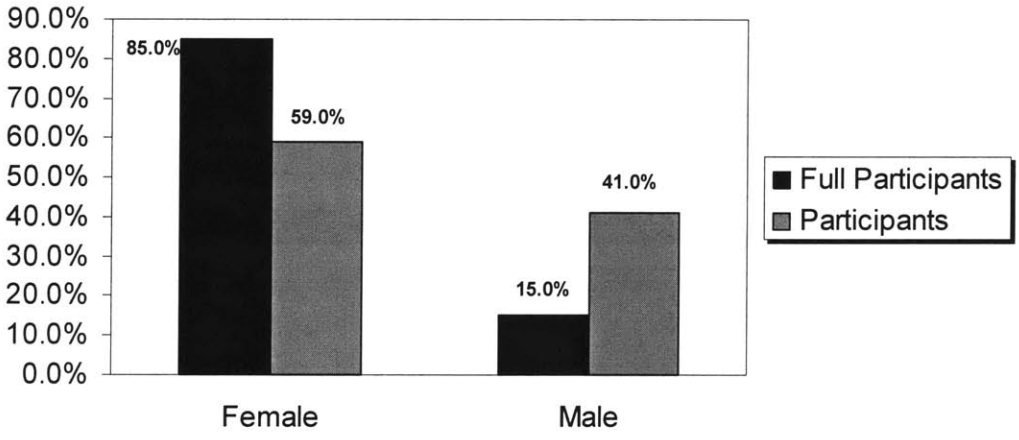


Figure 3-19: Comparison by gender of participants (n=17) and full participants (n=20).

These charts and chi-square tests allow us to orient our demographics and determine the representation of the population. The next step is to conceptualize the profile of the typical project participant.

The typical full participant and household representative, based on the project demographics discussed earlier was most often an African-American Non-Hispanic female between the ages of 40 and 69. The typical full participant's household was three members, with an income between $10,000 and $30,000. Full participants were typically single, divorced or widowed. Typical full participants also had a high school education, with some college experience, and had at least one child under 18 living in the household.

Table 3-5 shows a further breakdown of project participants by marital status, gender, and presence of children (all participants were African-American or Hispanic). There were five participating households (14%), without any children under 18 years of age. Three of these households were elderly persons who had adult children at home. There were 32 participating households with children under 18 (see Table 3-5). Married participants with children made up 32% of the participants; single, divorced or windowed participants with children made up 54% of participants. This gives us a sense of the number of households with children and the possibility that children in the home also used the computer. This profile helps us to see if the sample population is consistent with the profile that federal policymakers' consider the most at-risk households–single parent, African-American and Hispanic female headed household with children under the age of 18.

Table 3-5: Participant marital status, gender, and children in the household.

Marital Status[a]	Gender	Children under 18	No children under 18
Single [b]	Female	20	2
	Male	0	3
Married	Female	8	0
	Male	4	0

[a] n=37
[b] The single category includes divorced and widowed

The categorizations in Table 3-5 can be grouped into three categories (see Figure 3-20). 1) SFC – Single female with related children under 18 years old; 2) SNC – Single female or male with *no* related children under 18 years old; and 3) MC – Married female or male with related children

under 18 years old. Where appropriate these grouping labels will be used to identify participant types in these findings.

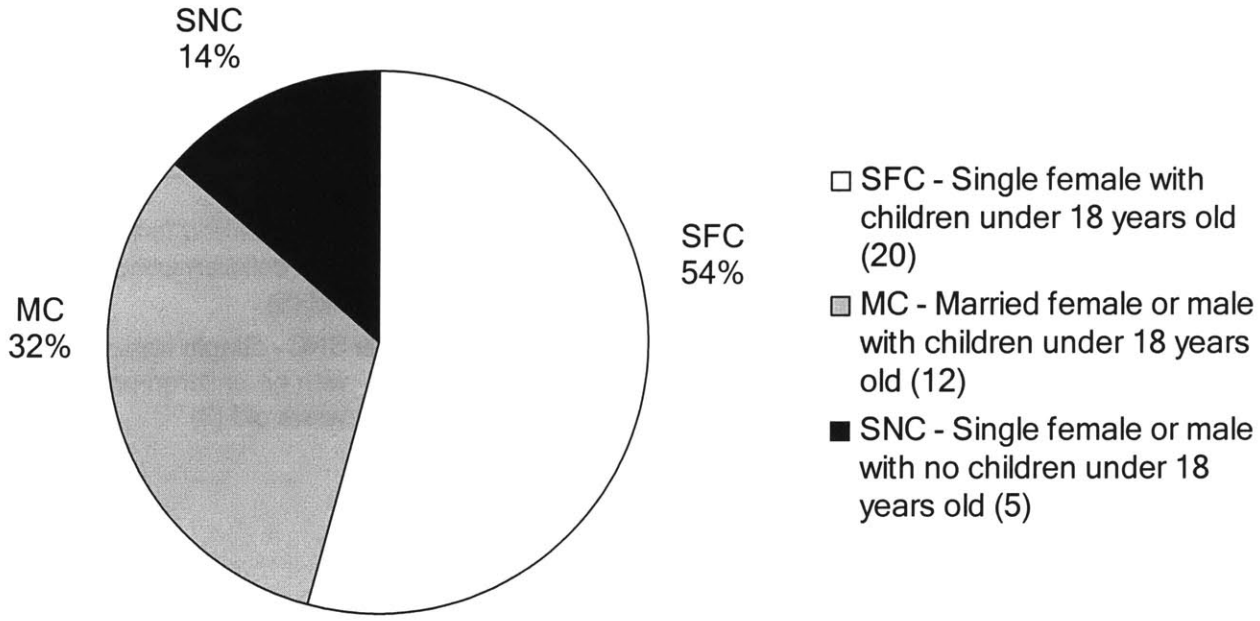


Figure 3-20: Groupings of participants by marital status, gender, and children in the household

The demographics of the Camfield Estates-MIT Creating Community Connections Project participants are consistent with those found least likely to have a computer and Internet access by the U.S. Department of Commerce's National Telecommunications and Information Administration "Falling Through the Net" reports (U.S. Department of Commerce, 1995, 1998, 1999, 2000). Although the latest report (2000) found increased usage patterns by all Americans, those found least likely to have a computer and Internet access were still African-American and Hispanic females with incomes less than $35,000 which is very similar to those participating in the Creating Community Connections Project.

Full participants are grouped in Figure 3-21 based on the groupings from Figure 3-20 with African-American and Hispanic full participants combined. As seen in Figure 3-21 of full participants 60% are in the SFC category, 25% are in the MC category and 15% are in the SNC category. With SFC, African-American and Hispanic single female with children less than 18

years old, being the largest category of full participants, in the next chapters we are able to observe the impact the project had with what policy makers consider the most at risk group.

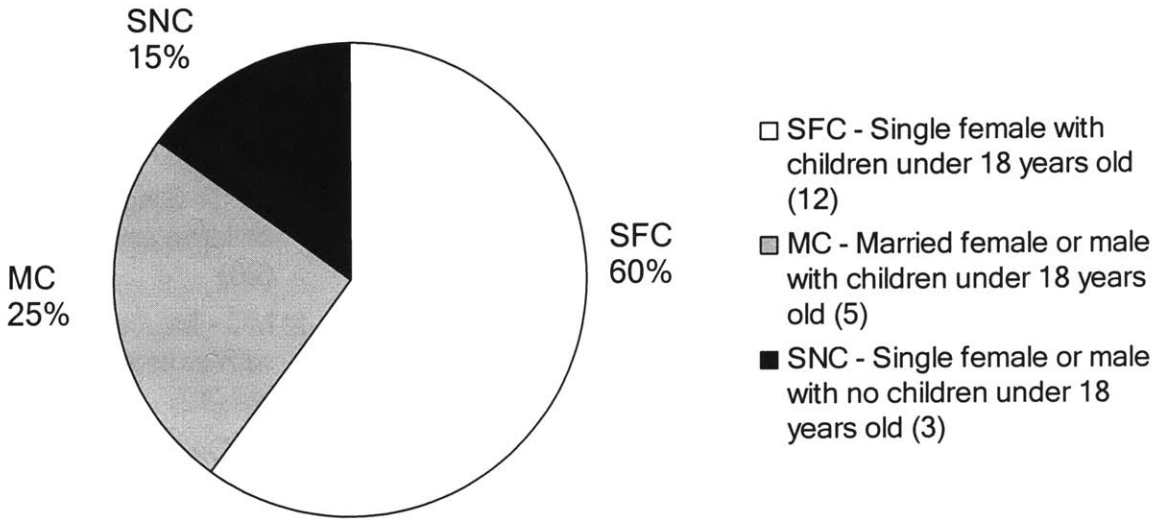


Figure 3-21: Groupings of full participants by marital status, gender, and children in the household.

As a result of the training offered, including the workshops, some of Camfield's adult residents are able to take advantage of the project's community technology components. In addition to accessing online content, participating households are also able to contribute content. The Neighborhood Technology Center is not just for the children anymore. The participating households can now take advantage of what the NTC has to offer by way of technology and training if they wish. Finally, the electronic network enables participating households to communicate via the Camfield website and the Internet with each other and friends and family not located at Camfield.

The next section presents computer experience and training interest statistics gathered from the pre-survey. The next section also provides a comparison of full participants (20) to participants (17) pre-survey data of self-reported prior computer experience, and their views on Internet access as a facilitator of empowerment and self-sufficiency. This analysis sheds lights on possible factors, outside of those described that may have contributed to participants dropping out.

PRE-SURVEY: COMPUTER AND TRAINING EXPERIENCE FINDINGS

Full participation in the project was not prohibited if a prospective participant already owned a computer. Fifty-five percent of participants considered themselves beginners at the start of the project and 32%, reported intermediate experience with computers; and 14% considered their skills advanced. Pre-survey data revealed that among the 37 participants (both full participants and participants) 56% reported that they owned a computer and 44% did not.

Table 3-6: Comparison of respondent computer ownership and skill level.

	Skill Level		
Computer Ownership	Beginner	Intermediate	Advanced
Yes	8	5	4
No	15	5	0

As shown in Table 3-6, beginners were least likely to own a computer while intermediate and advanced were more likely to own a computer. When participants were asked, "what topics would you like to see addressed through training," the highest priority was given, with nearly 81.8%, to how to access government information online (see Table 3-7).

Table 3-7: Potential training topics identified by respondents in pre-survey (Sept, 2000).

Rank	Workshop Topics	Percent[a]
1	How to access government information online	81.8%
2	How to create my own website	81.3%
3	How to access community information online	78.8%
4	How to find jobs online	78.1%
5	Protecting my children from certain online content	72.7%
6	How to help my children in school	71.9%
7	How to start a business	68.8%
8	Managing my finances	64.5%
9	How to shop for groceries online	32.3%

[a] n=37

When asked, in pre-survey, about their understanding, recognition, and familiarity with computers and how often they used them, 48.6% reported regular use of the Internet and e-mail while 78.4% reported never hearing of Multi-User Dungeons (MUDs) (see Table 3-8). More than 41% of participating household representatives heard of all but two of the computer terms presented.

Table 3-8: Self reported familiarity with computer terms and/or terminology.

Computer-related Term[a]	Never heard of	Heard of, never used	Tried a few times	Use regularly
Internet	2.7%	32.4%	16.2%	48.6%
Electronic Mail (e-mail)	2.7%	43.2%	5.4%	48.6%
Netscape/Internet Explorer	18.9%	35.1%	10.8%	35.1%
Word Processing	2.7%	40.5%	21.6%	35.1%
World Wide Web	16.2%	32.4%	18.9%	32.4%
Databases	13.5%	48.6%	5.4%	32.4%
America Online	10.8%	48.6%	10.8%	29.7%
Spreadsheets	13.5%	40.5%	21.6%	24.3%
Computer Games	5.4%	40.5%	29.7%	24.3%
Video Games (cf., Nintendo, etc.)	2.8%	58.3%	22.2%	16.7%
Electronic Newsgroups, Message Boards	35.1%	40.5%	10.8%	13.5%
Presentation Software	24.3%	54.1%	10.8%	10.8%
Internet Relay Chat (IRC)	32.4%	51.4%	8.1%	8.1%
Telnet	59.5%	29.7%	8.1%	2.7%
Multi-User Dungeons (MUDs)	78.4%	21.6%	0.0%	0.0%

[a] n=37

Most of the participants (67.6%) reported that work was where they used a computer, while using a computer at the Camfield Estates Neighborhood Technology Center (CENTC) was a distant second with 42.9% (see Table 3-9). Approximately 56% (21 participants) stated they did not have a computer, and approximately 67.6% (25 participants) stated work was where they used their computer, then this would suggest that several participants who already had a computer, used their computer outside of the home, mostly at work. Moreover, this would suggest that computers in these instances were primarily used for work-related tasks.

Table 3-9: Self-reported locations of computer use.

Rank	Location of Use	Percent[a]
1	Work	67.6%
2	Camfield Estates Neighborhood Technology Center	42.9%
3	Public facility (i.e., the library)	38.2%
4	School (i.e., a college or university)	24.2%
5	Another Neighborhood Technology Center	8.8%

[a] n=37

Participants were asked to select from a list of computer training courses they would like to see available at the Camfield NTC. The most popular response (88.2%) was training on word processing (see Table 3-10). The other selections (word processing, spreadsheets, networking, keyboarding, etc.) were consistent with skill building that was applicable in the work place.

Table 3-10: Rankings of future training topics identified by respondents.

Rank	Training	Percent[a]
1	Word Processing	88.2%
2	Spreadsheets	85.7%
5	Networking	85.3%
5	Keyboarding	85.3%
5	Operating Systems	85.3%
7	Programming	82.4%
7	Website Design	82.4%
8	Job Readiness	79.4%
9	Presentation software	77.1%
11	Databases	74.3%
11	Browsing the Internet	74.3%
12	Hardware	70.6%
13	Society Issues	66.7%

[a] n=37

When participants were asked in the survey "how would you plan to use your computer," nearly every participant (97.1%) responded with "communicate with family and access to community information" as their first priority. The next frequent response (88.6%) was, to "continue education" (see Table 3-11).

Table 3-11: Planned computer use by participants.

Rank	Use of Computer	Percent[a]
1	Communicate with family/friends	97.1%
2	Access community information	97.1%
3	Continuing education	88.6%
4	Career opportunities	88.6%
5	Access educational resources for children	82.9%
5	Business	77.1%
7	Create personal website	76.5%
8	Contribute/publish information	61.8%
9	Games	60.0%
10	Other	21.4%

[a] n=37

FULL PARTICIPANT VERSUS PARTICIPANT COMPUTER EXPERIENCE FINDINGS

As shown in Table 3-4, and discussed earlier, the areas of difference for full participants and participants were ethnicity, gender and age. Full participants tended to be younger, female and African-American, while participants tended to be older and male. In addition to language, I suspect that there are several reasons such as culture, age, and gender, among others, that may have contributed to participants not becoming full participants. The focus of my research was not specifically on culture and gender and IT use therefore there was no data collected on this to reveal why certain participants dropped out. However, I did capture computer and Internet use; empowerment and self-sufficiency data at the pre-survey for both full participants and participants.

The computer experience items covered ownership, skill level, recognition of computer and Internet terms and computer use at remote locations. Table 3-12 shows responses of both full participants and participants and their awareness of selected computer and Internet terms.

Table 3-12: Full participant and participant awareness of computer and Internet terms.

Technology Term	Never Heard of	Heard of, never used	Tried a few times	Use regularly
The Internet				
Full participants (n=20)	0.0%	15.0%	25.0%	60.0%
Participants (n=17)	5.9%	52.9%	5.9%	35.3%
Netscape/Internet Explorer				
Full participants (n=20)	10.0%	30.0%	20.0%	40.0%
Participants (n=17)	29.4%	41.2%	5.9%	23.5%
Electronic Mail (e-mail)				
Full participants (n=20)	0.0%	30.0%	10.0%	60.0%
Participants (n=17)	5.9%	58.8%	0.0%	35.3%

Full participants, in each instance of familiarity with Netscape/Internet Explorer and e-mail, were more aware of them than participants were. Perhaps previous experience of full participants contributed to these respondents continuing with the project. Table 3-13 above shows that full participants were more likely to already own a computer.

Table 3-13: Comparison of computer ownership for full participants and participants.

Type of Participant	Yes	No	No Answer
Full participants[a]	55%	45%	0%
Participants[b]	24%	59%	17%

[a] n=20
[b] n=17

As shown in Table 3-14 full participants reported having slightly more computer experience than participants did. Fifty percent of full participants and 70% of participants rated their computer skill level as beginner.

Table 3-14: Comparison of computer experience for full participants and participants.

Type of Participant	Beginner	Immediate	Advanced	No Answer
Full participants[a]	50%	30%	15%	5%
Participants[b]	70%	24%	6%	0%

[a] n=20
[b] n=17

Table 3-15 shows locations full participants and participants may have been exposed to computers and the Internet. Participants that did not complete the project had less experience recognizing terms. This would suggest that previous non-exposure contributed to their dropping out.

Table 3-15: Locations of pre-project computer use by full participants and participants.

Type of Participant	Work		CENTC		School		Library	
	Yes	No	Yes	No	Yes	No	Yes	No
Full participants[a]	89%	11%	50%	50%	35%	65%	44%	56%
Participants[b]	41%	53%	35%	65%	12%	82%	29%	65%

[a] n=20
[b] n=17

Participants were asked to respond to the statement, "Having access to the Internet in my home is important for empowerment." Both full participants and participants, "agreed" and "strongly agreed" that having Internet access in the home is important for empowerment (see Table 3-16). Reponses give an indication of participant's perception of the value of Internet access.

Table 3-16: Full participant and participant response to Internet in home and empowerment.

Type of Participant	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Full participants[a]	50.0%	35.0%	0%	15%	0%
Participants[b]	58.8%	41.2%	0%	0%	0%

[a] n=20
[b] n=17

Participants were asked, "Do you feel having access to the Internet is your home is important for family self-sufficiency?" Both full participants and participants believe that Internet access in the home is important for family self-sufficiency.

Table 3-17: Participant and full participant response to Internet in the home and family self-sufficiency.

Type of Participant	Yes	No
Full participants[a]	90%	10%
Participants[b]	100%	0%

[a] n=20
[b] n=17

The computer experience responses showed that full participants were more likely to recognize computer and Internet terms, to have previously owned a computer and to have some prior computer experience or exposure to computer. In addition to the language challenge discussed earlier, the computer experience differences may be attributed to generally not having access or exposure to a computer or the Internet. The empowerment and self-sufficiency responses showed that both full participants and participants recognized the relevance and value of in home Internet access. This suggests that participants, not becoming full participants may be more related to prior exposure and experience than recognizing the relevance and value of Internet access. Sustained participation may be attributed having been previously exposed to a computer and the Internet, and the possession of some human capital—computer skills.

COMPUTER EXPERIENCE BASED ON DEMOGRAPHICS

The following is analysis of skill level, computer use/exposure, familiarity with information technology terms among full participants and participants according to gender marital status and children in the households. This analysis will hopefully shed light on possible similarities of characteristics between this sample population and those identified by the digital divide report. Seventy-five percent of full participants had children in the home less than 18 years of age. The full participants were primarily Black and Hispanic. Fifty-five percent of the full participants that were single females with children considered themselves beginner or intermediate computer users (see Table 3-18). This particular group more than the others is the focus of many community intervention efforts. African-American and Hispanic single female-headed households with children are considered the most at-risk. How this project plays out to support this group will speak to this strategy's potential for helping low-income communities.

Table 3-18: Full participants with children pre-survey skill level based on profile categories.

	Skill Level		
Marital Status and Gender	Beginner	Intermediate	Advanced
SFC[a]	35%	20%	5%
MC[b]	15%	5%	5%

[a] SFC = Single female with related children under 18 years of age.
[b] MC = Married female or Male with related children under 18 years of age.

The computer awareness responses of full participants with children shown in Table 3-19 showed a pre-existing level of familiarity with technology. Although the single female with children group considered themselves beginners or advanced, there seemed to be some familiarity with the Internet, web browsers and e-mail.

Table 3-19: Awareness of computer and Internet terms by full participants with children[20].

Computer Term, Household Family Type[a]		Never Heard of	Heard of, never used	Tried a few times	Use regularly
The Internet					
	SFC[b]	0	10%	20%	30%
	MC[c]	0	5%	5%	15%
Netscape/Internet Explorer					
	SFC	5%	25%	5%	20%
	MC	5%	5%	5%	10%
E-mail					
	SFC	0	20%	10%	30%
	MC	0	10%	0	15%

[a] n=17
[b] SFC = Single female with related children under 18 years of age.
[c] MC = Married female or Male with related children under 18 years of age.

The single female full participants with children owned a computer at 30% of all full participants (see Table 3-20).

Table 3-20: Pre-survey computer ownership by full participants with children[20].

Marital Status and Gender[a]	Yes	No
SFC[b]	30% (6)	30% (6)
MC[c]	15% (3)	10% (2)

[a] n=17

[20] SNC households – Single female or male with no children under 18 years old, to improve readability the table excludes the 3 SNC households.

Eleven of 12 SFC (55% of full participants) are in the target population of the federal government and consider themselves beginner and intermediate computer users.

ON-LINE COMMUNITY FUNCTIONALITY AND USAGE PATTERNS

The previous section provided an analysis of project participants and their characteristics. This next section describes the functionality of the on-line community and usage patterns of the participants. The project was a learning process for both Camfield as a community, and us as researchers. There were no similar models of technological intervention of this type at the time this study was conducted. Much of what guided the project was garnered from what was learned during the course of developing the project. Certain areas such as the website interface, functionality and content, as well as appropriate training classes' content and levels, were less challenging to develop because of the information gathered in the pre-survey, and because of other direct experiences with participants during the course of the project.

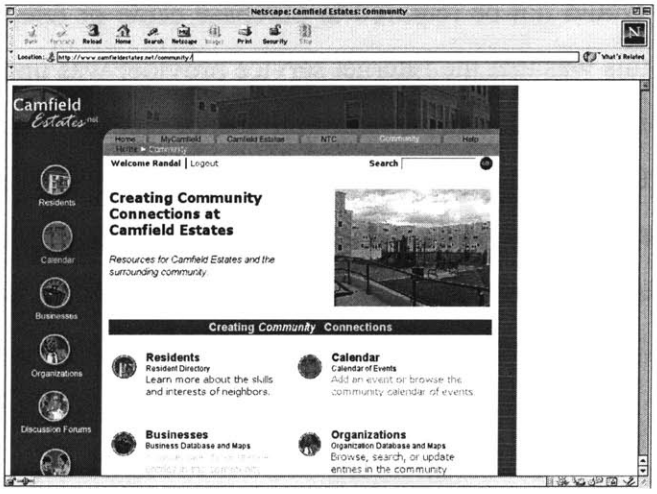


Figure 3-22: Screen shot of Creating Community Connections System. Source Camfieldestates.net

As mentioned earlier, part of the captured quantitative data was obtained from web logs. Through the signed informed consent it was agreed that capturing participant web logs would be allowed with the additional assurance that the linking of web logs to an individual was strictly

prohibited[21]. The Internet service provider set up a transparent proxy-server similar to the example shown in Figure 3-23.

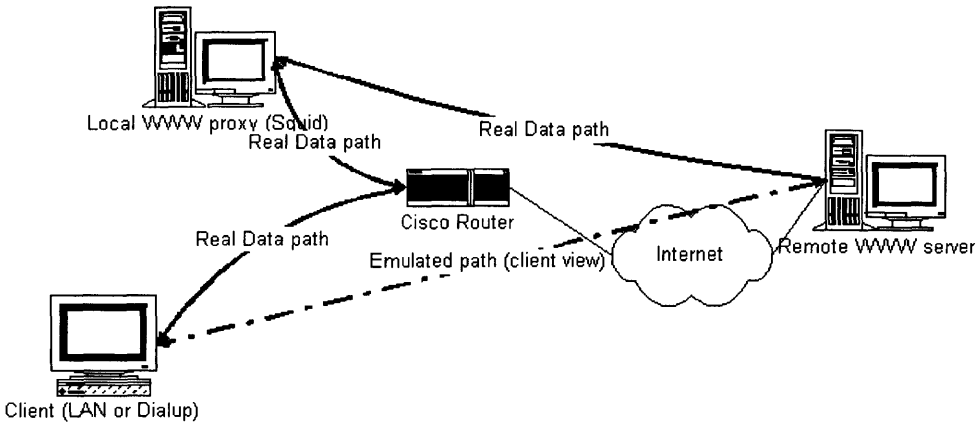


Figure 3-23: Schematic of how transparent proxy server operated.

The agreement with the Internet service provider was that residents could receive Internet service paid for by the project and would not be required to purchase cable or telephone service. Later we found the problem with this was that the Internet service provider was unable to unbundle the cable and phone services from the Internet service. This meant that the project Internet service provider could turn on Internet service and turn off cable and phone service, but the user was not allowed to purchase cable and phone service over the same line from another service provider. In other words, participants could not purchase Internet service from the project Internet service provider and cable service from another provider over the same coaxial connection to the housing unit.

The transparent proxy-server went live in October 2000, to coincide with project participants' receiving their high-speed Internet service. We received monthly transparent proxy-server logs every three months from the Internet service provider, and the camfieldestates.net server logs were automatically generated nightly. Both the transparent proxy-server (see Figure 3-24) and Camfield Estates web server logs were analyzed using the Webalizer version 2.0.1, a free web server log file analysis and counting program. As Figure 3-24 shows and Table 3-21 details,

[21] The agreement with participants was that project managers would not make any attempts to cross Internet activity with specific users and the Internet service provider encoded the web logs so we could not match logs with household IP addresses. Hence, we are unable to cross tabulate web log statistics with demographics.

utilization peaked during the months of January (1,419,632 hits) and February (1,132,957 hits) when the first round of participants connected to the Internet. To get a greater sense of utilization rates, I will examine web logs in more detail. Unfortunately, the Internet service provider discontinued sending transparent proxy-server logs with the last date recorded being May 10, 2001.

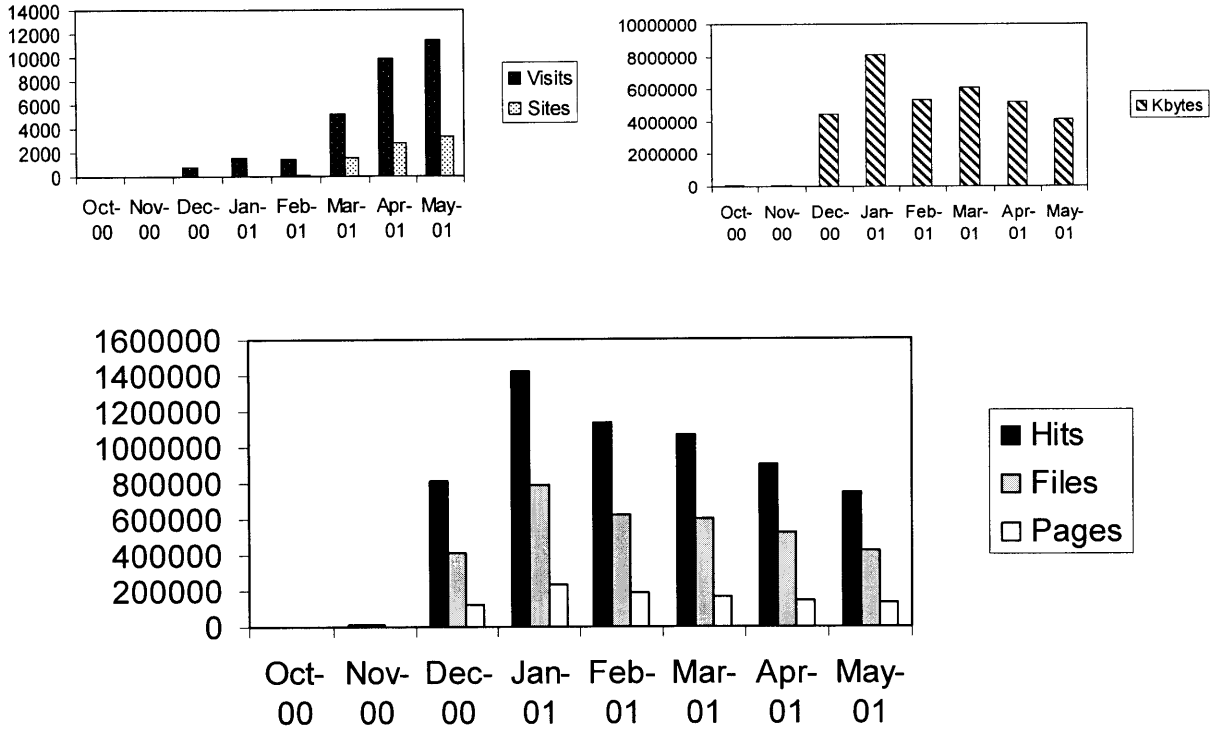


Figure 3-24: Camfield's transparent proxy-server statistics[22].

Webalizer Analysis

The Webalizer heading ***'hits'*** represents the total number of URL requests made to the server during the given time period (month, day, hour, etc.). The Webalizer heading ***'files'*** represents the total number of hits (requests) that actually result in something being sent back to the user. The Webalizer heading ***'pages'*** are those URLs that would be considered the actual page (.htm, .html, or .cgi) being requested, and not all of the individual items that make up the page (such as graphics and audio clips). The heading ***'visits'*** occurs when some remote site makes a request for a page on server for the first time during that browser session. As long as the same site keeps

[22] Transparent proxy-server statistics ended on May 10 of 2001. The totals for May-01 are projected by multiplying the May 10, 2001 numbers by 3.

making requests within a given timeout period *(default 30 minutes)*, they will all be considered part of the same *'**Visit.**'* The Webalizer heading ***'sites,'*** represents the number of unique IP addresses/hostnames whose server pages were being requested by participating households as they passed through the transparent proxy-server to visit external sites. The Webalizer heading ***'KBytes'*** (1024 bytes or 1 Kilobyte) represents the amount of data that was transferred between the server and the remote machine. Descriptions that are more detailed can be found in Appendix C.

According to Webalizer heading descriptions, by looking at the headings ***files*** and ***hits*** in Figure 3-24 we can get a sense of how many ***pages*** are from unique visitors. Assuming that a user allows caching, if he/she revisits the site the ***files*** count will not be incremented when a page is revisited[23]. As shown in Figure 3-23, Camfield users' Internet sessions are directed through the transparent proxy-server. Although any Internet user with the proper settings could access the Camfield transparent proxy-server, it is unlikely that anyone other than Camfield residents would utilize the invisible site. By taking the ratio of ***files*** to ***hits,*** we may be able to deduce trends in the number of repeat users.

In a continued effort to isolate unique users, the proxy-server statistics for Webalizer headings ***visits*** to ***sites*** provides another yardstick for measuring server use. ***Visit*** counts are incremented by ***pages*** and other URL requests for .jpg, .tiff, graphics, etc. and non-page URLs are not counted. According to Webalizer 2.0.1, heading descriptions ***Sites*** alone can be misleading because ***sites*** can be many users from a single site or they can also be many IP addresses. The ratio of ***Visits*** to ***Sites*** represents a measure of unique remote site usage through the server. In particular, an increase in ***Visits*** per ***Site*** means a user is staying longer at an external site, which would indicate depth as opposed to breadth.

[23] If the site was not static, but had changing content for the same URL (as with newspaper or e-commerce site) file caching would not reduce the file count.

Table 3-21: Summary by month of Camfield's transparent proxy-server October 2000 – May 2001.

Summary by Month										
Month	Daily Average					Monthly Totals				
	Hits	Files	Pages	Visits	Sites	KBytes	Visits	Pages	Files	Hits
May 2001[a]	24,749	14,067	4,285	381	1,098	1,374,849	3,817	42,853	140,677	247,490
Apr 2001	29,861	17,384	4,797	331	2,814	5,213,135	9,938	143,935	521,537	895,835
Mar 2001	34,427	19,239	5,287	168	1,584	6,107,232	5,221	163,912	596,417	1,067,262
Feb 2001	40,462	22,057	6,774	50	58	5,340,156	1,422	189,686	617,614	1,132,957
Jan 2001	45,794	25,541	7,681	49	40	8,094,228	1,527	238,113	791,791	1,419,632
Dec 2000	26,093	13,193	4,009	26	21	4,443,726	831	124,288	409,007	808,908
Nov 2000	647	442	56	1	9	79,022	32	1,411	11,062	16,196
Oct 2000	169	101	9	1	11	40,175	25	186	1,928	3,215
Totals						30,692,524	22,813	904,384	3,090,033	5,591,495

[a] Partial month through May 10, 2001

Observing the ratio of monthly ***files*** to ***hits*** shows that there was a small difference over the first eight months which would indicate that each month there was a similar number of unique users to regular users (see Figure 3-25). After the initial flurry of activity in the first couple of months, the ratio of ***files*** to ***hits*** remained flat.

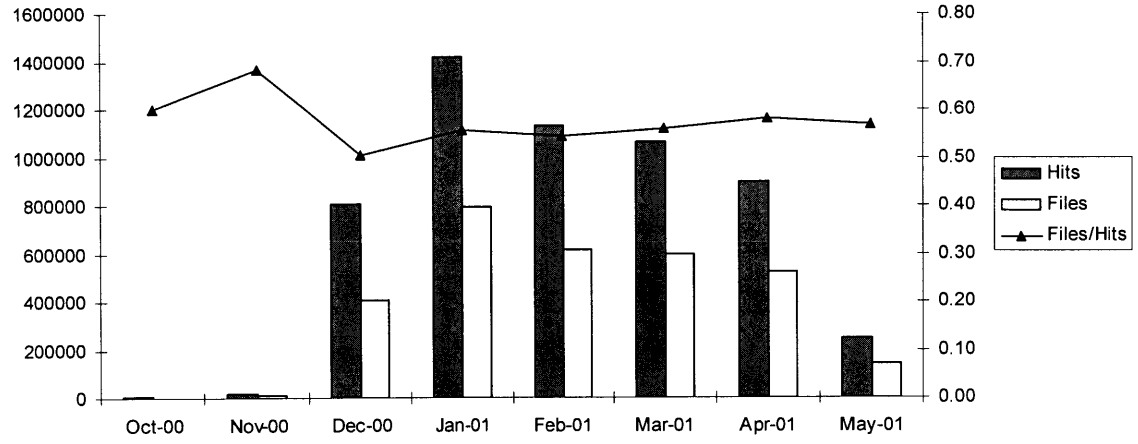


Figure 3-25: Comparison of monthly files per hits based on Camfield's transparent proxy-server logs (October 2000 – May 2001).

Observing the ratio of ***Visits*** to ***Sites*** shows how often, remote sites (IP addresses/hostnames) are making repeat visits to external websites (see Figure 3-26). The larger the ratio, the more often external websites have repeat ***visits*** occur and conversely the smaller ratios represent that remote site ***visits*** occur but users tend not to stay at the same site. Figure 3-26 shows an initial flurry of users making repeat visits to external sites with a dip from March 2001 to May 2001.

The spike suggests that users revisited sites more often in the beginning. The dip after the spike suggests that users were exploring the Internet and making more first time ***visits*** to external websites.

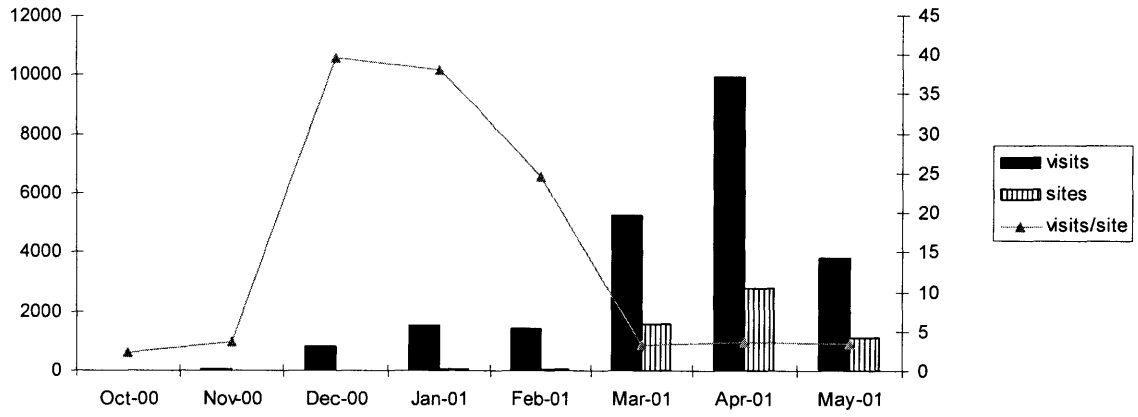


Figure 3-26: Comparison of monthly sites to visits based on Camfield's transparent proxy-server logs (October 2000 – May 2001).

Based on statistics from Table 3-21, the average daily visits to websites through the transparent proxy-server increased each month over the first eight months (see Figure 3-27). This increased activity would be consistent with more new project participants going online in the early months of the project.

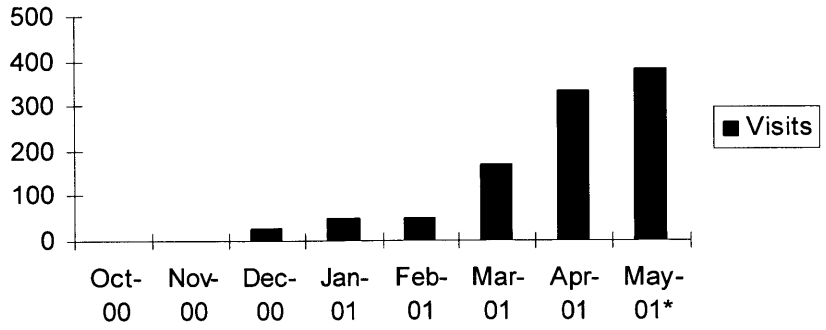


Figure 3-27: Average daily visits to sites made through the transparent proxy-server.

In January of 2001, the top 22 most common websites visited by participants varied from information-based sites (i.e., Boston.com), entertainment-based sites (i.e., launch.com, musicmatch.com) to online community/cultural-based sites (i.e., blackplanet.com, espanol.yahoo.com, yahoo.com, msn.com). Thirty-six percent and 27% of the 22 top sites in January 2001 were community- and entertainment-related respectively as shown in Table 3-22[24].

[24] It is worth noting that in the first eight months there were no websites of adult content registered through the transparent proxy-server even though we had not installed adult filtering software on the machines.

Table 3-22: Camfield Estates transparent proxy-server logs from January 2001.

Rank	Website	Website Type	Hits
1	blackplanet.com	Community	43,523
2	yahoo.com	Community	31,392
3	msn.com	Community	15,147
4	launch.com	Entertainment	9,426
5	espanol.yahoo.com	Community	3,385
6	camfieldestates.net	Community	2,292
7	hitbox.com	Entertainment	1,755
8	oneplace.com	Community	1,454
9	boston.com	News	1,115
10	aol.com	Community	1,009
11	collegeclub.com	Community	1,007
12	musicmatch.com	Entertainment	945
13	nick.com	Entertainment	841
14	wwf.com	Entertainment	672
15	gohip.com	E-Commerce	661
16.	peoplelink.com	E-Commerce	475
17	shockwave.com	Entertainment	401
18	uproar.com	Entertainment	388
19	microsoft.com	Business	368
20	simmons.edu	Education	367
21	xdrive.com	Online Support	363
22	nbci.com	News	358

In April of 2001, the top 19 most common websites visited by participants were consistent with January 2001 findings, community/cultural, and entertainment. However, e-commerce and communication specific sites appeared to be more popular in April with each making up 21%, or 4 of the 19 top sites (see Table 3-22). One of the e-commerce sites, vstore.com, focused specifically on starting a business. Community/cultural and entertainment related sites remained high with 26% and 21% respectively of the 19 top sites in April 2001 as shown in Table 3-23.

Table 3-23: Camfield Estates transparent proxy-server logs from April 2001.

Rank	Website	Website Type	Hits
1	launch.com	Entertainment	11,868
2	yahoo.com	Community	10,552
3	vstore.com	E-Commerce	9,000
4	blackplanet.com	Community	8,608
5	msn.com	Community	6,474
6	Weatherbug.com	News	4,519
7	qvc.com	E-Commerce	3,703
8	gohip.com	E-Commerce	2,287
9	camfieldestates.net	Community	1,967
10	zone.msn.com	Entertainment	1,800
11	hotmail.msn.com	Communication	1,553
12	shockwave.com	Entertainment	1,394
13	dialpad.com	Communication	1,264
14	netfirms.com	E-Commerce	1,036
15	espanol.yahoo.com	Community	1,034
16	aolmail.aol.com	Communication	716
17	wwf.com	Entertainment	511
18	chat.msn.com	Communication	317
19	boston.com	News	297

The Internet use in both January 2001 and April 2001 are consistent with our original goals of improving community, communication, and sense of independence. It was assumed there would be entertainment uses of the Internet, but it is clear from the transparent proxy-server logs that the Internet was being used for much more. Again, the Internet service provider discontinued sending transparent proxy-server logs in May of 2001. Detailed information on the Camfield Estates transparent proxy-server logs can be found in Appendix C. The Camfield Estates website web server has continued to generate its own web logs for usage of the Camfield website homepage.

The Camfield Estates web server began collecting logs on May 21, 2001, eleven days after the transparent proxy-server discontinued recording logs. Over the life of the project, the Camfield

Estates website has been fairly active with August 2001 showing the most activity (see Table 3-24). This high activity, however, cannot be solely attributed to Camfield residents. Anyone who visits camfieldestates.net is recorded as a hit, whether he/she is a Camfield participating household or any Internet user accessing the site from an external computer.

Table 3-24: Summary by month of camfieldestates.net web-server from May 2001 - November 2002 statistics.

Month	Hits	Files	Files/ Hits	Visits	Sites	Visits/ Site
May-01[a]	13,320	5,026	0.38	623	175	3.6
Jun-01	53,542	21,557	0.40	2,089	423	4.9
Jul-01	64,169	26,472	0.41	1,840	518	3.6
Aug-01	81,943	28,982	0.35	2,085	844	2.5
Sep-01	35,418	12,158	0.34	1,678	533	3.1
Oct-01	44,346	18,558	0.42	1,632	448	3.6
Nov-01	37,374	15,323	0.41	1,540	465	3.3
Dec-01	25,489	11,322	0.44	1,397	402	3.5
Jan-02	16,443	6,566	0.40	949	233	4.1
Feb-02	21,743	10,253	0.47	824	359	2.3
Mar-02	29,691	13,824	0.47	1,444	639	2.3
Apr-02	27,574	13,656	0.50	1,418	585	2.4
May-02	51,300	35,114	0.68	2,663	1,346	2.0
Jun-02	26,876	15,548	0.58	2,042	692	3.0
Jul-02	26,298	15,152	0.58	1,887	758	2.5
Aug-02	19,129	12,732	0.67	2,467	690	3.6
Sep-02	19,300	12,641	0.65	1,776	614	2.9
Oct-02	31,964	18,031	0.56	2,829	748	3.8
Nov-02	34,256	18,069	0.53	2,605	624	4.2
Totals	66,0175	310,984	0.47	33,788	11,096	3

[a] Indicates partial month.

Again, by taking the ratio of ***files*** to ***hits*** we may deduce trends in the number of repeat users to the Camfield website. Although the total number of hits declined, the ratio of ***files*** to ***hits*** as seen in Figure 3-28 shows an increase that could possibly be from unique users over the course of the

study. Also, the ***files*** per ***hits*** remained steady over the life of the project also supporting the notion of regular users.

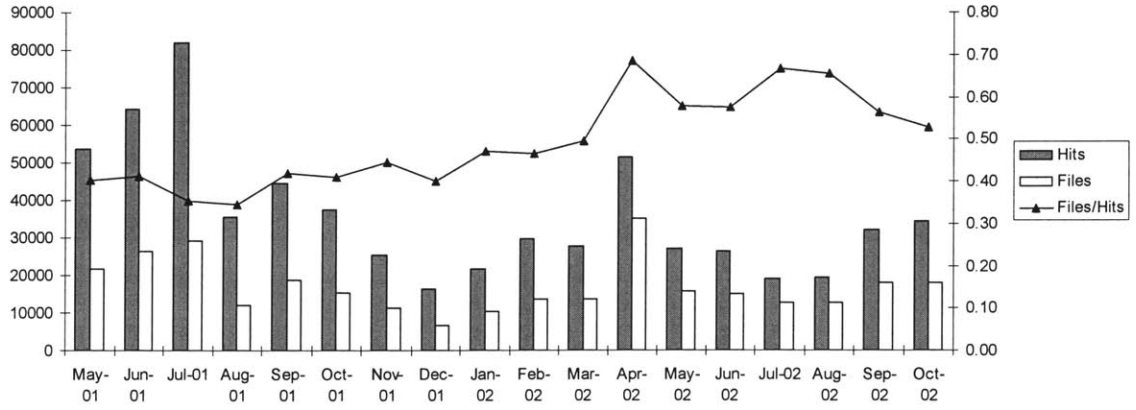


Figure 3-28: Comparison of monthly files to hits to Camfield's web server (May 2001 – November 2002).

The ratio of ***visits*** to ***sites*** for the Camfield web server, as seen in Figure 3-29, shows that the ratio spiked up and down over the course of the study.

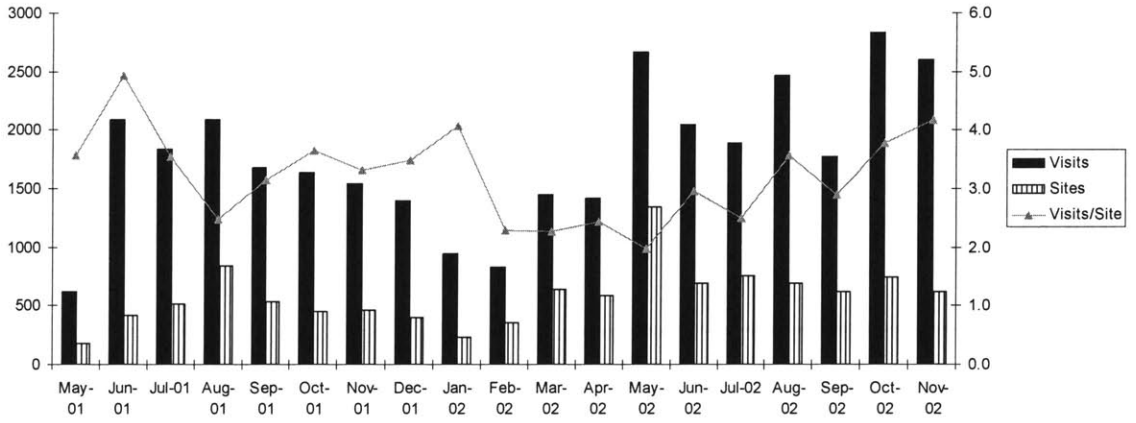


Figure 3-29: Comparison of monthly visits to sites to Camfield's web server (May 2001 – November 2002).

Visitors to the Camfield website have been consistent during the course of the study. To get a sense of the number of visits to the Camfield site, see Table 3-25 and Figure 3-30 for average daily visits. Its difficult to segment which visits are from Camfield users. IP addresses can change from time to time as some Internet service providers have dynamic IP addressing and allocate new addresses and/or renumber its servers. This increases the probability of external hits.

Table 3-25: Daily visits and maximum one day visits to camfieldestates.net web server (May 2001 - November 2002).

Month	Average Daily Visits	Maximum One Day Visits
May-01*	56	91
Jun-01	69	212
Jul-01	59	116
Aug-01	67	130
Sep-01	55	239
Oct-01	52	203
Nov-01	51	226
Dec-01	66	208
Jan-02	39	237
Feb-02	29	66
Mar-02	46	155
Apr-02	47	285
May-02	85	654
Jun-02	68	288
Jul-02	60	232
Aug-02	79	296
Sep-02	59	137
Oct-02	91	318
Nov-02	86	299

* Indicates a partial month

The average daily visits to the Camfield website were consistent over the course of the study with a slight dip from January 2002 to April 2002, as shown in Figure 3-30. The overall average daily visits to the Camfield website were 61 over the life of the project. Also shown in Figure 3-30, the maximum one-day visits were up and down over the course of the study with a dip down in February 2002 (66) and a spike in May 2002 (654). The consistent visits to the Camfield website over time suggest that the site had regular visitors during the month. The regular visitors are more likely to be from users that know the site is there more so than new visitors are. Much of the information and content contained on the Camfield website is specific to Camfield residents. The content would be of less interest to non-Camfield visitors and would

not warrant regular monthly visits from non-Camfield visitors. Also, the website is password protected which means only registered Camfield users can get beyond the initial home page. All of this would suggest that the regular monthly visitors are most likely registered Camfield users.

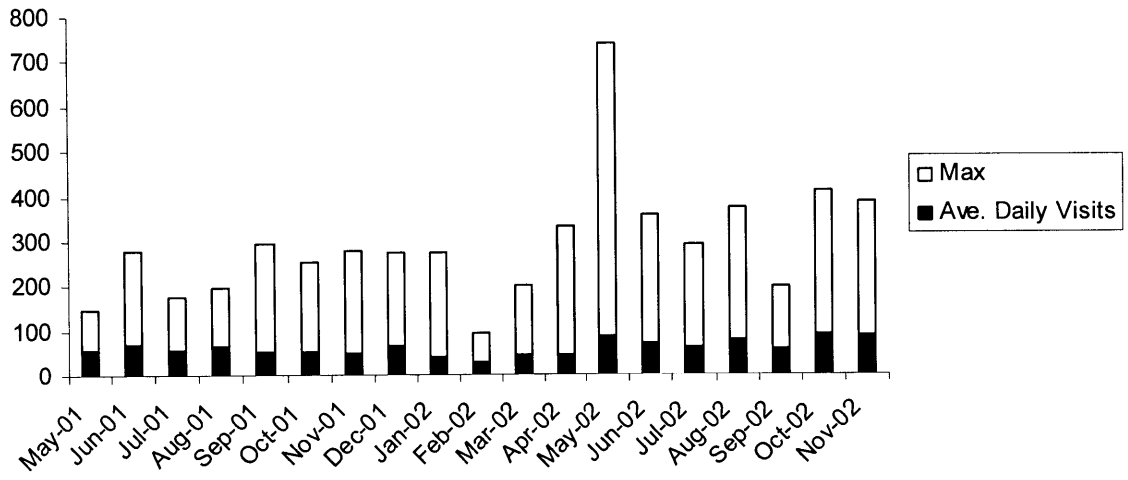


Figure 3-30: Comparison of average daily visits, and maximum one day visits to camfieldestates.net web-server (May 2001 - November 2002).

As seen in Figure 3-28 and Figure 3-25 and supported by Table 3-24 and Table 3-21, the ratio of ***files*** to ***hits*** for the Camfield web server showed an upward trend where the Camfield transparent-proxy server was flat. This is, however, not overall surprising considering that the transparent proxy-server is primarily accessible by Camfield users, while the Camfield Estates home page on the web server is available to anyone on the Internet.

As shown earlier the ratio of ***Visits*** to ***Sites*** spiked up in the beginning and flattened out from March 2001 to May 2001. Additionally, the ratio of ***Visits*** to ***Sites*** for the Camfield web server was sporadic over the life of the project with the trend going down and rising back up toward the end. For the activity surrounding the home page of the Camfield web server there is difficulty in distinguishing Camfield-specific activity. However, since the Camfield web site is password protected; therefore, sub-module activity is a better indicator of Camfield user-specific activity. To get a deeper understanding of activity on the Camfield web server requires looking at activity surrounding camfieldestates.net sub-modules.

A snapshot was taken from camfieldestates.net Web logs and most active sub-modules for May 2001, May 2002, and May 2003 (see Figure 3-31). The sub-modules are the sub-categories and functions of the Camfieldestates.net website, such as the user profiles page, the Camfield history page, the Neighborhood Technology Center page, etc. Analysis shows that residents' (29%) and organizations' (30%) sub-modules were the most active in May 2001, while chat (3%) was the least active. A comparison of the years shows the organizations' sub-module stayed the most active, the resident profiles sub-module went down in 2002 and increased again in 2003, the discussion group sub-module experienced a peak in 2002, and the calendar, e-mail, and chat sub-modules all experienced steady decline during the same period each year. The sub-module activity only reflects logging into the Camfield Estates website. E-mail lists can be used outside of the website without activity registering on the Camfieldestates.net web logs.

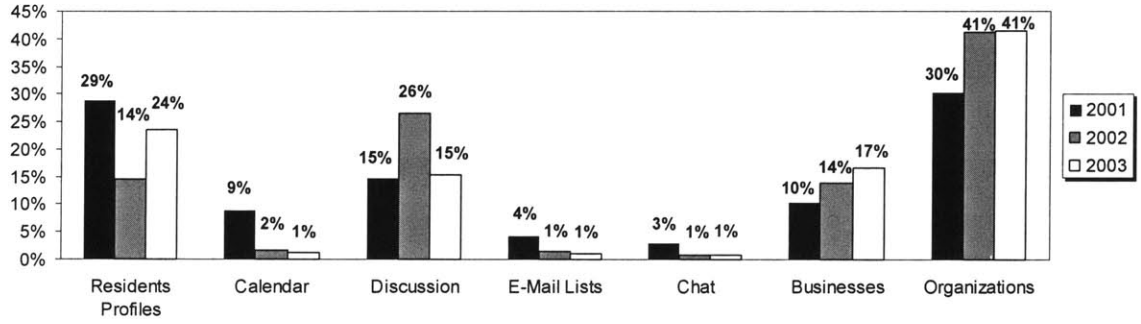


Figure 3-31: Camfieldestates.net active sub-module statistics by percentage of hits (May 2001, May 2002, and May 2003).

Although it is apparent participants used their computers and Internet access, page views of the Camfield website or use beyond the Camfield homepage overall dropped dramatically since its peak year in 2001 (see Figure 3-32). The trend line in Figure 3-32 shows unique visitors and/or users (IP addresses) steadily increasing in the first year with a peak in the summer of 2001. However, there is a downward trend toward the end of the study.

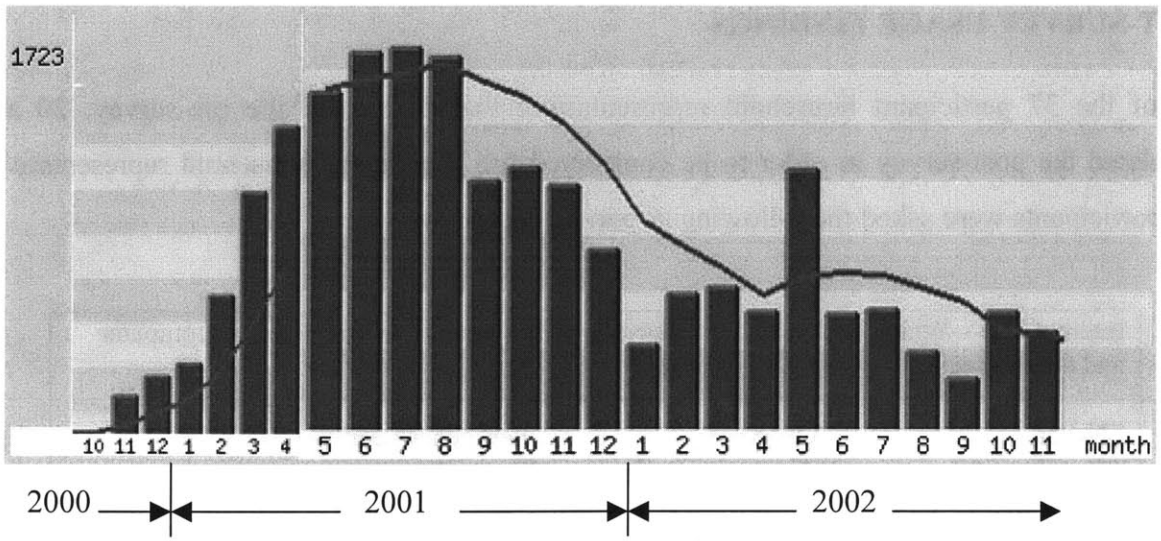


Figure 3-32: Monthly NedStat statistics on page views of www.camfieldestates.net

The drop-off in overall page views or use of the Camfield website, albeit mildly concerning, is not very surprising. I suspect the drop off is from users' increased familiarity with the availability of an array of Internet resources including publicly available online communities. Moreover, the novelty of having the computer and access to the Camfield website may have worn off after the first year, also contributing to decreased use of the website. This is an important lesson for the development of localized targeted online communities. However, the introduction of the Camfield website offered an entry-level opportunity for users and will remain a resource for occasional use or reference which may be the ultimate role it should play.

The chat room logs show that no user has been in the chat room since September of last year (2002) and the last visitor was almost a year before that. I suspect this is because there are so many publicly available chat rooms. However, the evidence that residents are still using the computers and the Internet is in an account from a MassHousing representative who sends out periodic e-mails to the Camfield residents, some of the e-mails request a response. Very few residents were responding to his e-mails, until one day he sent out and e-mail announcing free tickets to the circus. Almost every user responded! The MassHousing representative said, "Wow, I guess they are still out there using the computers." The next section details findings on just how much participants used their computers.

POST-SURVEY USAGE FINDINGS

Out of the 37 participant household representatives that completed the pre-survey, 20 also completed the post-survey in order to be considered full participant household representatives. Full participants were asked the following as part of the post survey:

> Internet Use—Which of the following best describes how often you use your computer and the Internet (i.e. with a web browser)?
>
> ☐Never ☐Once/year ☐Few times/year
> ☐Once/month ☐Almost every day ☐Every day
> ☐Don't know

For Internet use 55% responded every day while 35% responded almost every day (see Table 3-26).

Table 3-26: Participants frequency of Internet use.

Question	Never	Once a year	Few times a year	Once a month	Almost every day	Every day	Don't know
How often you use your computer and the Internet?[a]	0%	0%	5%	0%	35%	55%	5%

[a] n=20 , Fall 2001

Full participants were also asked the following as part of the post survey:

> Please identify the frequency with which you use you computer for the following activities (see Table 3-27):
>
> 1 – Never 2 – Seldom 3 – Occasionally 4 – Frequently

For the selected activities, "browsing the Internet" was highest with 75% indicating frequent occurrence and "sending and receiving e-mail" was second highest with 60% indicating frequent occurrence (see Table 3-27):

Table 3-27: Frequency of selected tasks performed with computer.

Activity[a]	Never	Seldom	Occasionally	Frequently
Browse the Internet	0%	5%	20%	75%
Send/receive electronic mail	0%	10%	30%	60%
Work or school-related tasks	30%	10%	15%	45%
Play games	20%	5%	30%	45%
Research a topic, hobby or interest	5%	5%	45%	45%
Access educational resources for children	20%	0%	40%	40%
Communicate with family/friends	5%	10%	45%	40%
Continuing education	45%	15%	5%	35%
Use an office application (i.e., word processing, spreadsheets, etc.)	10%	20%	35%	35%
Use an instant messenger	45%	5%	20%	30%
Career or job exploration	15%	10%	40%	30%
Business or entrepreneurial activity	35%	20%	25%	20%
Home banking	65%	10%	10%	15%
Design a document or presentation for family/friends	40%	10%	35%	15%
Access healthcare information	30%	20%	35%	15%
Purchase something online	20%	15%	50%	15%
Design a flyer, poster, or newsletter	65%	5%	20%	10%
Online chat	55%	25%	10%	10%
Contribute content to the Camfield website (i.e., calendar, business database, etc.)	50%	15%	25%	10%
Access social service information	45%	10%	35%	10%
Investing	90%	0%	5%	5%
Create an online photo album	90%	5%	0%	5%
Design a web page	75%	15%	5%	5%
Participate in online discussion groups	70%	5%	20%	5%
Place telephone calls	60%	20%	15%	5%
Contribute content to another website (i.e., articles, commentary/suggestions, etc.)	55%	15%	25%	5%
Search for housing	45%	20%	30%	5%

[a] n=20 , Fall 2001

What do all of these usage statistics mean? First, it's clear that not only are the project's full participating households using their computers and the Internet but the camfieldestates.net web

server shows it is continuing to be visited regularly by many new visitors and regular users. Additionally, with the majority of full participating household representatives using their computers and the Internet, many of the tasks performed frequently and occasionally were education, work, and communication related. These usage statistics provide a broad sense of the abundance of Internet use while the frequency of selected tasks performed gives a sense of how the full participating households used the Internet. The average project participant being Black, female, with less than two years of college and a household income under $29,000 represents some of the least likely U.S. citizens to have a computer and Internet access, based on the U.S. Department of Commerce's digital divide reports (1995; 1998; 1999; 2000). The positive effects of the Camfield Estate project go directly to positively affecting the digital divide.

What makes the usage statistics more important is that as discussed earlier, 56% of participants did not have computers in their home and 55% and 32% considered themselves beginners and intermediates, respectively. As shown in Table 3-27, many participants had either never heard of or heard of and never used many of the personal computer and Internet related utilities before the start of the project. Couple that with many participants reporting that work was where they primarily used a computer and the project providing basic computer training, a personal computer and high-speed Internet access in the home and the resulting continued computer use, the project's impact becomes that much more exciting.

SUMMARY

> *"Although consideration of demographic changes may be important to understand the complex nature and basis of changes in family structure, it is hardly sufficient ... changes in demographic factors are generally a function of broader economic, political, and social trends."*
>
> William Julius Wilson & Kathryn M. Neckerman, (1986)

The demographics of the participating households and full participating households were somewhat representative of the development as a whole. The full participant demographics are also representative of the population with which the digital divide is most concerned. With nearly 60% of participating households not having a computer in the home and 55% of participating household representatives considering themselves beginners, the Camfield Estates-MIT Creating Community Connections Project is having an impact on home computer and Internet use for project participants at Camfield and at home. The project also stands to enhance and support the skills of those considered intermediate or expertly skilled in computers.

The breakdown of full participating household demographics is drawn from Table 3-5 and is shown in Table 3-28.

Table 3-28: Full participant marital status, race/ethnicity and with children under 18 in the household.

	Children under 18	
Marital Status[a]	African-American	Hispanic
SFC[b]	11	1
MC[c]	4	1

[a] n=17 (The 3 SNC households are excluded from this table)
[b] SFC = Single female with related children under 18 years of age.
[c] MC = Married female or Male with related children under 18 years of age.

The project, at the time of its inception in 2000 was unique compared to similar efforts around the country. Our approach merged a low-income community-based technology initiative with research and evaluation components to measure technology's impact. As indicated by the partial post-survey findings, the full participating households are making good use of their computer

and Internet access on a fairly regular basis. Ninety percent of full participants' stating they use their computer with the Internet every day or almost every day demonstrates that the technology is increasingly being integrated into their day-to-day activities. Much of the community information and communication before the project was by word of mouth, flyer circulation, and/or community meetings. In addition to full participants frequently and occasionally browsing the Internet, sending, and receiving e-mail, full participants also frequently engaged in many other tasks such as work and school related activities, game playing, researching interests, and communicating with friends and family members. This also indicates an increased adoption of personal computing and Internet use by full participating households.

Although full participants, as compared to participants were not demographically different, pre-survey findings were useful in gaining some insight into what factors may have contributed to some participants dropping out. Connectivity issues, time constraints and the language barrier were the more obvious reasons why some participants chose not to continue. Given that 20 out 37 participants completed the project and data collection at time1 and time2, it was reasonable to assume that perhaps their characteristics may be different from the 17 that did not continue and complete the survey at time2. A comparison of time1 responses revealed that full participants were more familiar with technology terms and reported having a higher computer skill level. This suggests that technological familiarity may have played a role in full participants continuing in the project.

Interestingly, when I compared time1 answers for perception of the role of the Internet in a sense of empowerment and self-sufficiency there was no obvious difference between full participants and participants. This suggests the intention to complete the project was there and that there was no difference in the perceived value and relevance of technology. If there had a been a difference in responses, meaning if participants at time1 responded that they disagreed or strongly disagreed that the Internet plays a role then one could conclude that technology was not important to those who dropped out of the project.

Lastly, efforts to pinpoint why certain segments of the population do not engage technology, by choice or not by choice, will help to better tailor initiatives to meet user needs. (i.e. skill building,

information gathering) and characteristics (i.e. race, language, culture, job status), that influence the likelihood that these populations will engage technology.

CHAPTER FOUR

FINDINGS: REGAINING CAMFIELD'S SENSE OF COMMUNITY

INTRODUCTION

The previous chapter included an extensive review of Camfield's demographics and findings on participant IT usage, given its $16 million dollar improvements and now the introduction of technology, the Camfield development today is not the Camfield it was ten or even five years ago. By the time the Creating Community Connections Project was first introduced to the Camfield residents in the summer of 2000, they had struggled through many challenges related to the physical deterioration of the property and crime. A success within itself, residents formed the Camfield Tenants Association (CTA), established over 20 years ago, as a way to regain some control over their neighborhood.

By the fall of 2000, most of Camfield Estates residents had moved back to the development after having been relocated for two years or more. Residents focused on reorienting themselves to their new living space and settling in. Although residents admired the beauty of their new, clean, and secure development, they could not fully enjoy this victory; there were still many issues to be resolved. The tenant board had to press MassHousing for assurances that all outstanding construction orders and problems were fixed.

The struggle to get that far, reconstruction, relocation and the move back in, had taken its toll. Additionally, how Camfield was defined as a community had also changed. Residents who had lived as neighbors for many years were dispersed throughout the greater Boston area. Their levels of social contact and communication decreased over the two years. As one resident put it, "When we got back we just seemed like we were less together as a community." During the relocation, resident communication and information about the construction project, or changes were funneled through the tenant board. This method limited inter-resident communication. Moreover, the new townhouse layout that was designed to keep outsiders out unfortunately also limited the frequency with which residents were able to interact in the common areas (see Figure 4-1).

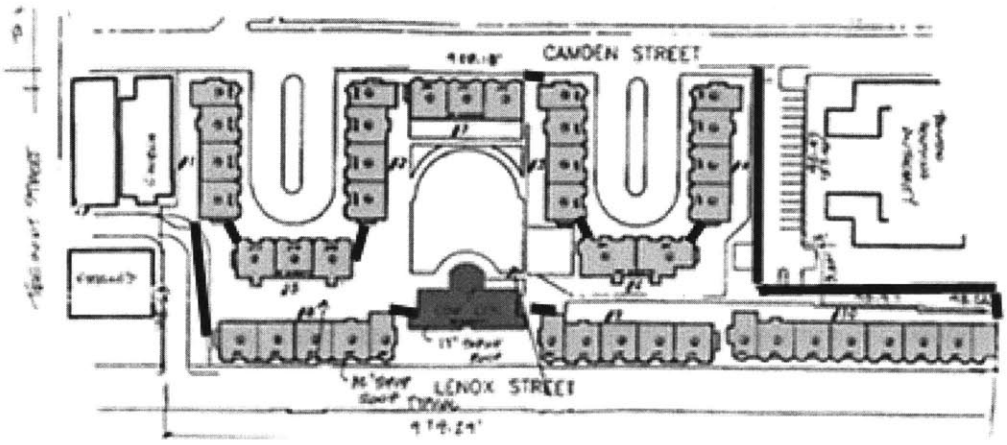


Figure 4-1: Map of Camfield Estates gate layout.

This gated community design did not lend itself to trespassing. The solid black lines in Figure 4-1 represent the gates that restrict foot traffic through Camfield Estates. The gates are strategically positioned in a manner referred to as a defensive design. The front door of each unit faces outward toward the street as compared to the previous tenement design of corridors of front doors, shared common entrances, and exit points. This previous design would increase the likelihood of encountering a neighbor. This new design, however, meant that residents essentially could go in and out of their front door and not come in contact with other residents. Given the stress and detachment caused by the relocation, and the development's new layout, the Camfield community was at risk of remaining fragmented due to limitations on social contact.

The Creating Community Connections Project was the second of such efforts, and the Camfield Estates Neighborhood Technology Center (CENTC) as described in chapter two was the first. The Creating Community Connections Project was focused on in-home computer and Internet use while the CENTC is focused at a local facility. The CENTC and the Creating Community Connections Project introduced personal computing and Internet access to Camfield with the intention of it playing a role in supporting Camfield's community. The technology had an immediate impact as demonstrated by the initially high levels of usage shown in Chapter Three. The transparent proxy-server web logs of the first eight months gave us a sense of how the Internet access was being used. This chapter presents data gathered on the role that a personal computer and Internet access played at Camfield. Specifically, this chapter details how in-home

personal computing and Internet access contributed to an increased sense of connectedness and sense of community for the project's full participants. In addition, I examine social contact and centralization of communication findings.

PLAN OF ANALYSIS

This chapter analyzes the pre- and post-survey data in order to identify the project's impact on participant's sense of community, sense of connectedness and social capital. The survey instrument is included in Appendix A. Correlations were conducted to check the direction of the relationship between Internet and e-mail use and a sense of community, social contact, and social tie strength. Through the analysis of the historical transformations at Camfield, including its current use of information technology, this research tests the hypothesis that Internet use correlates with an increased sense of connectedness, sense of community and social contact. The social capital analysis used draws upon Haase, Wellman, Witte, and Hampton (2002) *Capitalizing on the Internet Social Contact, Civic Engagement, and Sense of Community.* The social network densities based on pre- and post-survey data were analyzed for the frequency in which participants visited other residents' homes over six months, communication with other residents on a regular basis and recognition of the names of other residents.

Survey data items (described in Chapter Two), were analyzed using UCINet Network Analysis tool for density analysis, paired sample t-tests for longitudinal data and bivariate correlations. The social network data was structured in a binary form and the density calculation were the total number of ties divided by the total number of possible ties. The paired sample t-test was used to compare the means of the pre- and post- values of a single variable in a single group. The bivariate correlations were used to measure possible linear associations.

Each of the areas measured, sense of connectedness, sense of community and social contact, includes an explanation of the instrument questions, and the results. The time-span between time1 and time2 represents approximately one year from about September 2000 to September 2001.

When I began to run the numbers, I could not help feeling energized by what I found in the data. I realized that something interesting had happened, and then quickly realized, that it may not have necessarily been as a result of the introduction of technology. Given research protocol and the application of statistics (in addition to other factors) in explaining social phenomenon, it would not be appropriate to suggest that this research project was the *sole* cause of an increased sense of community or community activity at Camfield. First, I will present the survey results and then, in chapters five and six, I focus on their interpretation.

SENSE OF CONNECTEDNESS AND COMMUNITY

The *connectedness* measure included questions on feelings of connectedness in efforts to capture a full participant's sense of connectedness not only to family and friends, but also to the Camfield community in general. The rationale for including this measure was to find out if the presence of the in-home personal computer took away from a project participant's connectedness. The following is a sample question from this measure:

Would you say that you always, sometimes, or never feel a part of the local community in Camfield Estates?
☐Don't know ☐Never ☐Sometimes ☐Always

SOCIAL CONTACT

Social contact measures included questions regarding full participant's visits to other full participant's homes, communication to others, recognition of names of other residents, and e-mails sent to others. The rationale for including this measure was to check for evidence of social isolation and a decrease in social contact. This question represents the strongest of the social contact and social ties measured in this study. It proved to be the best indicator during this study of social contact. The following are two sample items from this measure. These items were presented with names of all adult Camfield residents:

a. [Identify] Those whom you have invited into your home in the last 6 months.

b. [Identify] Those on this list who have invited you into their home.

How often full participants talked to other full participants and Camfield residents during the last six months represents a level of social contact, but to a lesser degree than visiting social tie. The following is from a series of items designed to measure social contacts and social ties, names of Camfield residents were also provided to answer this item:

a. [Identify] Those whom you talk to on what you would consider a regular basis.

How many of the names full participants' recognized represented familiarity, which is considered the first stage or introductory stage in social contact and social ties. The following is from a series of items designed to measure what is considered the weakest of social ties:

a. [Identify] Those whom you recognize by name.

The following are items from a series designed to measure mode of communication and the use of technology to communicate versus the telephone:

a. [Identify] Those whom you have contacted using e-mail in the last six months.

b. [Identify] Those whom you have called on the phone in the last six months.

We used a square symmetrical network in keeping with Hampton (2001) in order to calculate tie strength densities. Using this method of social network analysis allows for analysis of only full participants' pre- and post-surveys. The square symmetrical network can unfortunately bias the network density calculation. The square symmetrical network method makes an assumption about contact. If a full participant identifies another full participant, or resident as having visited

their home, or as having talked to them on a regular basis, then the square symmetrical network analysis assumes reciprocation of the social contact or connection. Finally, using the symmetrized data, a Krackplot diagram[25] was created based on data gathered on the recognition of names.

DEGREE AND BETWEENNESS CENTRALITY

Centrality was measured based on social contact, visits, communication, recognition, and e-mail to determine degree and betweenness centrality. Drawing on Freeman's (1979), degree centrality measures the centrality of actors in the network. The total number of people directly connected to an individual in the network is used to calculate degree centrality. Moreover, drawing on Prell (2003), options used for counting these connections are "in-degree" and "out-degree." In-degree represents how many selections a person receives, and is a measure for determining the popularity of an individual. Out-degree represents how many selections a person makes of other people in the network.

Betweenness centrality measures the number of times an actor stands between two other actors in a network, who have no connection to each other. Finally, drawing on Borgatti and Everett's (1998) work, higher degree and betweenness centrality is interpreted as positive. Higher degree centrality is positive because the more people one has relationships with, the greater the chance that that individual has the resource one needs (Borgatti, Jones, & Everett, 1998). Higher betweenness centrality is positive because actors with high betweenness link together actors who are otherwise unconnected, creating opportunities for exploitation of information and control benefits (Borgatti et al., 1998). For this analysis, the totals are in percentages, with increases in degree and betweenness centrality representing higher individual interconnectedness within the network. The centrality analysis was done using UCINet 5 for Windows V5.74 Analytic Technologies (1999-2001).

[25] Krackplot Diagram is a graphical representation of social network connectedness using Krackplot 3.0: An Improved Network Drawing Program connections, Vol. 17(2):53-55 (Dec 1994).

SENSE OF COMMUNITY FINDINGS

The first part of my hypothesis was that low-income residents, in particular Camfield residents, who have a personal computer and Internet access in their home have an increased likelihood to feel a sense of community, have an increase in social contact and would nurture stronger social ties. The previous section described particular items that were used to test this hypothesis. The next section contains my analysis of the data and findings on a sense of community at Camfield.

As mentioned earlier, a full participant is an adult representative of one household and is usually, but not always, the head of the household. Full participants are representatives of 20 Camfield households. In efforts to understand technology's influence on sense of community, full participants were asked at time1 and time2 about their relation to the Camfield community. The following is a sample question from this measure:

a. Would you say that you always, sometimes, or never feel a part of the local community in Camfield Estates? ☐Always ☐Sometimes ☐Never ☐Don't know

This question was used as a sensitivity measure to get a sense of full participants' level of connection to the Camfield community. At both time1 and time2, nearly 90% responded that he or she "sometimes" or "always" felt a part of the community. There was little change between time1 and time2 with full participants maintaining a strong sense of connection to the community. It was important to understand if there was a relationship between the full participant's Internet and e-mail use, and a maintained sense of connectedness. In addition to being asked about Internet use and e-mail use as illustrated in Table 3-26 and Table 3-27, full participants were also asked about its importance to them:

a. Having access to the Internet in my home is important for empowerment. ☐Strongly Disagree ☐Disagree ☐Neither ☐Agree ☐Strongly Agree

This question as illustrated in Table 3-16 allows for understanding participants perception of the relevance and value of Internet access. At both time1 and time2 50% of respondents reported they agreed, while nearly 45% reported they strongly agreed that Internet access was important for empowerment. There again was little change between time1 and time2 with full participants maintaining a strong sense of the relevance and value of Internet access. The findings regarding Internet use, e-mail use and Internet empowerment were then correlated with feeling a part of the Camfield community (see Table 4-1). These correlations revealed a relationship between a sense of community and Internet use (0.474) empowerment from Internet use (0.426). There were no relationships between e-mail use and feeling a part of the Camfield community (see Table 4-1).

Table 4-1: Correlation coefficients between a 'sense of community' and 'Internet use'[26], 'e-mail use', or 'Internet empowerment'[27].

Question	Internet Use	E-mail Use	Internet Empowerment
Feel a part of the Camfield community[28]	0.474 [c]	0.049	0.426 [b]

[a] n=20
[b] Correlation is significant at the 0.10 level for small sample size (2-tailed)[29]
[c] Correlation is significant at the 0.05 level (2-tailed).

The findings presented in the table would suggest a relationship between Internet use, a participant's ability to connect to information and their sense of feeling a part of the community. The correlation between community and Internet empowerment suggests a relationship between a full participant's sense of control and awareness, and his/her feeling a part of the Camfield community.

It was found that, after having computers and Internet access for more than a year, full participants overwhelmingly felt equally (32%) or more connected (37%) to other Camfield

[26] This measure is coded as 0–never, 1–once/year, 5–few times/year, 12–once/month, 250–almost every day, and 365–every day (there were no selections of don't know). In an attempt to determine the sensitivity of the scale several coding options were tested, and it was found that the correlation coefficients did not change significantly.
[27] This measure is coded as 0–strongly disagree, 1–disagree, 2–agree, 3–strongly agree.
[28] This measures is coded as 0–never, 1–don't know, 2–sometimes, 3–always.
[29] Given the small sample size we have considered the relationship worth noting if significant at a 0.10 level.

residents (see Table 4-2). This feeling of connectedness was enhanced by the ease of information access from Internet and e-mail use. As one full participant stated, "It's easy to get a message to the residents and I can do it from home." Another participant said, "It's especially good for those residents that are not able to get out as often, so they are able to stay connected with what is going on at Camfield." Additionally, it was found that full participants felt equally (37%) or more connected (21%) to the Camfield Tenant Association board. "To obtain information regarding Camfield, I usually go to our site," acknowledged one full participant. Finally, residents felt equally (32%), or more connected (53%) locally and equally (26%), or more (53%) connected beyond their local area to family members. As confirmed by one full participant who stated, "I am able to share information about hereditary family health conditions with family members here at Camfield and in other parts of the country." As shown in Table 4-2 [30], the comments by several of the full participants were supported by correlations with Internet (see Table 3-26) and e-mail use (see Table 3-27).

[30] *Not sure* and *n/a* response category is not included in Table, but is included in the correlation coefficients.

Table 4-2: Full participants' feeling of connectedness[31], since receiving a computer and Internet access, and Internet and e-mail use.

	Responses			Correlation Coefficients	
Question[a]	More Connected	Equally Connected	Less Connected	E-mail Use	Internet Use
Family/friends in your local area?	53%	32%	5%	.615 [d]	--
Family/friends not in your local area?	53%	26%	11%	.500 [c]	--
Residents at Camfield?	37%	32%	5%	--	--
Camfield Tenants Association board?	21%	37%	16%	--	.438 [b]
People inside your local community?	32%	26%	16%	--	.332 [b]
People outside your local community?	42%	26%	11%	.461 [c]	--

[a] n=20
[b] Correlation is significant at the 0.10 level for small sample size (2-tailed).
[c] Correlation is significant at the 0.05 level (2-tailed).
[d] Correlation is significant at the 0.01 level (2-tailed).

The apparent relationship between e-mail use and full participants' sense of connectedness to family, friends and people outside of their local community is interesting. It suggests that the e-mail has a role in supporting interpersonal connections with people over distances. Also interesting is the possible relationship between Internet use and the connectedness locally with the Camfield board and people inside their local community. This suggests that other online functionality besides e-mail use encourage local connectivity. Feeling connected to the Camfield board was most likely influenced by on-line CTA information and communication to residents.

[31] This measure is coded as 1 – not sure, 2 – less connected, 3 – equally connected, 4 – more connected.

SOCIAL CONTACT

Initially, when the Creating Community Connections Project was introduced, many residents (perhaps based on a lack of understanding) were not sure about the role of technology. As mentioned earlier, nearly 60% of participants said they did not have a computer in their home, while 55% of participants considered themselves beginners, 32% said they had some experience with computers, and 14% considered their skills advanced. As a result of the training at the neighborhood technology center, many residents came in contact with other residents for the first time in years. One participant was heard saying to another participant: "Hey man, I haven't seen you since before they moved us out! How is your family?" I hypothesized that technology would aid in an increase in social contact and nurture stronger social ties. Identifying the mode and density of these relationships and technology's influence was a central focus of this study. Measurement of full participants' social contact and social ties were conducted based on the self-reported activity of having talked to, visited, recognized the name of, e-mailed or telephoned a fellow participant.

To help clarify our approach to data analysis, it is important to delineate the group names (full participants and Camfield community members) and their interaction/relationship. Data was analyzed regarding the interaction between full participants and other full participants, and the interaction between full participants and other Camfield community members. This relationship is diagramed in Figure 4-2. Granovetter (1973), in his seminal work *Strength of Weak Ties,* maintains that more substantive exchanges occur more often between weaker ties than stronger ties. Weak ties are considered a "bridge" or connection between two networks, while strong ties are connections between members of the same network. Members of the same network most likely have similar information, whereas members of different networks are more likely to have different or new information. The exchange between networks, through weak ties or bridges, will involve the more substantive exchanges discussed.

Full participants are considered a sub-network within the Camfield network. This is important for understanding whether weak ties or bridges occurred between the full participant network

and the broader Camfield network. If social contacts occurred among full participants, and not between full participants and the general Camfield community, then this could be interpreted to mean that Internet use may have contributed to isolation and taken away from community.

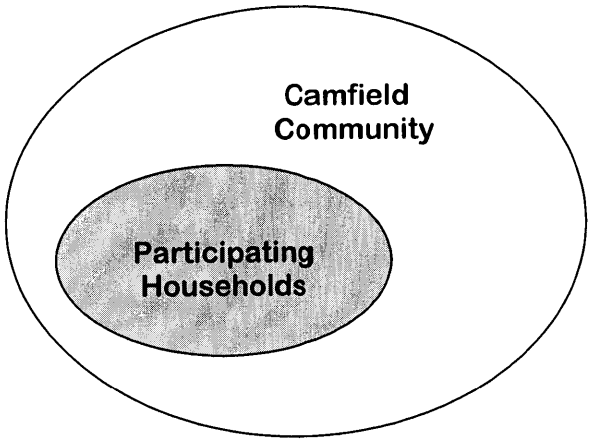


Figure 4-2: Representation of the Camfield households and subset of participating households.

It was found that not only did social contact increase during the life of the project, among full participants (P-to-P), but it also increased from full participants to the general Camfield community (P-to-C). See Table 4-3 and Table 4-4 for P-P and P-C results respectively. For example, the 'visited' row of Table 4-3 indicates that full participants averaged 1.1 visits to the home of other full participants during the six months before time1. The P-to-P 'visited' average increased to 1.5 for the six months prior to Time2 but that change is not statistically significant given the maximum possible number of visits is 19. The 'recognized' and 'phoned' measures did increase significantly for the P-to-P case.

The P-to-C results in Table 4-4 also stayed about the same or increased significantly. For example, the 'visited' row indicates an average of 1.5 visits of full participants to other (non full-participant) Camfield residents during the six months before time1. This number increased significantly to 8.8 during the six months before time2.

Table 4-3: Social contact in the last six months among full participants (P-to-P).

	Mean			Paired Sample	
	time1	time2	Diff	t	Sig.
Visited[a b]	1.10	1.50	0.40	1.322	--
Talked To[a b]	2.85	2.60	(0.25) [f]	0.641	--
Recognized [a b]	6.50	8.80	2.30	1.973	0.063[c]
E-mailed[a b]	0.65	1.30	0.65	1.530	--
Phoned[a b]	0.80	1.45	0.65	1.716	0.103[c]

[a] n= 19
[b] List of 19 other participant names was provided.
[c] Correlation is significant at the 0.10 level for small sample size (2-tailed).
[d] Correlation is significant at the 0.05 level (2-tailed).
[e] Correlation is significant at the 0.01 level (2-tailed).
[f] Brackets represents a negative change from time1 to time2.

Table 4-4: Social contact in the last six months of full participants to Camfield community (P-to-C).

	Mean			Paired Sample	
	time1	time2	Diff	t	Sig.
Visited	1.50	8.80	7.30	3.910	0.001[d]
Talked To	9.70	9.25	(0.45) [e]	0.270	--
Recognized	28.6	38.3	10.3	1.163	--
E-mailed	1.20	2.85	1.65	1.970	0.064 [b]
Phoned	2.35	4.35	2.00	1.539	--

[a] n=168 (all Camfield residents in non-full participant households)
[b] Correlation is significant at the 0.10 level for small sample size (2-tailed).
[c] Correlation is significant at the 0.05 level (2-tailed).
[d] Correlation is significant at the 0.01 level (2-tailed).
[e] Brackets represents a negative change from time1 to time2.

The fact that social contacts stayed the same or increased suggests that the introduction of home computing did not diminish participant's contact with other residents. The P-to-P numbers in Table 4-3 are not directly comparable to the P-to-C numbers in Table 4-4 since there are so many more contact possibilities among the 169 non-full-participant residents than among the 19 other full participants. On a percentage basis, the 1.5 average for P-to-P 'visits' at time2 represents 1.5/19 = 7.9% of the maximum possible number of visits whereas the 1.5 average for P-to-C 'visits' at Time1 represents 1.5/169 = 0.9% of the maximum possible visits, and the 8.8 average for P-to-C 'visits' at Time2 is 8.8/169 = 5.2% of the maximum. Therefore, the P-to-C visit proportion started out quite low but by time2, grew considerably and ended up similar to the P-to-P visit proportion. The low number of visits before time1 is understandable since the residents had only recently returned to the renovated Camfield units. The fact that P-to-C contacts ended up similar to P-to-P contacts indicates that there really was not a clique per se developing among full participants.

Individual Frequencies

I now look at the data in more detail. By analyzing individual frequencies, it can be seen that although there are some cases where home visits among full participants decreased or remained the same from time1 to time2, generally there was an increase in home visits (see Figure 4-3). Additionally, when comparing full participant to full participant visits, with full participant to Camfield resident visits (see Figure 4-4), there was a consistent increase in home visits.

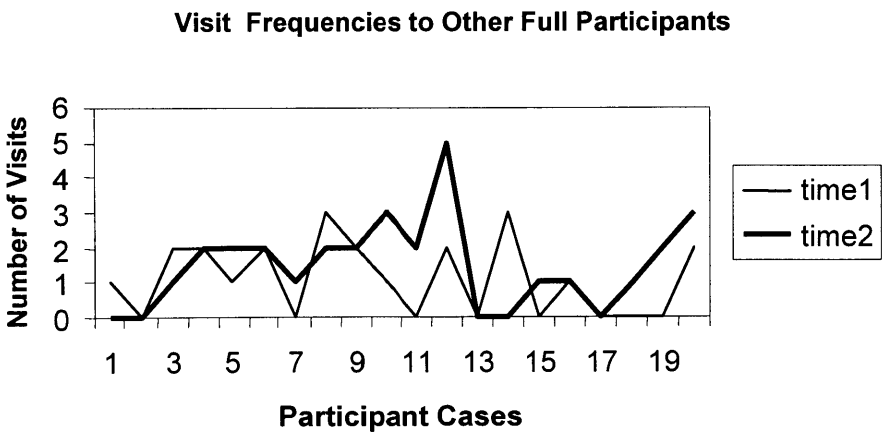


Figure 4-3: Frequency of home visits by full participants to other participants in the last six months.

As shown in Figure 4-3 and other frequency figures, the change that has occurred with all full participants can be attributed to a large change in frequency among specific individuals. *Visiting* frequency by specific individuals shifted in full participant to Camfield community (see Figure 4-4).

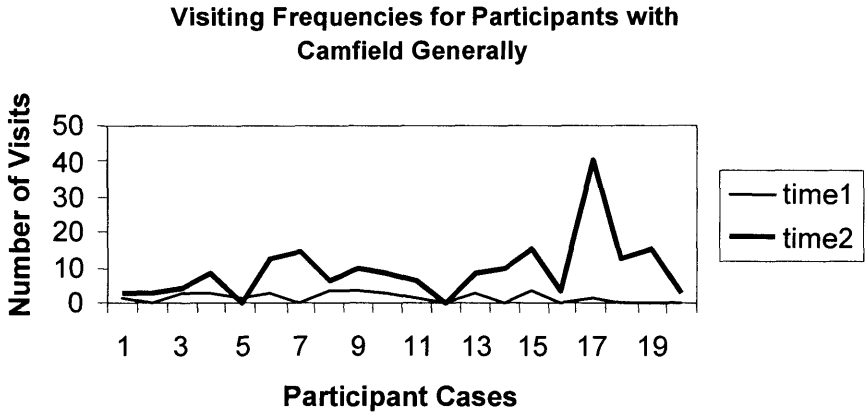


Figure 4-4: Frequency of home visits by full participants to Camfield residents in the last six months.

Data analysis for "talking to on a regular basis" showed inconclusive results in both instances of "talked to" between full participants, and "talked to" between full participants and Camfield members (see Figure 4-5 and Figure 4-6).

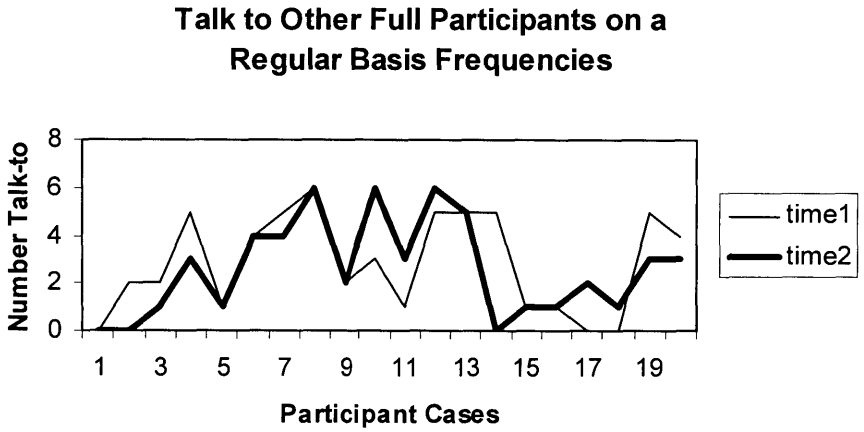


Figure 4-5: Frequency of full participants talking to other full participants on a regular basis in last six months.

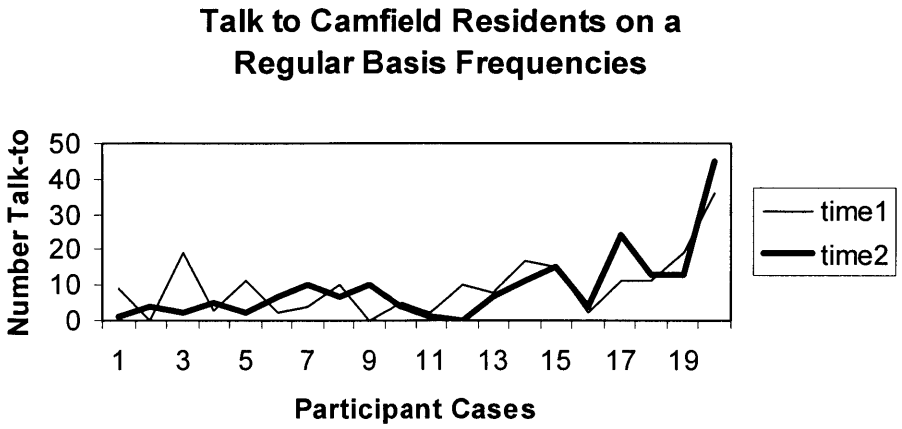


Figure 4-6: Frequency of full participants having talked to Camfield residents on a regular basis in last six months.

Although recognition of another full participant's name is considered the weaker of the social connections, it increased from time1 to time2 (see Figure 4-7). For most full participants, this represents an increase in familiarity with other Camfield residents. This strand of familiarity is viewed as the initial step in starting other social connections. The increase from time1 to time2 for full participants who recognized other residents was negligible and less consistent (see Figure 4-8).

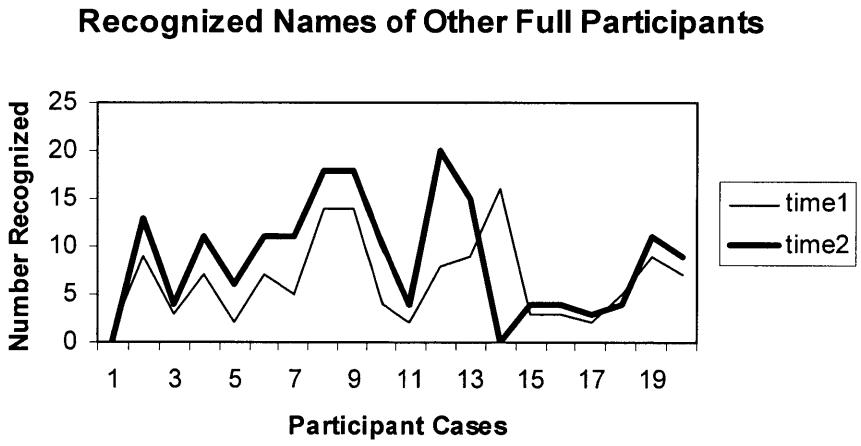


Figure 4-7: Frequency of full participants who recognized names of other full participants.

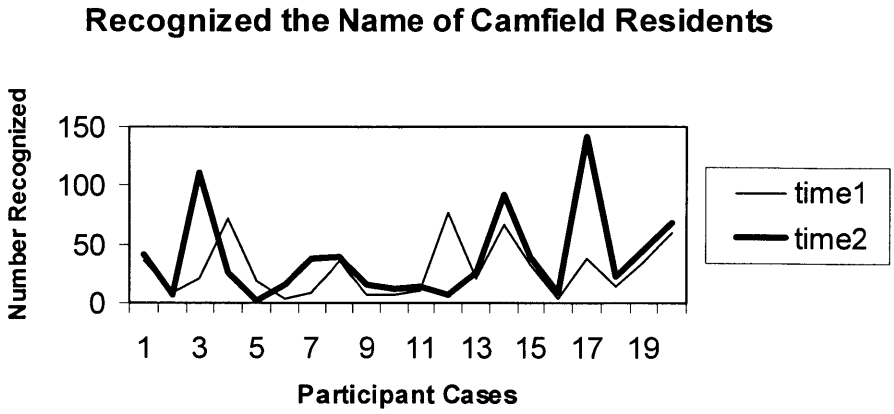


Figure 4-8: Frequency of full participants who recognized names of other Camfield residents.

Although not significant, communication modes via both e-mail and telephone increased. There was a larger increase from time1 to time2 for several full participants. Since most full participants did not have a computer, Internet access, or computer experience before time1, the increase in e-mail use (see Figure 4-9 and Figure 4-10) in both instances was not surprising. There was an increase in telephone use (see Figure 4-11 and Figure 4-12) among several full participants and among these participants and Camfield community members. This suggests that full participant communication was not limited among project members but extended to the Camfield community.

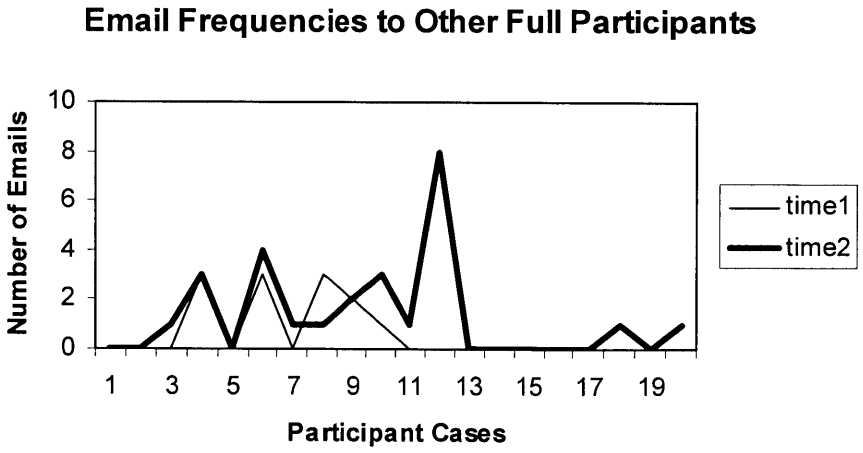


Figure 4-9: Frequency of full participants who e-mailed other full participants in last six months.

The change in email frequencies is not surprising since many full participants did not have computers or Internet access at the start of the project. As with other social contact frequencies the change of specific individual email frequencies from Figure 4-9 to Figure 4-10 shifted to different individuals. Again, the large change among specific individuals influences the overall average.

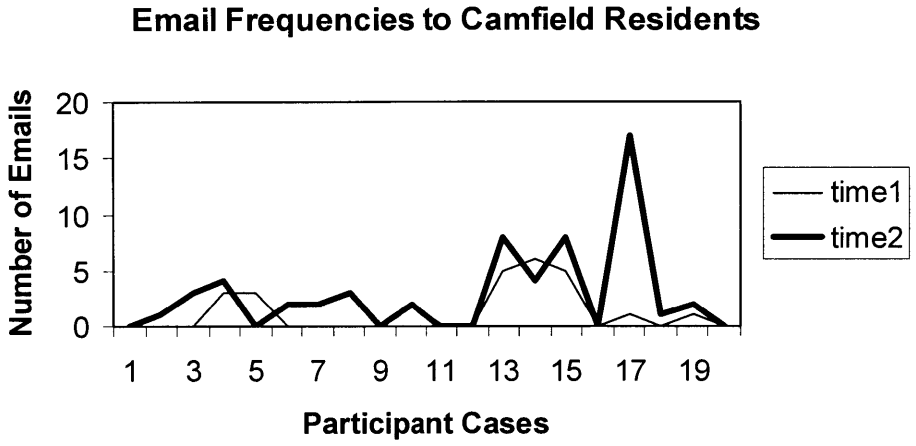


Figure 4-10: Frequency of full participants who e-mailed other Camfield residents in last six months.

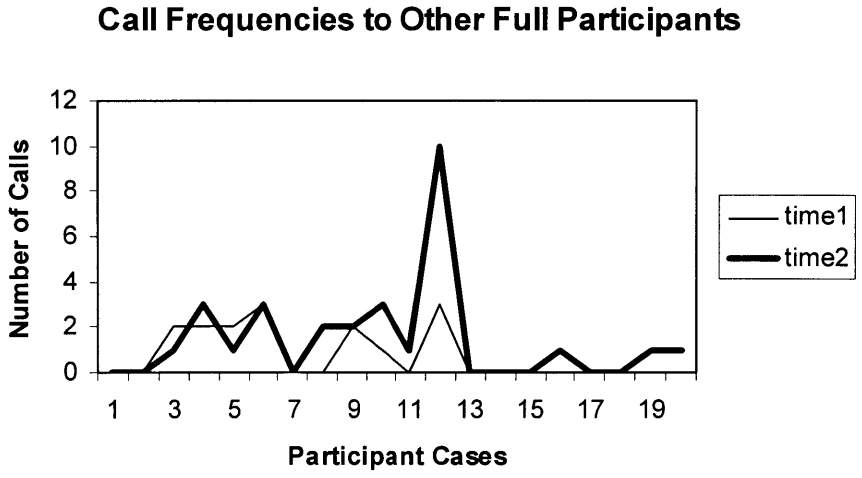


Figure 4-11: Frequency of full participants who called other full participants in last six months.

Individual phone call frequencies occurred along similar patterns of some of the other forms of social contact. The higher frequencies again shifted from one set of participant cases as shown in Figure 4-11, to a different set of participant cases as shown in Figure 4-12. It can't be said conclusively but the increased activity from full participants to other Camfield residents might be attributed to several board members that participated and contacting other residents as a part of their board function.

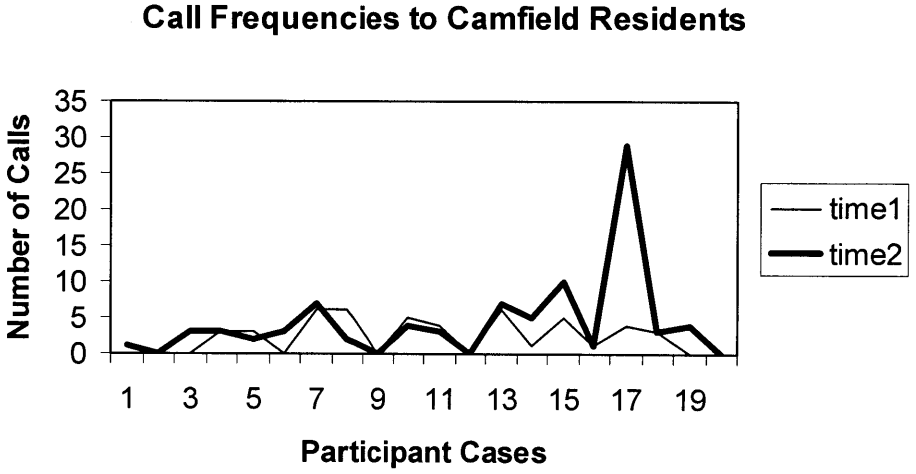


Figure 4-12: Frequency of full participants who called other Camfield residents in last six months.

Figure 4-7 through Figure 4-12 suggest little change and it is apparent the change in average is due to a few specific cases for which there is a big change. This leaves the obvious question as to who these individuals might be. As was mentioned earlier our agreement with participants does not allow us to connect specific individuals with specific findings.

The finding that there was an increase in most of the social contacts is interesting. When each measure was correlated with frequency of Internet and e-mail use, there was, however, no significant relationship. The occurrence of increased social contact is also interesting to note. Although the cause of this increase cannot be conclusively established with the data, the increase in social contact can support a finding that technology did not have a negative impact. As discussed earlier this may be attributed to the move back to the development and the technology. However, the increase in social contact suggests that the frequency of Internet and e-mail use do not take away from acts of social contact. The "talk to" average did not change, while the

"visited" average changed; this is interesting because one would assume that if you visited a person you would also talk to him/her. Increased visits between time1 and time2 may be attributed to residents' visiting each other to see each other's new homes.

Finally, the finding that social ties from full project participants to the Camfield community increased, and the finding that ties are occurring from the sub-network of full participants to the larger network of the Camfield community and are important indicators that the project did not negatively influence social ties or isolate participants from the broader Camfield population.

Network Density

The next phase of social network analysis is network density. The previous section described findings about the average frequency of individual social contact. The network density is the number of communications among members of the network divided by the total number of possible communications. The density findings lend credence to the findings that social connections occurred and demonstrated how much these connections were being reciprocated and the extent to which all or only a few of the full participants accounted for the reported contacts. Twenty Camfield residents completed both the pre-and post-surveys, which produced 190 potential[32] social ties or connections in the network.

Table 4-5, compares densities of the social network measures used and is represented by the percentages. The density of the social connections either increased or stayed the same from time1 to time2. The highest density increase occurred with "recognition of other residents names" (diff = 0.1079) (see Table 4-5). A slight increase in density occurred with "visited other residents" (diff = 0.0474), "e-mailing other residents" (diff = 0.0632) and "phoning other residents" (diff = 0.0526) and no change occurred in "talk to on a regular basis."

[32] Based on Wasserman and Faust (1994), potential network ties is calculated as g(g-1)/2, where g is the total number of nodes in the network. That is, 20 participants had 19 potential connections each with all connections recorded as mutual.

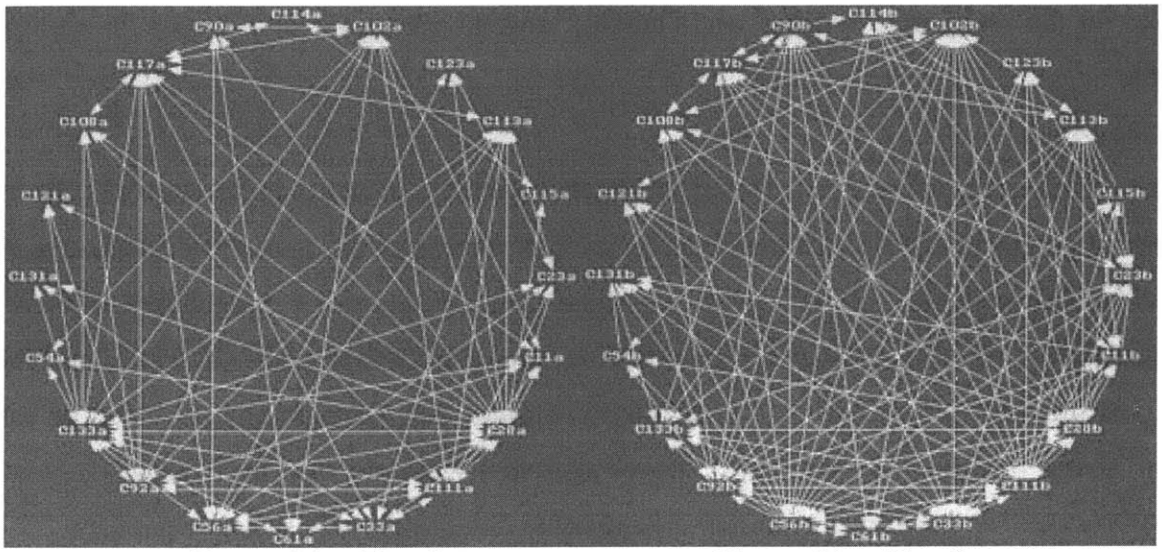
Table 4-5: Densities of social network measures.

	Network Densities		
	Time1(%)	Time2(%)	Diff(%)
Visited[a] *Symmetrized*[33]	6.32	11.1	4.74[c]
Talked To[a] *Symmetrized*	20.5	20.0	0.53[e]
Recognized[a]	33.4	44.2	10.8[d]
	Communication Mode		
E-mail[a] *Symmetrized*	4.21	10.5	6.32[d]
Phone[a] *Symmetrized*	6.32	11.6	5.26[c]

[a] n=20
[b] Correlation is significant at the 0.10 level for small sample size (2-tailed).
[c] Correlation is significant at the 0.05 level (2-tailed).
[d] Correlation is significant at the 0.01 level (2-tailed).
[e] Represents a negative change from time1 to time2

A more dramatic representation of the density increase, for individual cases of recognition of names, from full participants to full participants, is presented in a Krackplot diagram (see Figure 4-13).

[33] Symmetrized data represents reciprocal contact. This means that if respondent1 says he/she visited the home of respondent2, it is safe assume that a reciprocal relationship exists. UCINet symmetrized the data based on this assumption.



Recognition Time1 **Recognition Time2**

Figure 4-13: Krackplot diagram of full participants who recognized names of other full participants and other residents.

We can see from this representation among full participants how the recognition of other full participants increases in density[34]. The increased density of the social contacts and ties in the network of full participants represented an increased opportunity for information and resource exchange. As with social contact frequencies, the densities of social contact correlated with Internet and e-mail use, but did not show a significant positive or negative relationship.

CENTRALITY AND THE DECENTRALIZATION OF CAMFIELD'S COMMUNICATIONS FINDINGS

When Camfield residents returned to their development, the customary method of staying informed, while relocated, was through the tenant association. Many felt that personal and informal communications among residents had lessened when residents returned to Camfield. Information channels became less distributed and more centralized. This section examines whether, during the life of the project, communication remained centralized. Centrality analysis

[34] Due to the number of Camfield residents, it was not feasible to do a Krackplot diagram of full participants to Camfield residents in general. The diagram would not be legible.

is done for the social ties, "visited" and "talk-to," and for communication modes "e-mail" and "phone."

As mentioned earlier, degree centrality measures the centrality of actors in the network. The total number of people directly connected to an individual in the network is used to calculate degree centrality. The variable "visited" is an important form of the social contact and showed an increase (diff = 12.28%) in degree centrality from pre- (10.53%) to post- (22.81%) (see Table 4-6). The increase of "visited" degree centrality suggests that full participants'[35] visiting each-others' homes became less centralized. Degree centrality was only used for "visited" because it was *symmetrized* and the other centrality measures did not operate with *symmetrized* data.

Table 4-6: Home invite degree centrality.

	Centrality (Degree)		
	Pre (%)	Post (%)	Diff
Visited[a] *Symmetrized*	10.53	22.81	12.28[b]

[a] n=20

[b] Correlation is significant at the 0.01 level (2-tailed). Generated using UCINET 5 for Windows V5.74 1999-2001 Analytic Technologies.

In-degree centrality for "talk to" showed a slight increase (diff = 1.94%) from pre-(17.73%) to post- (19.67%) and out-degree showed a decrease (diff = - 9.15%) from pre- (39.90) to post- (30.75) (see Table 4-7). This would suggest that members of the network received contact from many different members of the network, and that the network was becoming less centralized. There was an increase in the percentage of full participants who received e-mails (diff = 24.1%) from others, and sent e-mails (diff = 1.94%) to others from the pre- to post-survey. There was an increase in the percentage (diff = 35.2) from pre- (12.19%) to post- (47.37%) of full participants who received telephone contact.

[35] Centrality measures were only done for full participants to full participants because UCINet required the matrix to be square. Post survey data was only available for full participants.

Table 4-7: Talk to, e-mail, and phone—In and Out Degree Centrality.

	Centrality In-degree			Centrality Out-degree		
	Pre (%)	Post(%)	diff. (%)	Pre (%)	Post (%)	diff. (%)
Talk to[a]	17.73	19.67	1.94[c]	39.90	30.75	9.15[b d]
E-mail[a]	13.02	37.12	24.1[c]	18.56	20.50	1.94[c]
Phone[a]	12.19	47.37	35.18	28.81	19.67	9.14[c d]

[a] n=20
[b] Correlation is significant at the 0.05 level (2-tailed).
[c] Correlation is significant at the 0.01 level (2-tailed).
[d] Represents a negative change from time1 to time2.

The three communication areas in the betweenness centrality showed dramatic increase in the percentages (see Table 4-8). This finding suggests that more actors in the network are being directly connected. The betweenness measure suggests that more individuals are playing a role in connecting other individuals who are not connected, as opposed to connectivity being left to a few individuals in the network.

Table 4-8: Talk to, e-mail and phone--Betweenness Centrality.

	Centrality Betweenness		
	Pre (%)	Post (%)	diff (%)
Talk to	49.37	55.87	6.5[b]
E-mail	4.06	23.39	19.33
Phone	0.28	32.50	32.22[d]

[a] n=20
[b] Correlation is significant at the 0.10 level for small sample size (2-tailed).
[c] Correlation is significant at the 0.05 level (2-tailed).
[d] Correlation is significant at the 0.01 level (2-tailed).

These centrality findings suggest communication among full participants was becoming more distributed and less centralized. Full participants were communicating more directly with each

other. As mentioned earlier, and worth reiterating again, when the centrality findings were correlated with Internet and e-mail use, the relationship was not significant. This however, does not prevent us from recognizing that social connections occurred among full participants, and from full participants to the rest of Camfield.

SUMMARY AND CONCLUSION

Today Camfield is an attractive, well-kept, and secure housing development. What is most impressive is its resident leadership's historical commitment, not just to the up-keep of the physical property, but also to the up-keep of their relationships to each other. Although, the defensive design provided safety, it also threatened resident interaction.

Nearly 35% of the full participants have lived at Camfield since it was erected in the early 1970s. This fact provides insight into the tenacity of Camfield residents and their efforts. Camfield leaders have achieved enormous success, especially given the climate of public policy regarding affordable housing, and dwindling assistance for the low-income populations. (see Figure 4-14).

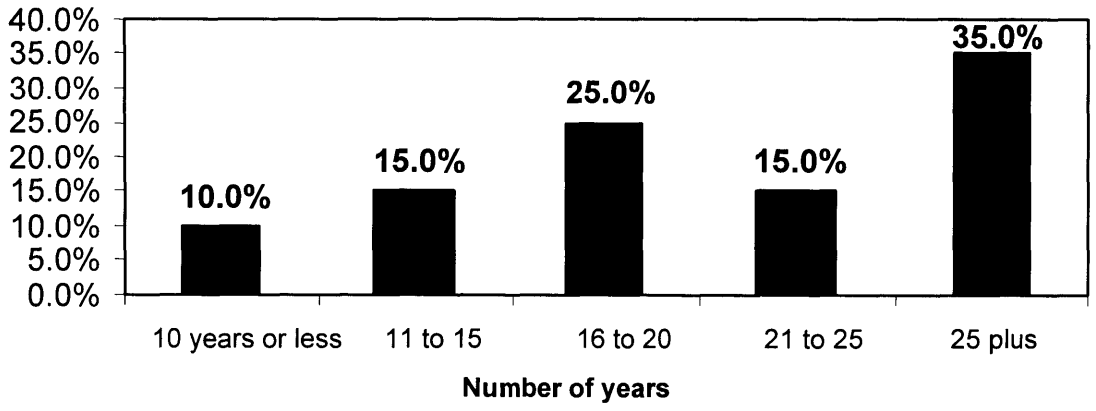


Figure 4-14: Length of residence at Camfield.

The data has shown that project participants had an increased sense of community and connectedness. The data also revealed that those social connections and communication modes

increased from time1 to time2, additionally, the increased density of these connections, and the mode demonstrates the strength of these social ties.

These findings support that *something* influenced a participant's sense of community and social interaction at Camfield. It is difficult to quantify what specific factors: the introduction of technology, the move back to Camfield or other social influences during the 2000 to 2002 time period that influenced this increase. The deployment of IT in this community, and its conclusive effects on social contact, and a sense of community cannot be unequivocally stated. Likewise, these findings did not reveal that respondents experienced fewer social interactions and a decrease in their sense of community. Given this, and at a minimum, technology was not an inhibitor of the development of social contacts. The study's sample size, non-random participant selection and lack of control group limits the generalizability of these findings to other low-income communities. However, this should not negate the value, and contribution of these research findings to the community and technology debate, but rather it should provide the motivation to replicate this research with a modified design to address these issues.

Finally, as urban housing policy continues to influence the design and construction of public housing in particular, in efforts to address safety concerns and congestion, it will be important for planners to remain aware that design and layout can impact the quality and frequency of resident interaction (see Bauman et al., 2000 for more on housing policy). Camfield's defensive design qualifies it as a gated community. These types of neighborhoods can be observed in many cities across this country. Perhaps as exemplified by the Netville study, new housing developments should include the necessary physical components to wire homes and establish on-line communities (as basic feature), in efforts to facilitate communication and resident interaction in cases where the development's design could potentially impede resident interaction.

Resident interactions is a topic discussed by William Julius Wilson who characterizes qualities of urban neighborhoods and offers specific elements that must be present in order for neighborhood social organization to develop which include resident social networks, resident ownership of the problems in neighborhood, and Resident participation. "Neighborhood social

organization," he writes, "depends on the extent of local friendship ties, the degree of social cohesion, the level of resident participation in formal and informal voluntary associations, density of and stability of formal organizations...In neighborhoods with high levels of social organization, adults are empowered to act to improve the quality of neighborhood life... (1996: 20)."

Camfield as neighborhood and a community recognizes the importance of, and continually strives to overcome the challenges of an urban, low-income environment. However, it will become increasingly important, in less organized and fragmented communities, to aid these communities in whichever manner possible to build, maintain and augment social networks for the well-being of its residents. Camfield exhibited many of the good social qualities Wilson identified; and admittedly, these qualities existed before the introduction of technology. However, the introduction of technology enabled residents to create new forms of social organization and communication and facilitated via the on-line community. The definitive role and effectiveness of virtual social contact/interactions, and virtual neighborhood networks is still to be determined. Given the limited generalizability of this study's findings, nevertheless, this study champions the potential role of technology in addressing the needs of low-income communities and their residents.

CHAPTER FIVE

FINDINGS: EMPOWERMENT AND SELF-SUFFICIENCY AT CAMFIELD ESTATES

INTRODUCTION

> *"...[T]he fallacy of the empty vessel...is, the belief by those who design new technologies that there is nothing there in advance of their arrival."*
>
> –Lucy Suchman & Brigitte Jordan,
> *Computerization and Women's Knowledge* (1997)

The last chapter presented findings about "sense of community," "social contact" and connection density, along with the finding that these connections became more decentralized once residents moved back. Although the cause of this cannot be completely attributed to the introduction of technology, qualitative signs of empowerment and changes in attitudes among other factors corroborate these findings. When talking about empowering low-income communities to become more self-sufficient, it is important to focus the effort towards those most in need, and most at risk within these vulnerable low-income communities. An interesting revelation was that the average participating household as described in Chapter Three, was a single African-American and Hispanic female-headed household with children under the age of 18 (SFC). This type of household and the investigation of its technology usage, was not a specific focus of this research, but it emerged so strongly in the data, it could not be ignored.

This chapter examines full participant's sense of empowerment, efforts to achieve some level of self-sufficiency and the role that having a personal computer and Internet access played in these efforts. Our measures for these attributes developed out of the empowerment and self-sufficiency literature discussed earlier. In particular the work of Mark Zimmerman (2000) entitled *Empowerment Theory: Psychological, Organizational and Community Levels of Analysis* is drawn upon. As discussed in Chapter One, empowerment is viewed as a process in which individuals learn to see a closer correspondence between their goals and a sense of how to achieve them, and a relationship between their efforts and life outcomes (Mechanic, 1991). Additionally, the self-sufficiency framework is focused on the sustainability of empowerment. This means that once an individual becomes empowered, will he/she stay that way, or will his/her sense of empowerment be limited to certain areas of his/her life? Self-sufficiency is an

indicator that empowerment has infiltrated one's life enabling one to have the capacity and the desire to do more for oneself. The self-sufficiency component draws upon the work of Miller and Din (1996) entitled *A New Approach for our Communities: Long-Term Self-Sufficiency A Practiced-Based Anti-Poverty Analysis.*

Lastly, qualitative data are included in my analysis as supportive material for the quantitative analysis.[36] The project's research design gathered qualitative data through pre- and post-surveys, interviews, observations, and one case study. Thematic analysis was used to code interview data and efforts to maintain validity included the triangulation of data sources (i.e., surveys, web logs, interviews, observations). In addition, participant feedback acted as additional validation of qualitative findings.

THE NATURE OF THE STRUGGLE

Before the Creating Community Connections Project and the renovation of Camfield Estates, the Camfield tenants had experiences, which illustrated the potential for information technology to be empowering. During the DemoDispo process starting in the early 1994, the Camfield Tenants Association (CTA) and its residents managed, successfully, to fight and keep HUD from putting their homes out to auction. The CTA struggled with many important decisions along the way, such as whether to rehabilitate the existing facility or raze it and build a new one. A totally new townhouse structure was ultimately decided on, but not without considerable deliberation.

The residents, HUD and MassHousing had reached an impasse over the form of rehabilitation the old Camfield Gardens would undergo. The Camfield tenants wanted a new townhouse complex, while the HUD and MassHousing wanted more or less a cosmetic face-lift. Camfield leaders representing their constituents' pushed for a total razing of the property and development of new townhouse type of structures. In direct opposition to the sentiments of the residents, HUD and MassHousing viewed a basic rehabilitation of the existing facility as being a less costly and faster construction solution. A stalemate developed. Several meetings took place between the

[36] The survey data collected, as described in Chapter Two, was analyzed using paired sample t-tests and bivariate correlations. The paired sample t-test compared the means of the pre- and post-values of a single variable in a single group. The bivariate correlations were used to measure possible linear associations.

parties without a resolution. The CTA continued to fight for their interests despite the obvious disproportionate power relationship.

During an interview with a Camfield board member, the topic of the rehabilitation came up within the context of discussing empowerment. This board member told me about an experience she had in a HUD chat room, while she was chatting with other tenants across the country about the challenges of tenant association efforts. At the time, the then Secretary of Housing and Urban Development, Henry Cisneros, entered the chat room. Having been sworn in as secretary in 1993 he took great efforts to connect with people who were working directly in the public housing environment. He asked people to share with him some of what was happening at their respective developments. This was a little scary at first for this board member because she was now chatting with the top official of HUD. Several of the chatters began to probe him for verification of his identity, despite his obvious username. After a little convincing, the chat room members began to share some of their challenges and concerns. This board member told me how she began telling Secretary Cisneros what was happening with their deadlock over new townhouses or rehabilitating the old structure and viewed the secretary's replay that, "Someone from my office will look into it," as well-meaning, but I got the impression she had heard that before.

Several days later, there was a flurry of activity from both HUD and MassHousing. Representatives from both agencies, at a meeting with Camfield tenants, discussed the progress of the project and decided that they were now willing to entertain the new townhouse option for Camfield. As this board member put it, "I think they treated us totally different after that. The relationship had really changed." This board member's account exhibits the three components of Zimmerman's (1999) empowerment model: 1) sense of control—by being able to speak directly with the top decision maker without an intermediary; 2) critical awareness—knowing of the availability of the HUD chat room and 3) participatory behavior—actively engaging the decision maker in a way to effect change. Technology had allowed direct access to the top of the organization in a way that traditional channels, such as telephoning and/or letter writing may not have.

As evidenced in Camfield's DemoDispo story and this noteworthy story in particular, Camfield leadership possessed a very strong sense of purpose. Throughout the DemoDispo process, Camfield residents struggled for some measure of control of their environment. Moreover, they did their best to keep each other informed and engaged in the process. With the energy surrounding improving the conditions of the Camfield development, residents stayed engaged, involved, and active.

The following data is presented within the context of confirming the second part of my hypothesis that, low income residents, in particular Camfield residents, who have access to information gained through computer access in their home, have an increased sense of empowerment and ability to do more for themselves and will independently access relevant information related to their needs, wants and purpose.

PROJECT PARTICIPANTS BUILDING THE CAPACITY TO DO FOR SELF

SIGNS OF EMPOWERMENT

The project participants were given knowledge and command of a body of facts for basic computer understanding. Through training participants developed skills on how to use the Microsoft Windows 2000 operating system; browse the Internet; send and receive electronic mail; and to use the Camfield website (www.camfieldestates.net). Moreover, the participants gained additional skills through targeted workshop subjects as mentioned earlier. Fourteen percent (5 of 37) of the participants already possessed the necessary skills for participating in this study; they were able to test out of the required training. The full participants showed behavior changes related to computer usage with some going from not having computers to using their computer every day. From the pre-survey interview, nearly 56% stated they did not own a computer as discussed in Chapter Three, and 55% considered themselves beginner computer users. The project presented a lot of room for computer literacy growth and development related to computer use.

The post-survey interview showed that 60% of the full participants use their computers either every day, or almost every day (see Figure 5-1). Of those that use their computer regularly, 90%

of them use their computer along with the Internet either every day, or almost every day. The overall average number of hours spent using the computer by full participants was approximately 3.8 hours daily. Full participants responded that they used the Internet to stay informed about neighborhood (58%), regional (84%), and national (90%) news and information "frequently" or "occasionally."

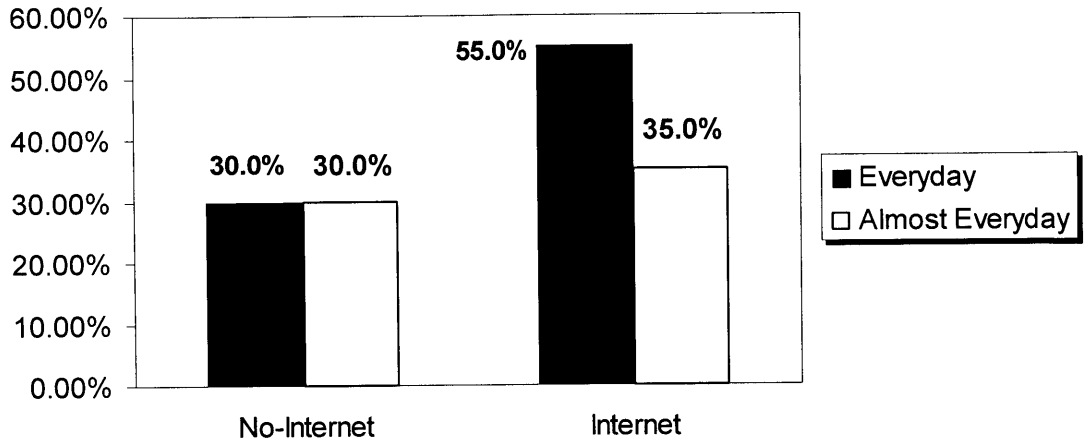


Figure 5-1: Full participant self-reported computer use (n = 20).

Respondent remarks during post-survey interviews reveal the impact and complexity of the role of a personal computer. Qualitatively, the revelations are full of supportive ideas, expressions, emotions, states of being and understanding that directly signify feelings of empowerment and self-sufficiency. Individual responses from full participants showed that what they have learned as a result of the Creating Community Connections Project and that the project has inspired continued computer use.

Many respondent comments are related to the influence of the intellectual infrastructure (human capital) that this research provided and the development of participant's technological skill set. Additionally note that this respondent's remark gives a sense of the feelings about technology and its relevancy and denotes this participant's pride and sense of independence:

> *"It [computer training] has changed my life a lot just because it has enhanced my knowledge of computers. I know a lot more how computers work and how to go online and use e-mail." [SFC]*[37]

The remark of a respondent with limited mobility further denotes how technology nurtures feelings of independence, and the impact of this recognition of the power associated with in-home access. In addition to the impact of recognizing the relevance and the role of a personal computer, these remarks capture the potential role of technology in this respondent's broader life and future outlook:

> *"I don't have to go to a library. I can't go out of my house. How am I going to a library? The computer is a library. I have it in my home... I mean, this is something that connects you throughout the world. And I found it incredible." [SNC]*

Although it was not a component specifically measured for, knowledge gained about technology and the desire (goal) to learn was observed in this respondents remarks. Learning as a goal is generally a reasonable pursuit. The possession of understanding and motivation to pursue this goal corresponds with the notion of empowerment. Specifically a respondent commented:

> *"[The project] has changed my life in more ways than one. A good example of this is that I found enough courage to teach myself HTML. Had I not had this opportunity, I might still be looking to muster up the courage. I know that technology is key to the future and I know that I could personally do anything with it that I put my mind to." [MC]*

This respondent commented about the courage to learn was inspired by the recognition of technology's relevance. A sense of empowerment can be observed in this respondent's remark that "I could personally do anything that I put my mind to." During another interview, a respondent also expressed pride about the knowledge gained, and its influence on their future outlook on life:

[37] In this chapter, we use the household type description SFC, SNC, MC to indicate the type of participant household associated with interview remarks. (see Figure 3-20).

> *"I feel that I can keep learning. I can keep growing. It's changed my life because learning and growing do not stop with age. Now, I want to learn new things. It has changed my life to learn that learning and growing is forever and you just keep going and going. It's taught me that you have to keep growing and learning forever." [MC]*

Given these remarks, it is reasonable to conclude that empowerment, as a state of recognition, was influenced by the respondent's exposure to the personal computer. As a result, capacity was built in the form of a new skill set, knowledge base, independence, sense of empowerment and changed outlook on the future.

Zimmerman (2000) indicates that there are three areas critical to achieving a closer correspondence between goals and a sense of how to achieve them, which are sense of control, critical awareness, and participatory behavior. There were signs of stability and slight increase in all of these major areas of empowerment. All of the full participants felt empowered knowing how to use a computer and the Internet. Full participants found it easier to manage personal affairs with a computer and found it easier to get information about what affects their life with Internet access.

SENSE OF CONTROL

As mentioned earlier, Camfield residents had a strong sense of purpose before and after the Creating Community Connections Project and the survey responses confirm just that. Responses to the statement "I have little influence over the things that happen to me," remained high with before and after percentages of 83% to 95% disagreeing or strongly disagreeing with this statement. Participants were asked to rank the importance of issues of general concern. The following is a sample item from this measure:

a. Please rank the following issues in terms of their importance to you, ranging from 1, which corresponds to the issue that is most important to you, to 9, which corresponds to the issue that is least important to you.

☐ Employment	☐Safety/environment	☐Health Care	☐Housing
☐Child care	☐Community activism	☐Political involvement	
☐Parenting	☐Education		

At both time1 and time2, full participants selected employment, housing, education, safety/environment and health care as their top five issues of concern. As shown in Table 5-1, at time2 safety/environment was ranked fourth in the issues of community concern and it is worth noting that it was not ranked first (perhaps the new defensive design contribute to this). Safety/environment concerns can be addressed through accessing the local police website and reviewing local crime logs or sending a comment or question to a police department representative. It is worth noting because if safety is a community's biggest concern, then it is difficult to focus attention or energies on other community issues.

Table 5-1: Participants ranking of issue importance.

		Issues of concern by rank at time2 (% of full participants)								
	Weighted Average Selection	Most	2	3	4	5	6	7	8	Least
Employment	2.35	40	20	5	5	10	0	10	0	0
Housing	2.55	15	40	5	15	5	10	0	0	0
Education	3.35	10	15	25	20	0	10	5	0	5
Safety/environment	3.80	15	5	15	15	5	5	10	5	5
Health care	4.25	5	10	10	25	20	5	10	10	0
Parenting	4.95	5	5	0	10	25	20	10	10	5
Child care	5.75	0	0	10	0	15	25	10	20	10
Community Activism	6.50	0	0	5	0	5	10	25	30	15
Political Involvement	6.85	0	0	10	0	0	10	5	15	45

As can be seen from Table 5-1, at time2 full participants ranked employment as their number one concern, with housing and education second and third respectively. Safety/environment was ranked fourth and health care was ranked fifth. In-home personal computing and Internet access played a role in four of the five major areas of concern. As shown in Table 3-27, 70% of full participants used the Internet occasionally or frequently for career or job exploration; 35% for housing searches; 40% and 80% for continuing education and to access educational resources for their children respectively; and 50% used the Internet to access healthcare information.

Responses to the statement "The quality of life at Camfield is up to the residents" stayed high with approximately 95% agreeing or strongly agreeing. Responses to the statement "I feel I can make a change in my community if I can make myself heard" also stayed high with approximately 85% agreeing or strongly agreeing. These indicators started high and showed no significant change. However, the fact that they did not significantly decrease would suggest that Internet use did not negatively affect full participant's sense of responsibility to their community but rather helped to sustain it.

CRITICAL AWARENESS

Participants were asked to rate their awareness of community resources. The following is a sample item from this measure:

a. Please rate your awareness of the following community resources, according to the following scale:

□Very well informed □Well informed

□Somewhat informed □Not informed

Critical awareness falls into two areas: being aware of resources outside of Camfield and resources inside of Camfield. As shown in Table 5-2, full participants' awareness of "associations and organizations that serve the community" rose from time1 (25%) to time2 (55%). Awareness of "volunteer opportunities in the community" and awareness of "social services and programs provided for the community" both increased 40 percentage points from time1 to time2. Awareness of "Institutions located in the community (e.g., libraries and schools)" and awareness of "products and services sold by local businesses" both stayed about the same from time1 (75%, 35%) to time2 (85%, 35%) respectively. Awareness of "community projects, activities, and events" showed the largest increase of 50 percentage points from time1 to time2. Finally, awareness of "employment opportunities in the community" increased from 5% to 35% from time1 to time2. Awareness of internal resources, "skills and abilities of other residents at Camfield Estates," as shown in Table 5-2, rose from 10% at time1, to 30% at time2.

Table 5-2: Awareness of community resources[38].

Responded[a] very well or well informed			
	time1	time2	Diff
Skills and abilities of other residents at Camfield Estates.	10%	30%	20%[b]
Associations and organizations that serve the community.	25%	55%	30%[b]
Volunteer opportunities in the community.	5%	45%	40%[d]
Institutions located in the community (For example, libraries and schools).	75%	85%	10%
Social services and programs provided for the community.	25%	65%	40%[d]
Community projects, activities, and events.	10%	60%	50%[d]
Businesses located in the community.	55%	65%	10%
Products and services sold by local businesses.	35%	35%	0%
Employment opportunities in the community.	5%	35%	30%[c]

[a] n=20
[b] Correlation is significant at the 0.10 level for small sample size (2-tailed).
[c] Correlation is significant at the 0.05 level (2-tailed).
[d] Correlation is significant at the 0.01 level (2-tailed).

All of the measures of awareness of community resources with the exception of one showed an increase from time1 to time2. The only measure that did not show an increase but stayed the same was awareness of 'products and services sold by local businesses'. These measures were compared with full participant Internet and email use. Awareness of "skills and abilities of other residents at Camfield Estates" was the only measure that showed correlation with Internet use at a significance level at $p < 0.01$. This is consistent with some of the usage findings in Chapter Three that showed resident profiles, which included skills and abilities of other residents, was the most common module on the Camfield website (see Figure 3-31). This represents evidence that the Camfield Estates website served its function as an online resource for internal Camfield community assets.

Full participants responded that computer access was instrumental in their becoming more aware of available resources in their neighborhood, and surrounding community. Evident in

[38] This measure is coded as 0 – not informed, 1 – somewhat informed, 2 – well informed, 3 – very well informed

respondents' remarks are the importance of computer access in getting information they wanted and their awareness of the role of Internet access in enabling these efforts. Key factors according to several respondents, in addition to Internet access were their ownership of, and motivation to get information and use the information:

> *"I think it was important for [residents] to go out and find that information ourselves [via the Internet] because that, in itself, was an exercise in community building. We are the ones that live here and this is going to benefit us and these are things that we should know..." [SNC]*

Full participant's responses showed awareness of resources outside of the Camfield community. The project full participant's qualitative responses revealed that use of the technology to stay informed as well as connected to other Camfield residents and connected to what is happening at the development. Specific to ownership and use of information, a respondent remarked about electronic communication as having advantage over flyers that sometimes get lost:

> *"We are communicating more without a doubt. They [Camfield Tenants Association] send out e-mails to keep us updated. I think we are finding out more because they are sending it out. People had a problem finding out what was going on because they would say, 'I didn't get this or that' like the flyers or something that the kids would send out, then if they didn't get it they didn't know." [SFC]*

Technology's role in bolstering communication efforts and awareness is evidenced in the data and observed in participant remarks. The remarks include references to their sense of control, improved ability to communicate, ownership of online contents, taking responsibility for and sharing information and an overall sense of independence that translated into feelings of empowerment.

PARTICIPATORY BEHAVIOR

Participatory behavior is placed into two categories: community involvement and political involvement. Participatory behavior suggests an individual moving beyond his/her personal, possibly isolated space, to becoming engaged with what was going on around him/her. Recognizing that each individual has a finite amount of time, this section compares involvement priorities. Nearly 60% of participants engaged in nearly 13.9 hours of volunteer work in the past

month. Despite high levels of community participation, 65% felt they could be more involved with the Camfield Estates community. Additionally, 27% felt that "not enough time" was the most prohibitive factor in people not volunteering more.

Camfield's history demonstrated that as a community its residents have been fairly active. Full participants were asked to select the type of organizations in which they hold memberships. For community involvement, religious affiliations and the Camfield Tenant Association received the highest percent of full participant memberships at time2 (see Table 5-3). The full participants also held memberships with community and social type groups—discussion/reading groups, community organizations outside of Camfield and music/art/dance/drama groups and social clubs based on their country or city of origin. There was not a correlation between community involvement and Internet and e-mail use, however it is still an observation worth noting. Despite time conflicts as reported by some, during the life of the project, full participants remained involved with organizations inside and outside of the community.

Table 5-3: Community involvement, volunteerism and organization memberships at time2.

Organization	Percentage
Church/Temple/Mosque	55%
Camfield Tenants Association (CTA)	55%
Discussion/Reading Group	40%
Community Organization Outside Camfield	40%
Music/Art/Dance/Drama Group	25%
School Clubs/Student Government	25%
Labor Union/Professional Groups	25%
Social Clubs Based on Country or City of Origin	15%
Community Planning Board	15%
Local Political Groups	10%

Drawing on Rothenbuhler et al. (1996), Stamm (1985) and Kavanaugh and Patterson (1999), we sought to capture Camfield's community involvement based in part on their measures. Rothenbuhler (1996) found a positive correlation between newspaper readership, localized activities and community involvement. Participants were asked to rate their frequency of community involvement. The following is a sample item from this measure:

> a. Please respond to the following [community involvement] questions, according to the following scale:
>
> □Never □Seldom □Occasionally □Frequently

The questions as presented in Table 5-4 range from "keeping up with Camfield news" to "working to bring about changes at Camfield." Responses indicated a stable level of staying informed at time2 along with high levels of community involvement.

Table 5-4: Self-reported frequency of community involvement.

	Occasionally/ Frequently		
Question[a]	time1	time2	Diff
How often would you say you keep up with the local news in Camfield Estates?	85%	85%	0%
How often would you say you have ideas for improving things in Camfield Estates?	75%	65%	10%
How often do you get together with people who know what's going on in Camfield Estates?	65%	60%	5%
How often do you work to bring about changes in Camfield Estates?	60%	55%	5%
How often do you watch the local news on TV to find out what's going on in your community?	80%	80%	0%

[a] n=20

Full participants self-reported frequency of involvement stayed high from time1 to time2. The lack of significant change is an indication that the presence of the personal computer and Internet

access did not diminish full participant's community involvement. When the measures for community involvement were correlated with Internet and email use there was no significant positive or negative relationship.

When full participants were asked about political activity, not surprisingly "voted in general election" was highest priority at time2 (see Table 5-5). The 2000 presidential election had occurred before time2. As with community involvement the correlation with Internet and e-mail use was inconclusive. It is however, important to recognize that full participants saw voting in a national election as an important act of political involvement. Full participants saw giving money to a volunteer organization or cause as being the second most important political activity. This is interesting given that Camfield is a low-income community.

Table 5-5: Self-reported ranking of political activities.

Political Activity	Percent
Voted in general election	85.0%
Gave money to a volunteer organization or special cause	73.7%
Voted in tenant association meeting	65.0%
Visited child's school	65.0%
Volunteered time to an organization	60.0%
Signed a petition	57.9%
Phoned or went to see a public official	31.6%
Wrote a letter to a public official	26.3%
Boycotted a product	21.1%
Ran a fundraising campaign for a volunteer organization	21.1%

SIGNS OF SELF-SUFFICIENCY

As mentioned earlier in the chapter, participants began to "frequently" or "occasionally" use their computer and Internet access to explore career or job opportunities (70%), access educational resources for children (80%), and access healthcare information (50%) (see Table 3-27). When asked to rank items for importance to achieving family self-sufficiency full

participants selected employment (1), housing (2) and personal attributes (3) in the post-survey (see Table 5-6). Employment and housing was the top priority for self-sufficiency and is consistent with what was reported for a sense of empowerment. It is interesting that full participants saw personal attributes such as motivation as also being important for family self-sufficiency. This makes sense and is consistent with our interpretation that participants are highly motivated. Those Camfield residents that signed up to participate and stayed involved with the project process to become a full participant demonstrated high motivation.

Table 5-6: Self-reported rankings of issues important for self-sufficiency.

		Rank of issues of concern for self-sufficiency at time2 (percentage of full participants)								
Issue	Weighted Average Selection	Most	2	3	4	5	6	7	8	Least
Employment	2.60	30	20	10	10	15	0	0	0	10
Housing	3.00	20	25	15	5	5	10	0	10	0
Personal attributes	**3.45**	25	5	15	5	20	5	5	5	0
Assets/savings	4.15	0	10	25	15	10	10	15	0	5
Safety/environment	4.55	20	0	5	20	20	10	15	5	5
Empowerment	4.75	5	10	10	15	5	15	10	5	15
Community involvement	5.30	0	20	0	10	0	15	10	25	10
Personal relationships	5.80	0	0	10	10	5	10	25	20	10
Human services	6.90	0	0	0	0	10	15	10	15	40

As with the empowerment findings, Internet and e-mail use presented in Chapter Three demonstrated technology's potential for supporting full participants in what they see as important. Employment was the top priority for family self-sufficiency. The average number of full participant reported jobs rose from less than one (0.90) to (1.00). Employment status shifted for some from no jobs to one or two jobs and for others from one or two jobs to no jobs etc. In an

effort to be sensitive to employment situations for some participants we did not probe the employment question with any real depth.

The modest change in this area is most likely attributed to the fact that one year (2000-2001) was not enough time for a change in job status. A measurement over three to five years may give a better indication of any significant change. Those currently enrolled in school or college rose from 19% to 30%. Although those enrolled in adult education programs dropped, the number of those interested in enrolling in an adult education program increased from 60% to 77% of full participants responding. An overwhelming majority (> 90%) expressed pre- and post- that they would like to own their own home. Safety at and around Camfield Estates, perhaps due to its defensive design, improved during the course of this study. When asked directly about feeling safe at and around Camfield, an overwhelming majority agreed or strongly agreed that they felt safe (> 95%). A majority of participants made use of the social services available in the neighborhood (> 81%), although only 40% felt comfortable going into most social service agencies in their neighborhood. A majority of participants reported feeling highly motivated to accomplish whatever they have to do (> 95%). Finally, as mentioned in Chapter Three, participants' personal networks expanded during the course of this study.

COMPUTER USE AND ATTITUDE CHANGE

The transition of respondent attitudes specifically about technology during the post interview was intriguing. I will discuss in the final chapter how attitudes may have affected this study's ability to have higher rates of participation. Helping participants recognize the relevance of technology, coupled with exposure to the technology and appropriate training were methods used in this research. This approach appears to have been effective in changing one respondent's views of technology. This change in view is described at time2 by an initially reluctant resident:

> *"When we moved back and this building [Camfield Estates] was done and I heard that we were going to get computers, I didn't care why. I didn't want one. And I told [them] I didn't want one. I was really disgusted with it all.*
>
> *I got my first session and I was amazed! I couldn't believe it! It was so fascinating! I get my second session and I'm getting e-mail, which was totally blowing my mind. And I'm saying, 'Oh my God, this is incredible.*

> *I would have never wanted a computer. I didn't see anything in it. Now I wouldn't know what to do without it. I believe I am better physically and mentally because of the computer." [SNC]*

Perhaps this respondent's remark characterizes the negative attitudes of many members of our society with respect to the technology wave that has swept over all of us. The sources of, or reasons for negative attitudes (i.e., the refusal to use technology or the fear of it) are not clear. This respondent, however, decided to participate and fortunately was able to gain a skill set (again stressing the importance of an intellectual infrastructure), thus building capacity. The once-negative attitude transformed into a new attitude that informed her beliefs and behaviors. This respondent's life-changing attitude shift, if taken out of context, may read as exaggerated. However, consider that the typical project participant was an African-American female with children less than 18 years old and categorized earlier as SFC (See Figure 3-21). According to the 2000 Department of Commerce reports, this segment of our population still trails far behind their White counterparts in computer use. This trend perhaps indicates barriers to IT use beyond what the data was able to capture (i.e. socio-economic, racial, cultural, educational and institutional road blocks).

FULL PARTICIPANT FAMILY USE

The typical full participant family at Camfield had 1.5 children, and was headed by an African-American female whose reported computer use fell primarily into five areas: work, education, shopping, news/information, and social communication. Consistent with benchmarks identified in the seven areas of Miller and Din's (1996) self-sufficiency model (Income/assets, education/skills, housing/food, safety/environment, human services, relationships, personal attributes), the project's full participants and their families have begun to show signs of self-sufficiency.

HOME LIFE, PERSONAL COMPUTER AND INTERNET USE

It is reasonable to assume that once introduced into the home, technology could potentially affect existing household dynamics. As described in Chapter Two, in order to participate in the project,

an adult household representative was required to sign up, and it was anticipated that other members of the household would use the computer and Internet access. During interviews participants remarked about the computer's influence in the household and other household members' desire to use the personal computer. These remarks are of interest because they speak to technology's potential impact on household dynamics, which suggests the need to further understand the role of the in-home computer in the lives of household members including adults and children:

> *"Instead of going to the library for information I can find it here at home, it saves me a lot of time. I am still getting used to the technology though. It has changed the attitudes in the house. The children are really excited when they discover new games and activities on the computer." [SFC]*

Another participant commented that:

> *"We have to wait for turns on the computer. For the summer it's been great because each of us has flexible schedules, but during the school year each person just has to wait." [SFC]*

The demand for computer time based on individual household members need poses an area for family negotiations, similar to negotiations about what to watch on television and/or telephone use:

> *"Because everyone wants to use it at the same time which means I think I am going to have to get a router. Because we only have one machine it can be insufficient access for family members." [MC]*

Usage statistics (see Chapter Three) reflect consistent daily use of the personal computer by respondents, making it interesting to note that previously, many of these households did not have in-home access, causing several respondents to be faced with a new dilemma, how to ensure equal use time for household members.

PERSONAL COMPUTER, INTERNET USE AND WORKING AT HOME

The convenience of having a personal computer at home is one of the major points of interest for individual users. Innovations enable the computer to be outfitted for home use. Project

participants also valued the convenience of a home computer to complete work related tasks. Two different full participants remarked:

> *"He [respondent's husband] has found his life to be more efficient using the technology. Being able to do his job from home is probably the biggest change." [MC]*

Another participant stated:

> *"I access the Internet much more frequently at home now. I used to have to wait until I went to work but now I do most of my Internet stuff at home. I really like the convenience." [SNC]*

Given that access to the Internet expanded participants' capacity to do work, the influence of this capacity on their work and home life are literally too numerous to name. Most full participants acknowledged that the personal computer was a benefit for completing tasks. In-home computing is particularly interesting if one considers how tasks may have been completed before the introduction of the personal computer.

PERSONAL COMPUTER, INTERNET USE AND CHILDREN'S EDUCATION

Given that many consider education as the great equalizer, the education of urban children in public schools is constantly scrutinized. The role of the personal computer in aiding educating participants' children was evidenced in their remarks. Unlimited access to educational resources over the Internet was of enormous benefit to this community's children. Limitations were often placed on outdoor activities because of safety concerns. The Neighborhood Technology Center at Camfield provides a safe environment for technology use. However, the technology center is a modest size and several parents voiced not having enough room for every young person to use a computer. In the post-survey, some full participants commented about the convenience of a having a computer in the home for their children to do schoolwork.

> *"Some of them [children] view practice tests on the Internet as a result of that they are getting higher scores in their classes. Sometimes they just want to play and go to music sites. I would say for the most part they are doing better in school." [SFC]*

The reality of technology's influence in every aspect of our lives, is a constant reminder of the importance of learning how to use it. The digital divide statistics report that African-American children are less likely to have a personal computer and/or Internet access. The Camfield community is a predominantly African-American community with 42% of residents under the age of 18 according to management company's 2000 statistics. The jumpstart introduction to technology access in the home that this project provided for children in the household, and the availability of on-line reference materials was illustrated in the remarks of a full participant who stated:

> *"My daughter has been able to use the computer by herself and it helps her with her education....I have downloaded encyclopedia's to help her as well. It has cut down on time paying bills, tutoring, and research for my daughter. She has been able to type her own papers." [SFC]*

The economic advantage of a personal computer included savings in time, money, and other human resources for many project participants as evidenced in the previous remarks. It is apparent that the personal computer was crucial to the educational goals of participants and household members in high school or college. Public education in general has struggled with gathering adequate computer resources. Moreover, college computer labs can overflow at times with students trying to meet their educational demands. With respect to the in-home personal computer aiding a student's efforts to get educational work done, a participant (who was a student) said:

> *"Being able to do my homework at home, [look up] research questions, [and] being able to do this in a low stress environment outside of work..." [SFC]*

PERSONAL COMPUTING, INTERNET USE AND SHOPPING AT HOME

The role of technology in opening up a participant's ability to participate and take advantage of the vast e-commerce market over the Internet was a recurring theme in participant remarks. The next two remarks also infer a shift in participants' shopping approaches:

> *"Now, I shop more online than I do at a store. I shop for baby stuff, work clothes and other things. I also renew my license, pay tickets online and I even paid my electric bill online once." [SFC]*

Another participant stated:

> *"When Alex had to fly to LA he got on the Internet and checked out the tickets and he got a good deal and called them and got the tickets. Every time he wants good tickets he goes on the Internet. Time and money we have been able to save." [MC]*

Traditional activities that required long periods of waiting in line or waiting on hold on the phone were noticeably different for participants once they learned how to conduct these activities over the Internet:

> *"It helps to make life easier with ordering stuff to be delivered to people. I like being able to pay bills and monitor account activities." [MC]*

The other commented that:

> *"My kids go online and find out what particular store has what they want and have them hold it. Then I get an e-mail telling me that it is on hold and will be ready. I'm saving more but then again but by the time they tax it and ship it, you're paying the same. But for like plane tickets, the prices are good." [SFC]*

In addition to the benefits of shopping at home, it is important to consider the ramifications to the economy if large segments of our population are not able to participate in this new method of commerce because they lack on-line access.

PERSONAL COMPUTER, INTERNET USE AND NEWS, INFORMATION AND ENTERTAINMENT

The personal computer is a multi-dimensional tool, which in the same household has different uses for members, according to participants' remarks. Some household members use the in-home personal computer to do job-related work, schoolwork, play games, listen to music and shop. This research also found that the personal computer was used as a resource for news and entertainment. Access to news or information immediately was characterized in the remarks of the following participants.

> *"It has made a big difference in our lives. One thing that I like is that I have access all day long. I can leave it on all day and night and look up information when I want to." [SNC]*

Another participant commented that:

> *"I read the newspaper and do searches on information related to spinal cord injuries." [MC]*

The latter remark includes an aspect of the personal computer use in gathering health- related information. Gathering information on a medical condition is an empowering feeling that was voiced by many participants dealing with minor to severe medical conditions themselves, or of other family members, a participant commented about the painful reality of having an ill family member:

> *"For example, my sister is dying with cancer so I am researching how to get information for her, who to call, even medicine." [MC]*

There are numerous on-line communities developed to connect individuals with similar illnesses from cancer, to learning disabilities, to rare childhood diseases. The in-home personal computer and Internet access aided several participants in being able to connect and feel empowered by the medical information found.

PERSONAL COMPUTER, INTERNET USE AND COMMUNICATION WITH FAMILY AND FRIENDS

As discussed in Chapter Four, full participants used the Internet to communicate with each other, other Camfield community members and members of their family not participating in the project. The amazement at the ease of communicating with e-mail is evident in almost every one of the participants' remarks. For example, a participant commented:

> *"I have made more connections with neighbors I wish I could have made even more utilization of these connections. I have managed to get in touch with some neighbors that I have never been in touch with." [SNC]*

The availability of e-mail and free e-mail accounts has contributed to the use of e-mail to stay in contact with family and friends no matter how far apart. Communicating with loved ones, receiving updates on events or getting an invitation to an event helps build a sense of connection, a sense of being a part of another's life. The once a year updates that traditionally happened with holiday greeting cards have been transformed by e-mail and e-commerce. These social connections, nurtured through e-mail contact was viewed by respondents as meaningful, a participant remarked:

> *"When Alex goes to school I can e-mail him every day. My daughter on her job will e-mail me. My other daughter will go to the library and e-mail me. I have a friend in Ohio, Pennsylvania. And brother-in-law in Silver Springs, Maryland... not that I e-mail them every day, but they ask for my e-mail address and I give it to them and they e-mail me." [MC]*

This chapter offered a preview into the minds, hearts and desires of participants in their quest to complete the simplest of tasks with the use of an in-home personal computer, tasks that many take for granted. There were reported changes in attitude about technology that largely stem from recognition that technology is relevant for many uses. Participant behavioral changes are indicative of the personal computer's role in getting information on local happenings, staying connected with family and friends and for participating in and benefiting from the vast e-commerce market place. The crucial role of access for the physically challenged or participants with medical conditions underscores the need for additional initiatives in communities with populations least likely to have a computer and Internet access. The educational benefits to participants include information gathering on a number of topics, such as medical resources, news, and entertainment, in addition to its role as a teaching tool for children and older students.

Consider for a moment that many of these tasks and others were not done in the home before this project was implemented. How did participants conduct these tasks previously? Perhaps the answer to this question lies between the lines of their resonating remarks of amazement regarding the relevance and unlimited potential to gather information with personal computer can have in their personal lives, essentially—opening up a whole new world.

The following is a closer look at one participant's recognition of technology's unlimited potential. This participant's experience with the project epitomizes the role of technology and the role that similar initiatives can play in a respondent's life. It also puts into perspective the nature of this type of research in a similar setting and the types of relationships that develop. These relationships don't simply end when the project ends and this realization changes the nature of this work to being far more consequential than just taking surveys and running the numbers.

THE CASE OF EDWARD JAMES: TECHNOLOGY AND INDIVIDUAL ACHIEVEMENT

"OK, we are going to run a counter gap left with 'E' at lone back...Reeaadyyy BREAK!" It was a fall Saturday afternoon. The air was cold and the field was as hard as concrete. The quarterback's voice pieced the air, "BROWN 45! BROWN 45! Set, set, hut, hut." On the snap of the football bodies, immediately sprang into motion. The quarterback handed Edward the ball as he turned his body up field on the left side. After Edward followed his blocking beautifully for a 12-yard gain, a crushing tackle came seemingly out of nowhere laying Edward on his back. After lying on his back for what seemed like an hour with his knees up and his feet flat on the hard ground, Edward wondered if the love of the game was enough to keep him coming back to semi-pro football. Edward shook off the fogginess and decided, although he was not sure to what end, "I have got to get up and get back in the game." This would be a mantra for Edward throughout his adult life. Despite some of the curves and unexpected circumstances life would throw Edward's way, he would always face adversity by getting up and getting back into the game of life.

We were meeting, discussing, and planning the Creating Community Connection Project when a young man appeared in the conference room doorway. He stood a little less than six feet with a shiny bald-head and a Hershey colored complexion. He confidently stated, "I am here for the Camfield technology project." Randal and I were pleasantly surprised to see that Edward James[39] was a young African-American male. At the start of the project in 2000, many urban areas, including Camfield, got through the tumultuous, challenging and in many cases deadly 90s for young African-American males. According to the Justice Policy Institute (2002), in 1999/2000

[39] Edward James is not his real name.

young African-American men were more likely to end up incarcerated (791,600) than in college (603,000). At the assertive age of 25, Edward represented the antithesis of all of the stereotypes—an undergraduate at a local university, a teacher/counselor at a local charter school, and a volunteer football coach for a local youth football team. Edward was ready to offer his support to the Creating Community Connections Project. Little did he know that not only was he going to give a lot to the project, but he was also going to get from the project much more than an increased awareness and skill set from the use of personal computing and Internet access.

Edward, one of several African-American males to complete the project and by his own admission, sometimes felt like a ship without a rudder, heading in no particular direction. When we met Edward, he was struggling with his academic career. His efforts were falling short, not from lack of desire but rather from a lack of clarity of purpose and the visible means to support his efforts. One of his biggest challenges was that he commuted to college. Although many college commuters are able to overcome the spatial challenges commuting represents, Edward found it difficult to stay energized about school. Often he had assignments that required using a personal computer. He did not have a computer at home, not to mention Internet access. This gap in support can become a toxic scenario to a student still struggling to come to grips with his ultimate goal for being in school and graduating. Despite his periodic frustration with school and a sporadic academic performance, he always believed, when he was down, that he had to "get up and get back into the game."

While a young high school athlete, Edward paid little attention to his academic career and direction. Moreover, his circle of friends lacked some of the necessary motivation for academic accomplishment, reinforcing some of his unclear goals. With his mother and sister, they moved to Camfield in 1989. Despite the condition of Camfield at the time, it was a better facility than the place Edward and his family lived at previously. Edward was about 14 then, just entering high school. Strongly bonded with his mother, Edward would spend much of his life appreciating everything his mother would do for him and staying committed to making her proud.

Edward was one of the first Camfield residents to receive a personal computer and Internet access through the Creating Community Connections Project. He committed to being the

Camfield project leader. Edward was involved with all aspects of the Creating Community Connections project, such as identifying resources to map for online cataloging, helping to administer the pre- and post-surveys, soliciting resident participation in the project, and contributing with suggestions for the C3 system. Edward played an important role in responding to resident e-mail requests for basic support, here is copy of an e-mail[40] sent by Edward to a participant regarding this participant's problem sending e-mail:

Posted by:	Edward James (Edward.james@noname.com)
Topic:	Help
Subject:	Response to I am having problems sending e-mail

What part doesn't work? Does it comeback to you? Is the person not receiving it? Please provide more details of the steps so I can better understand what is happening.
-Edward

Edward was willing to help participants with any number of their technical problems, which ultimately expanded his own technological knowledge base. I often received calls at home from him regarding a technical issue. Often we would talk the problem through, resolve it and the conversation would always end with Edward apologizing for calling me at home. I was actually thankful for his calls because they provided insight into the nature of some of the problems that participants experienced. I would not have known about the power outage at the development if Edward had not sent out the following e-mail. Often Edward would jump into the mix of things and tenaciously follow up until the issue was resolved. Here is a copy of an e-mail sent by Edward, note the specific follow-up information that is included in the e-mail:

[40] E-mail was edited to maintain anonymity.

Posted by:	Edward James (Edward.james@noname.com)
Topic :	News and Announcements
Subject:	Reimbursements for power outage

Nstar electric is currently reviewing cases for households that suffered losses during last weeks power outage [sic].

All you have to do is send a letter with your name, address, phone#, account#, time that your power was out, a list of the groceries that had to be replaced and or a receipt from the groceries you had to buy as a result of the outage[sic].

Mail the info to:
NStar Electric
Risk Administration
Nstar Way SUM-SW310
Westwood, MA 02090
Any questions call the Claims Office, 1-866-xxx-xxxx

As time went on Edward gained more confidence with his computer and Internet access. Having a computer at home made it considerably easier for him to stay engaged and excel in school. Edward's local and distant family used the Internet extensively to stay connected and share information. In one instance, it was discovered that a family member of his, who did not live locally, was suffering from a health condition. After exchanging several e-mails with family members, and Edward researching the condition, he discovered that not only was it treatable, but that the condition ran in the family. The electronic discussion brought a level of comfort to the family member stricken with the condition.

Edward finished his undergraduate degree in sociology and education during the time of the Creating Community Connections Project. Moreover, he continued on to earn a Masters degree. He has also continued as a teacher and counselor at a local middle school and continues to volunteer as a football coach for neighborhood youth. As Edward puts it, "I am inspired by what you and Randy have accomplished. I look up to you guys and admire what you have done."

Edward's recent accomplishments also include participating as a reflective practitioner at MIT's Center for Reflective Community Practice (CRCP). At CRCP, a reflective practitioner spends an

academic year reflecting on his/her work and analyzing ways to improve it. Edward, his mom and his sister signed up for and completed the Cisco Networking Academy prerequisite course, which trains users on the designing, building and maintaining of Cisco network systems. Edward also achieved runner-up out of four candidates for a community representative position of the lower-Roxbury Empowerment Zone board. Finally, Edward is now in hot pursuit of a Ph.D. program focused on urban education. He is keenly interested in pursuing a Ph.D. because as he put it, "Getting to know you guys [Randal and I] and seeing how down to earth you both are, I see getting a Ph.D. as an attainable goal."

SUMMARY

The most fascinating part of the Camfield Estates-MIT Creating Community Connections Project is the individual stories of participants and how participants experienced a change of attitude and perception of computers and the Internet. Moreover, for some, the computer has become an integral part of their daily lives. For all of the participants, computers have become an empowering method by which Camfield residents can obtain information, share information, and contribute information to each other, their community, and society. Specifically, as shown in the qualitative responses many of the single African-American and Hispanic females, with children under 18 (SFC), expressed how empowering having a computer and Internet access was. This project engaged the group that both policy makers and the digital divide have identified as being socio-economically at-risk and least likely to have a computer and Internet access.

How information is accessed and used, becomes the formula by which community, empowerment, and self-sufficiency can be tied together. The capacity of the end users appears to serve as the foundation for resource generation and access. Social networks appear to serve as a vehicle to offer the multiplier effect in relation to shared resources and information. Empowerment appears to serve as fuel for the push towards self-sufficiency.

Observations and statements made by participants exhibit signs of empowerment and behaviors that included the personal initiative to look for information and use this information to help themselves. Participants reported that they felt empowered to generally learn more, were more aware of resources in and outside their community and reported changes in attitudes about

technology and perception of themselves and their ability to learn. Many of these reported changes translated into changes in behavior and participation in community social networks. The case of Edward James, given the small number of Black males that participated in the project, adds additional perspective on the potential role of technology on facilitating achievement for those who need intervention and support to realize their goals, whether the goal is to continue their education or build job skills. To bring this reasoning full circle, Edward was fortunate to be raised in a loving and supportive female-headed household. Traditionally these households lack essential structure, finances and support required to raise children to reach their full potential and become self-sufficient adults (Anderson, 1999; Wilson, 1987, 1996). History, research, and experience has enlightened us to the challenges faced by these families, what has not been discovered, are effective methods to promote and support connections between at-risk families (and individuals), and methods to access relevant information—to help them help themselves. This research, at a minimum, offers a potential methodology for connecting low-income residents to a sphere that they have not traditionally participated. As this sphere of technology continues to expand, these populations, if they are not allowed to catch-up, will add yet another statistical category: member of the digital divide, to a long list of statistical categories and institutional labels that they have been hard pressed to shed.

CHAPTER SIX

DISCUSSION AND CONCLUSION

> *"Progressives who are concerned about the current social conditions of the have-nots and the future generation of have-nots not only have to fight against the current public policy strategies; they are morally obligated to offer alternative strategies designed to alleviate, not exacerbate, the plight of the poor, the jobless, and other disadvantaged citizens of America."*
>
> William Julius Wilson, 1996

The previous chapter presented findings on empowerment, sense of control, critical awareness and changes in the behaviors and attitude of participants who received a personal computer and Internet access. Part of the inspiration and motivation for conducting this research was to try to understand the role a personal computer and Internet access can play in addressing low-income community issues, which have been targeted by federal policies to encourage community empowerment and family self-sufficiency. These policies have attempted to develop the capacity for communities and families to be able to do more for themselves and be less reliant on the government. Many of the federal efforts are targeted toward families at-risk, especially families that are headed by single African-American women with children under the age of 18. With respect to this population Wilson writes, "In addition to strong links between single parenthood and poverty and welfare receipt, the available research indicates that children from mother-only households are more likely to be school drop outs, to receive lower earnings in young adulthood, and to be recipients of welfare (Wilson, 1996:92)." To date, federal empowerment and self-sufficiency efforts have not included personal computing and Internet use as a method to assist families.

"Can personal computing and high-speed Internet access support community building efforts; and can this access to technology empower low-income community residents to do more themselves," was the question this thesis addressed. My hypothesis was divided into two parts. Part one speculated that low-income residents who have a personal computer and Internet access in their home might have an increased likelihood to feel a sense of community, have an increase in social contact and nurture stronger social ties. Part two suggested that low-income residents who have access to information gained through computer access in their home might have an

increased sense of empowerment and ability to independently access relevant information (related to their needs, wants and purpose). This study analyzed the potential that personal computing and Internet access in the home, might have on efforts to encourage individuals to do more for themselves.

My perspective on this issue, as other research has suggested, was reaffirmed, challenged, and augmented with respect to the potential of personal computing and Internet access in building a sense of community, empowerment, and self-sufficiency. The "community" aspect of this research was influenced by my view that community networks and relations can be nurtured and extended with technology. My views are largely inspired by the community-technology debate and much of this debate is based on macro-level analysis, which largely ignores the impact that technology may have on individuals and families. In my opinion, the debate misses an important facet of community relations that can be cultivated by technology. Perhaps this study's sense of community findings cannot be solely attributed to Internet use. It can however, be observed that a sense of community was encouraged. Additionally, the finding that social interaction and information exchange intensified, and was more decentralized is an important finding considering the either/or debate on technology and its relationship to isolation.

My experiences with community initiatives and technology inspired me to include an empowerment and self-sufficiency component in my research design. Specifically, I was concerned with accessibility of relevant information and what that means to a sense of control and awareness. The findings support my hypothesis that accessibility in the home can influence feelings of empowerment and self-sufficiency. Given many of the public policy efforts to assist low-income communities in doing more themselves, this research suggest a potential role for personal computing and Internet access in these efforts.

This chapter represents my final analysis of the Camfield Estates-MIT Creating Community Connections Project findings. I present participant demographic statistics within the larger conceptualization of the digital divide and close the chapter with a description of specific challenges encountered during the project and discuss potential focus for future research.

REVIEW OF FINDINGS

As presented in Chapter Four, one's sense of community or feeling connected to the Camfield community had a strong correlation to Internet use and feelings of empowerment from Internet access (see Table 4-1). Moreover, full participants reported in the post-survey feeling equally or more connected to family members, friends, other Camfield residents and people in their surrounding community. *Hits* to the Camfield website had leveled off over time as discussed in Chapter Three and *visits* to the Camfield website held steady averaging 66 per day during the life of the project as shown in Figure 3-30. Monthly page views peaked early at 1723 in July of 2001 and steadily declined toward the end of the project as shown in Figure 3-32. However, this was not totally surprising given that users focused on specific Camfield website modules to which they returned frequently (see Figure 6-2). The familiarity with the technology and the Internet perhaps signified that the novelty of the website began to wear off and most likely this contributed to dips in usage later on in the project. Moreover, given the excitement about the project and new participants flooding the page all at the same time, it is easy to understand how Camfield website usage spiked up during the beginning of the project. It's apparent based on the post-survey, in which respondents reported an average of 3.8 hours per day computer use, that project participants were using their computers; since full participants reported using their computer and the Internet every day (55%) or almost every day (35%) (see Table 3-15), this would suggest the usage is going elsewhere on the Internet. Web logs revealed a number of different sites that were visited (see Chapter Three) and, based on the nature of these sites; participant usage could include everything from searching for information and playing games to chatting or buying groceries. Another reason for the dip in usage of the Camfield website could be that residents have become comfortable with the Camfield website and only use it when they deem necessary. In the future, researchers could try to understand what types of on-line; web-based functionality (e.g., daily news briefs, weather, etc.) would generate consistent use.

PARTICIPANT STATISTICS WITHIN THE CONTEXT OF THE DIGITAL DIVIDE

There were 37 participating Camfield households, which constituted 54% of 69 eligible households. Twenty (20) of the 37 participating households were classified as full participants based on who completed all the required training, follow-up interviews, and received

uninterrupted Internet connectivity (see Chapter Three). The average project participant as discussed in detail was a single (including widowed or divorced), African-American female, between the ages of 40 and 69, with less than two years of college, with at least one child under 18 in the household, and with a household income under $30,000. Given these demographic characteristics, it is worth a review of the digital divide statistics and its similarities to project participants. Although, the 2000 digital divide report states that the gender gap in computer and Internet use at home has closed, when looking at race and gender, African-American females are far behind all other races and ethnicities except Hispanics (U.S. Department of Commerce, 2000).

The population that policy makers are most concerned with being socio-economically at-risk is single African-American and/or Hispanic female headed households with related children under 18 years of age. The digital divide is concerned about this same population also being those least likely to have a computer and Internet access and in jeopardy of being locked out of the electronic mainstream. Hence, most participants in the Creating Community Connections Project are the same population that is the focus of policy maker's digital divide concerns.

Given our study's demographic population, which is characteristic of many low-income communities, it is important that more IT initiatives are undertaken in efforts to address the divide. This study revealed that once participants recognized the relevance of IT, their computer use increased. Perhaps the cost of IT, and not lack of relevancy, is a more likely inhibitor for IT use. Households with only one breadwinner usually have much less dispensable income, as compared to two income households (Wilson, 1987, 1996). The average cost of a new computer is roughly $1,000 dollars; in addition, the cost of high-speed Internet access can be as high as $50 per month (or $600 per year!). The prospect of even a one time expense of a thousand dollars (or more), not to mention the steep learning curve associated with setting up a computer and installing and using software, (if one has never done it before), may ultimately loose out to more pressing economic and time-related family matters. This initiative was able to remove many of the economic barriers to IT use by providing free computers and access along with a comprehensive computer training.

The computer and Internet usage among participants was evident from the three sources–the transparent-proxy server, the Camfield Estates website logs, and post survey results. The transparent-proxy server showed that initial usage activity steadily increased (see Figure 6-1). The transparent-proxy server recorded the most common websites visited in January of 2001 were community/cultural and entertainment and in April of 2001 were e-commerce and communication type of sites. This suggests that project participants were becoming more comfortable with doing business on-line as well as participating in other online communities.

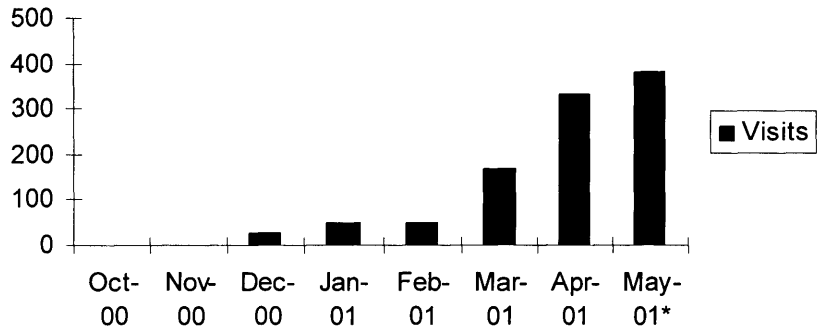


Figure 6-1: Average daily visits to sites made through the transparent proxy-server

When the transparent-proxy server was discontinued in May of 2001, the Camfield web server continued recording logs through the end of the project in November of 2002 and continues to record activity today. The average daily visits remained steady from May 2001 to November 2002 with a spike in May of 2002 (see Figure 3-30). The Camfield web server recorded that the most common modules used were organization listings, resident profiles and the discussion module (see Figure 6-2). These specific modules support the notion that participants were using the website to get to know their fellow neighbors through resident profiles, build community with their neighbors and find out about their neighboring community organizations. The Camfield Estates website supported and continues to support certain aspects of community building.

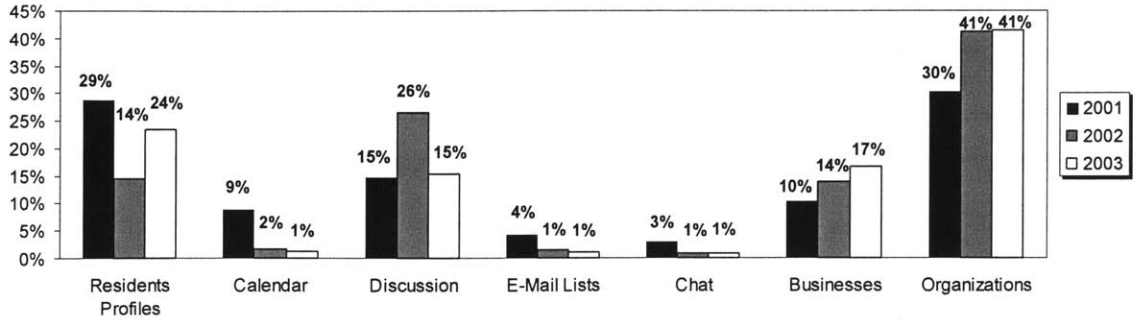


Figure 6-2: Camfieldestates.net active sub-module statistics by percentage of hits (May 2001, May 2002, and May 2003)

As discussed earlier in this chapter, full participants reported using their computers and the Internet every day or almost every day for several hours per day. In addition to browsing the Internet and using e-mail frequently, many full participants also reported frequently doing work or school related tasks, researching a topic, hobby or interest, accessing education resources for their children, and communicating with family and friends. Full participants reported usage gives important insight into the regularity with which the computer and Internet were used as a resource.

Participation categories emerged to address classification differences of several prospective participants that did not complete the pre-survey and/ or the post-survey. Those participants that completed both the pre- and post-surveys, and did not have more than two months of interrupted Internet service were classified as full participants. Analysis of the characteristics of full participants, and participants presented in Chapter Three, revealed that both groups recognized the value in having a personal computer and Internet access however, those that became full participants were more likely to have had some prior exposure to computers and/or the Internet.

This suggests that some prior exposure or experience is important in sustained participation and it also suggests that similar efforts should include more intensive follow-up and support with less technologically experienced participants. This finding gives valuable insight into several factors that may encourage participants to stay involved in technology initiatives, and why some may drop out.

Some participants, that did not satisfy the requirements to become full participants, were as a result of more straightforward practical reasons. The strictly Spanish speaking participants, not only had the language barrier to contend with, also had Spanish literacy challenges. A primary challenge for several other participants in general was an exorbitant cable and/or telephone bill which caused the Internet service provider to discontinue all three services (i.e. cable, phone and Internet service). This may suggest that within the low-income community, the ability to pay bills (given very limited resources) contributes to quality, and even perhaps the frequency of participation in projects that consist of additional financial obligations by participants. For the 17 participants that did not become full participants, as discussed earlier, there was the language barrier for many and diminished interest and use for others. Some of those that did not become full participants experienced technical problems as discussed in the Specific Project Challenges section of this chapter. The issues related to technological confidence and support are most likely the primary cause of this. Conversely, full participants exhibited a strong interest and valued personal computing and Internet use. Because of prior experience and exposure, many full participants surpassed the learning curve, while initially harboring some feelings of skepticism. Nevertheless, there was a number of hard to reach households at Camfield that for some reason did not consider a free computer, training, and two years of free Internet access as enticing enough to participate in the project.

REVIEW OF COMMUNITY FINDINGS

There is research that suggests that the Internet decreases social contact and causes isolation (see Kraut et al., 1998; Nie & Ebring, 2000; Stoll, 1995). In contrast, we did not find this to be the case. Much of the debate of whether technology takes away from or adds to community has focused solely on extremes. Although the debate is becoming less extreme, largely due to research conducted by Hampton and Wellman (2001) and others, much of it still focuses on the Internet's effect on community as an "either/or." Hampton (2001) effectively characterizes the extremes of this debate (Hampton, 2001:168-169):

> *"Computer-mediated communication will either lead to the complete destruction of community, or the creation of completely new forms of community. Critics have argued that new home-based information and communication technologies will disconnect us from our friends, families and communities ..."*

As the community and technology debate plays out over the next several years, I suspect concerns about Internet use causing isolation will take a different form and will have little effect on the continuing rapid growth of home computer and Internet use. That is not to suggest concern over Internet and isolation is not legitimate, but rather, the focus should be on the nature of the on-line community connections and whether or not those on-line connections translate into something meaningful for the user.

This research presented qualitative data to support that participants had a meaningful IT experience, as evidenced in their comments about their exposure and access to technology. It was hoped that the technology would not negatively impact Camfield's resident interactions. The residents had enough problems to deal with having been relocated for nearly two years during the reconstruction of their development. The residents, through the board members, had made a concerted effort to stay connected while away from their development. They returned to a development designed in a way that had residents much more distributed than the previous physical structure, and we had to be concerned about the project not contributing to Camfield residents feeling disconnected. This transitional state presented a unique opportunity, but also posed a challenge in distinguishing whether the technology played a role in the community connections or whether it was due to the migration back to the development.

REVIEW OF EMPOWERMENT AND SELF-SUFFICIENCY FINDINGS

Chapter Five reports many of the positive impacts of the project on participant's lives, behaviors and outlook on the future. The empowerment and self-sufficiency findings suggest that a personal computer and Internet access can play a role in empowering low-income individual's in becoming more self-sufficient and plays a role in one's sense of control, because of access to information, which can influence behaviors and encourage the opportunity to do more for oneself. Low-income communities and its residents have historically relied on third-party organizations to assist them in finding jobs, housing and other information. A personal computer and Internet access can help low-income residents, with comprehensive training, to do more of these types of tasks on their own.

Many of these tasks must be completed despite the fact that life in an urban setting is wrought with obstacles that cannot be planned for and underserved communities seem to get more than their fair share of hardships and disappointments. One aspect of this research was designed to capture participant's sense of control of things that happen to them. This research found that project participants' responses to the question, "I have control over things that happen to me," remained high from time1 to time2. Critical awareness of resources and services inside and outside the community rose from 25% to 55% (see Table 5-2). In addition, awareness of community projects, activities, and events increased 50 percentage points (from 10% to 60%). Likewise, there was an increase in awareness of employment opportunities and an increase in the awareness of the skills and abilities of other residents (see Table 5-2). This research also found shifts in self-reported rankings in memberships in community, religious, civic, and political activities. Signs of self-sufficiency were evidenced in findings of increased use of the computer for job searches, for gathering information on healthcare, and accessing educational resources for their children (see Table 3-27). Other signs included shifts in self-reported items of importance such as an increase in school/college enrollment, from 19% to 30% among full participants at time2.

The findings support signs of stability and a slight increase in all of the major areas of empowerment: sense of control, critical awareness, and participatory behavior. Several full participants reported feeling empowered by having the knowledge to use a computer and the Internet. Some reported that the computer made it easier to manage personal affairs and to obtain information that was relevant to their interests. These findings are interpreted to mean that building an intellectual infrastructure and the capacity to make use of that infrastructure is important for well-informed use. What this means is: Training is a necessary component to build capacity. As a result, of the placement of a personal computer in the home, similar to daily exposure to other technologies such as the telephone, radio, and television, the computer becomes more relevant for use in day-to-day activities.

Empowerment and self-sufficiency are topics that are difficult to quantify because the definition of each can have different meanings for different people. In this study, empowerment meant that

individuals' have beliefs that certain goals are possible and believe that they have the means available to accomplish those goals. The qualitative findings such as self-reported feelings of empowerment and observations of self-sufficiency provided a framework for allowing a certain degree of quantification. These findings can lead one to believe that Internet use is the sole cause of the increased sense of community, increased awareness and participatory behavior reported by participants. However, this cannot be said definitively. It can be drawn from the finding that increases in these attributes, and Internet use did not take away from a participant's sense of community or signs of empowerment.

MEETING THE CHALLENGE: CREATING AND ESTABLISHING THE PROJECT

The complexity of the research did not necessarily lie in how the data was collected or analyzed, but rather in maintaining the relationships that were required to sustain a successful research project. It should be recognized that in creating an initiative such as this, creating strong relationships with community members, and taking the time to understand community culture and its processes are crucial. In addition, countless patience, respect, and flexibility go a long way to ensure an initiative's survival through unexpected occurrences. For example, when we were set to introduce the project to Camfield in the fall of 2000, the Camfield residents were in the middle of relocation, dealing with several construction problems that were important enough to residents to delay moving back. The participatory interventionist nature of what we engaged in as researchers afforded us the opportunity to develop strong interpersonal relations and trust with Camfield's stakeholders and residents. Given our approach as researchers to remain flexible and to be patient with the community process we were not offended by being sidelined on the meeting's agenda in order for residents to work out the construction issues. Instead, we took it as an opportunity to observe this community in action. We rescheduled our presentation, which we hoped would illustrate to this community that we were willing to be sensitive to their more pressing concerns. This experience helped to inform our approach and confirmed that Camfield residents were an active and committed community.

These relationships with the Camfield Estates community, MassHousing and HUD representatives, and the Camfield Neighborhood Technology Center (CENTC) staff and the property management staff went a long way in supporting the development and implementation

of the project. As a result of this approach, we were able to minimize the potential impact of resident suspicion and its influence on being able to gather support for the project. It was important to us to break down distrust that low-income community residents have of people presenting a new initiative to their community. A general sense of skepticism for Camfield was warranted given their past experiences, which included several disappointments that resulted from promises and commitments being made and not kept. As academic researchers, it would have been difficult to get resident buy-in, participation, and honest feedback if our motives were continually in question.

Researchers may encounter, when doing a similar project in a similar setting, suspicion that stems from cultural and other community realities. Culture refers to the values, beliefs, and practices that influence the way an individual interprets the world (Gee & Green, 1998; Lee & Smagorinsky, 2000; Pinkett, 2001). Having had several years of previous experience with implementing community initiatives taught me that it is vital to build strong bonds in efforts to counter distrust of outsiders (see project background in Chapter Two). If researchers or project developers lack community experience and/or community credibility, building a research team that includes and is representative of the community will be an extremely important feature to include in the project's design. In addition, researchers should focus on getting a handle on the role and meaning of a personal computer and Internet access to a respondent in efforts to understand critical indicators of capacity, empowerment, and behavior changes.

Specific Project Challenges

Developing a two-year longitudinal, multi-dimensional study, in an urban community, presents many challenges. The pre-survey, interviews and observations offered us a glimpse into what we might encounter. However, there were still issues that the surveys and interviews did not reveal. Many of these challenges can be categorized as technological and non-technological.

One of several perplexing non-technical challenges was the ratio of participation (54%) as compared to the total number of potential participants. This level of participation was surprising given the opportunity for participants to get a free computer and two years of free high-speed Internet access. A possible reason for only 54% of Camfield households participating, as

reported by some second round participants, was a lack of understanding of the initiative's relevance to their lives. I think that clearer messages and information from project managers to residents about relevance of technology is a possible method of countering this challenge. Being technologically literate is a required skill given technology's pervasiveness. Technical literacy is required for completing even basic tasks, such as using the self-checkout lane at a supermarket, banking or filing forms electronically with the government (see Government Paper Elimination Act, Office of Management and Budget, 2003). In the future, the importance of basic technological literacy cannot be stressed enough to populations that are at risk of falling into the digital divide. When promoting participation in similar studies, and/or other IT deployment efforts, it will be important to highlight the relevance of technology from the very beginning and to identify residents and remain in contact with them (i.e., telephone, visits, flyers, etc.) throughout the life of the project. Technological initiatives aimed at communities should be easier to implement now. At the start of this project, there was mounting consumer and investor backlash regarding the depreciation (and misleading) value of the dot-com companies, and at this time many of the web service providers were not as well know as they are today. The more perceptive and better managed dot-coms weathered the storm to become household names (i.e. Yahoo, Google, Amazon, etc…).

Although we had limited control over this challenge, individual time constraints of some residents also prevented them from participating. This was due to residents' working multiple jobs, and having child care needs, and other daily responsibilities. Perhaps, offering childcare, being flexible in setting up training sessions, and allowing participants to join training at different times are possible approaches to overcoming this challenge. In addition to these approaches, technology efforts that are aimed at building capacity through offering educational courses and/ or specific job training may be more successful since skills gained from comprehensive training can translate into real opportunities for participants to seek and achieve employment. That is, integrating technology transfer efforts with other social programs or services could make both more effective and efficient.

Culturally specific challenges, which affected a small subset of the population at Camfield, but were no less significant, included language barriers, fear of technology and generational

differences. These challenges are complex and can be planned for by the researchers and project implementers with the understanding that these issues may be difficult to fully address.

The technological challenges mostly involved connectivity. As mention in Chapter Three, the agreement with the Internet service provider was that residents could receive Internet service paid for by the project and would not be required to purchase cable or telephone service. We discovered that participants could not receive Internet service from the project Internet service provider, and purchase cable service from another provider over the same coaxial connection. This meant that several households did not have any cable service during the project, while other participants chose to purchase cable service from the project's ISP provider. Unfortunately, we did not anticipate this problem and fortunately, it only affected a few units, but this was a problem nonetheless and resulted in a few participants choosing not to participate because they did not want switch their cable service or receive cable from this provider.

A different challenge along the same line was that several households that we thought were participating and that purchased additional services from project Internet service provider (i.e., cable or phone service) had their Internet service turned off in the middle of the project when their cable service was discontinued because of a past due cable bill. Later the project's Internet service provider informed us that Internet service had to be terminated, in certain cases, because of seriously overdue cable and phone service bills. Unfortunately, both the Internet service provider and those participants that experienced service termination neglected to inform us of the service termination.

An additional crisis with the Internet service provider was the halt of the transparent proxy-server web logs in May of 2001 (over a year before the project officially ended). Although many attempts were made, these logs were not delivered and the service provider did not give any reason why the proxy-server logs were discontinued. This was one of the project's major technological disappointments because without these logs we could not track participant on-line activity through to the end of the project. Taking into consideration the extent of our research plan, attention paid to developing relationships and to securing funding. The challenges encountered with the Internet service provider underscores the limited amount of control, (for

instance, this project started just as the dot-com and telecommunications earnings bubble burst, many broadband ISPs were under considerable financial pressure), that researchers may have over the actions of project partners.

Many of the challenges encountered during this project were easily remedied, while others took considerably more effort to resolve, or did not become evident as a challenge until later on in the project. It is hoped that because of our experience, future researchers will be able to anticipate and prepare contingency plans for potential challenges.

FUTURE RESEARCH

The Camfield story and history is still being written. It is a fantastic story and history of successful struggle, commitment, and promise for not only a clean, safe, and beautiful development, but also a community of families and individuals who care about the health and well being of one another. According to US Census data, the average household income in Boston increased 36% from $30,000 to $40,000 in the last ten years. Camfield is located in a community that is in the midst of an economic boom with property values in some cases quadrupling. A condominium on the next block from Camfield could barely get homebuyers in 1993 to pay $95,000. Today those same units are asking and selling at $380,000 or more. As evidenced from this study, Camfield's resident leadership is committed to staying connected to information about what is going on in their community. The use of technology to help low-income communities understand and benefit from economic changes outside their community is very interesting, and perhaps is a focus for future research.

Apparent in these findings are several promising signs that reveal possible new approaches to support a low-income community's efforts to empower themselves and become more self-sufficient. Camfield Estates represents a low-income housing development whose residents, before this study, possessed a strong sense of personal as well as community purpose. In addition, based on these findings, the availability and access to the Internet, as a linkage institution, shows signs of being able to play a significant role in building a sense of empowerment and moving residents toward self-sufficiency.

When noting lessons from our experience, a project of this size is very time-consuming and at times frustrating. Our frustrations included moderate participation percentages, connectivity issues, partnership related dilemmas, and ensuring that any technical difficulties were addressed immediately. The larger question for research and initiatives similar to this is: Is it worth the effort? Putting a personal computer and Internet access in the home along with building an adequate training program and support infrastructure is not an easy task given the numerous intellectual, physical, human and monetary resources required. However, this should not be a deterrent from ensuring that low-income residents have access in their homes.

The amount of critical information for individuals and families that is easily available on the Internet is growing every day. Opening this doorway and/or "on ramp" for low-income communities to what has become known as the "information superhighway" is becoming increasingly important. Equally as important is convenient, private, safe and affordable access. The individual rewards of technology come from the *experience*. During an interview, this participant expressed the impact of her rewarding experience with technology:

> *"I feel that I can keep learning. I can keep growing. It's changed my life because learning and growing do not stop with age. Now, I want to learn new things. It has changed my life to learn that learning and growing is forever and you just keep going and going. It's taught me that you have to keep growing and learning forever." [MC]*

The economic model we used of philanthropic intervention is not an easy model to replicate. This project certainly benefited from the reputation of Massachusetts Institute of Technology in securing the necessary funding and support. This is not to suggest that another project similar cannot be done without involvement of an academic institution. On the contrary, I am suggesting that processes and lessons can be taken from this effort and used under another economy model. Another economic approach might be to take advantage of today's reduced cost of personal computers and have the end user share some, if not the entire computer costs. What will be important is for project managers and developers to focus their energies on developing strategies to aid low-income populations in understanding the relevance of technology. It will also be essential to do what I call building an intellectual infrastructure to ensure participants are able to make meaningful use of the technology. Energies can also be focused on gathering resources, designing methods and developing strategies for the diffusion of high-speed Internet connectivity to underrepresented populations.

Gathering resources for an initiative such as this can be substantial, but in the future it does not have to be. The Creating Community Connections Project incurred hard costs associated with hardware, software, Internet service and training. The average hard cost per participant (37) was approximately $1,500. The project also received hardware, software and Internet service in-kind contributions totaling approximately $2,300 per participant. These costs in 2000 would be less expensive today as technology becomes more readily available. Comparing this project's costs to

the cost of maintaining a technology center is complicated and perhaps cost is not an appropriate factor for comparison. Much of the project's cost were one time expenses, whereas technology center costs are ongoing with staffing (i.e. center maintenance and utility costs). These two models in this project were conceptually and purposefully joined. The Creating Community Connections Project effectively used the CENTC not only to support the project, but also to ensure technical support beyond the life of the project. It's difficult to identify per user costs or volume for technical support since some may use this support more than others. However, technical support in the private sector can be more than $100/hour. Most community technology centers cannot pay market rate for technical support and often find creative ways to fill the need. In addition to sharing the expertise among several CTCs, many also make use of volunteer support offered by local organizations, residents and nearby universities. In addition to using technical support contracted from MassHousing for the CENTC, the Creating Community Connections Project made use of local residents with some expertise such as Edward to offer technical support to other residents. In essence it is important for the sustainability of any community technology initiative to connect the effort with a local CTC to maintain a certain level of costs and services appropriate to provide useful and meaningful technological support.

Sustaining Internet connectivity in the home over the long-term is the final challenge faced by many community technology initiatives. Policy makers have labeled efforts to get high-speed and high-bandwidth Internet service in the home as the "last mile." This project provided high-speed Internet service which ended in November of 2002, and we have not yet been able to determine precisely how many project participants are now paying for their in-home Internet service. As discussed in chapter two, the Creating Community Connections Project is experimenting with wireless connectivity using the CENTC's T1 connection as the access point. With several Internet options available to communities, project managers, as in Camfield's case, should help community members develop Internet service alternatives.

The Camfield Estates-MIT Creating Community Connections Project demonstrated the value of in-home personal computing and Internet access above and beyond the local technology center. However, an initiative with an emphasis on in-home computing is an expensive investment. In addition to the fixed hardware, software, Internet service and training costs, the Creating

Community Connections Project also included 2 full-time Ph.D. candidate researchers, 1 full-time onsite resident project leader, several part-time graduate student researchers as well as support from several faculty advisors and university staff. This level of expertise and project support private sector is neither cheap nor easy to come by. Coordinating project development with a local university and sharing support and costs with other community technology efforts, as well as with other community development efforts makes more economic sense. In addition to the Creating Community Connections project costs; much has been invested in physically improving Camfield Estates. The rebuilding costs for the development averaged about $160,000 per unit. Efforts to redevelop other deteriorated low-income housing could bundle in our $3,800 per unit community technology project cost with new construction costs. As hardware, software, and networking costs continue to drop, projects such as these will become more affordable. Internet service and training costs could also be bundled in with other social service and employment training program efforts. Only time will tell if the physical and programmatic investments at Camfield Estates will translate in improved socio-economic conditions.

Finally, Empowerment, self-sufficiency, and community are not concepts that are unfamiliar to Camfield residents, nor are these elements completely absent in this community. Residents desire all of the positive effects that result from achieving these ideals. The challenge is *how* one goes about being empowered or self-sufficient. Camfield residents, as do residents in many other low-income communities, want to be self-sufficient and empowered and to live in safe, supportive and involved communities. Public policy has not been completely successful in its approach to promoting self-reliance. Rather, finger pointing continues to be directed at the individual and not at institutional barriers (Wilson, 1996). It is hoped, that similar studies will continue to shed light on technology's role in sharing information and resources that could potentially empower an individual to become more self-sufficient.

REFERENCES

Anderson, E. (1999). *Code of the Street: Decency, Violence and the Moral Life of the Inner City.* New York, NY: W.W. Norton & Company.

Aspen Institute. (1997). *Voices from the Field: Learning from the Early Work of Comprehensive Community Initiatives.* Washington, DC: Aspen Institute.

Bauman, J. F., Biles, R., & Szylvian, K. M. (Eds.). (2000). *From Tenements to the Taylor Homes: In Search of an Urban Housing Policy in Twentieth Century America.* University Park, PA: The Pennsylvania State University Press.

Beamish, A. (1999). Approaches to Community Computing: Bringing Technology to Low-Income Groups. In D. Schön & B. Sanyal & W. J. Mitchell (Eds.), *High Technology in Low-Income Communities: Prospects for the Positive Use of Information Technology* (pp. 349-368). Cambridge, MA: MIT Press.

Bishop, A. P., Tidline, T. J., Shoemaker, S., & Salela, P. (1999). Public Libraries and Networked Information Services in Low-Income Communities. *Libraries & Information Science Research, 21*(3), 361-390.

Borgatti, S. P., Jones, C., & Everett, M. G. (1998). Network Measures of Social Capital. *Connections, 21*, 1-36.

Briggs, X., deSouza, Mueller, E., J, & Sullivan, M. (1997). Housing Satisfaction, *From Neighborhoods to Community: Evidence on the Social Effects of Community Development.* New York, NY: Graduate School of Management and Urban Policy New School for Social Research.

Davenport, T. O. (2001). *The Human Capital Metaphor: What's in a Name?* [Electronic]. LiNe Zine.com, Spring. Retrieved February 11, 2001, from the World Wide Web: www.linezine.com/7.2/articles/tdthcmwian.htm

Denzin, N. K. (1989). On the Ethics and Politics of Sociology, *The Research Act: A Theoretical Introduction to Sociological Methods* (pp. 248-269). Englewood Cliffs, NJ: Prentice Hall.

Ferguson, R. F., & Dickens, W. T. (Eds.). (1999). *Urban Problems and Community Development.* Washington, DC: The Brookings Institute Press.

Ferreira, J., Jr. (1999). Information Technologies That Change Relationships between Low-Income Communities and the Public, and Nonprofit Agencies That Serve Them. In D.

Schön & B. Sanyal & W. J. Mitchell (Eds.), *High Technology in Low Income Communities: Prospects for the Positive Use of Information Technology*. Cambridge, MA: MIT Press.

Freeman, L. C. (1979). Centrality in Social Networks: Conceptual Clarification. *Social Networks, 1*(215-239).

Gaber, J., & Gaber, S. L. (1997). Utilizing Mixed-Method Research Designs in Planning: The Case of 14th Street, New York City. *Journal of Planning Education and Research, 17*(2), 95-103.

Gee, J. P., & Green, J. (1998). Discourse Analysis, Learning and Social Practice: A Methodological Study. *Review of Research in Education, 23*, 119-170.

Granovetter, M. S. (1973). The Strength of Weak Ties. *American Journal of Sociology, 78*(6), 1360-1380.

Haase, A. Q., Wellman, B., Witte, J., & Hampton, K. (2002). Capitalizing on the Internet: Social Contact, Civic Engagement and Sense of Community. In B. Wellman & C. Haythornthwaite (Eds.), *The Internet and Everyday Life*. Oxford, UK: Blackwell.

Hampton, K. (2001). *Living the Wired Life in the Wired Suburb: Netville, Glocalization and Civil Society.* Doctoral Thesis, Department of Sociology, University of Toronto, Canada.

Hampton, K., & Wellman, B. (1998). *Netville Wired Suburb Survey*: University of Toronto, Department of Sociology.

Hampton, K., & Wellman, B. (2001). Long Distance Community in the Network Society Contact and Support Beyond Netville. *American Behavioral Scientist, 45*(3), 476-495.

Horrigan, J. B., & Rainie, L. (2002). *Counting on the Internet*. Washington, DC: PEW Internet & American Life Project.

Huber, G. P. (1990). A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making. *Academy of Management Review, 15*(1), 47-71.

Jennings, J., with, Evereteze, J., O'Bryant, R. L., Williams, R., Kim, S., & Colon, M. (2002). *The Demonstration Disposition Program in Boston, Massachusetts, 1994 to 2001: A Program Evaluation* (Final Draft Report). Medford, MA: Urban and Environmental Policy and Planning Tufts University.

Kavanaugh, A. L., & Patterson, S. J. (1999). *Blacksburg Electronic Village (Bev) Community Survey*. Blacksburg, VA: Virginia Polytechnic Institute & State University.

Klosterman, R. E. (1992). Evolving Views of Computer-Aided Planning. *Journal of Planning Literature, 6*(3), 249-260.

Klosterman, R. E. (1997). Planning Support Systems: A New Perspective on Computer Aided Planning. *Journal of Planning Education and Research, 17*, 45-54.

Kraut, R., Kiesler, S., Boneva, B., Cummings, J., Helgeson, V., & Crawford, A. (2002). Internet Paradox Revisited. *Journal of Social Issues, 58*(1), 49-74.

Kraut, R., Lundmark, V., Patterson, M., Kiesler, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet Paradox: A Social Technology That Reduces Social Involvement and Psychological Well-Being. *American Psychologist, 53*(9), 1017-1031.

Kretzmann, J. P., & McKnight, J. L. (1993). *Building Communities from the inside Out: A Path toward Finding and Mobilizing a Community's Assets*. Chicago, IL: ACTA Publications.

Laroche, M., Mérette, M., & Ruggeri, G. C. (1998). *On the Concept and Dimensions of Human Capital in a Knowledge-Based Economy Context*. Ottawa, Ontario, Canada: Canadian Government Publishing Directorate.

Lee, C. D., & Smagorinsky, P. (2000). Introduction: Constructing Meaning through Collaborative Inquiry. In C. D. Lee & P. Smagorinsky (Eds.), *Neo-Vygotskian Perspectives on Literacy Research*. New York, NY: Cambridge University Press.

Mark, J., Cornebise, J., & Wahl, E. (1997). *Community Technology Centers: Impact on Individual Participants and Their Communities* (Paper submitted to Informal Science Division, National Science Foundation and Human Resources). Newton, MA: Educational Development Center.

Mead, L. M. (1991). The New Politics of Poverty: The Non-Working Poor in America. New York, NY: Basic Books.

Mechanic, D. (1991). Adolescents at Risk: New Directions. *Journal of Adolescent Health, 12*, 638-643.

Miller, M. L., & Din, G. (1996). *A Practice Based Anti-Poverty Analysis* (Policy Brief Section I of III). San Francisco, CA: Asian Neighborhood Design Network.

Minicucci, S. (2000). *Social Capital Community Benchmark Survey*. Harvard University, Kennedy School of Government, Cambridge, MA.

Morino, M. (1994, May 5). *Assessment and Evolution of Community Networking.* Paper presented at the Ties That Bind Conference on Building Community Networks Sponsored by Apple Computer and The Morino Institute, Cupertino, CA.

Neal, A., & Groat, H. T. (1974). Powerlessness Scale. In J. P. Robinson & P. R. Shaver & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (Vol. 1, pp. 301-303). San Diego, CA: Academic Press.

Nie, N., & Ebring, L. (2000). *Internet and Society: A Preliminary Report*. Stanford University, Institute for the Quantitative Study of Society. Retrieved May 24, 2001, from the World Wide Web: http://www.stanford.edu/group/siqss/Press_Release/Preliminary_Report-4-21.pdf

Nie, N., Hillygus, H., Sunshine, D., & Erbring, L. (2002). Internet Use, Interpersonal Relations, and Sociability: A Time Diary Study. In B. Wellman & C. Haythornwaite (Eds.), *The Internet in Everyday Life* (pp. 215-243). Malden, MA: Blackwell Publishing.

O'Connor, A. (1999). Swimming against the Tide: A Brief History of Federal Policy in Poor Communities. In R. F. Ferguson & W. T. Dickens (Eds.), *Urban Problems and Community Development*. Washington, DC: The Brookings Institute Press.

Office of Management and Budget. (2003). *Implementation of the Government Paperwork Elimination Act*. Executive Office of the President. Retrieved September 5, 2003, from the World Wide Web: http://www.whitehouse.gov/omb/fedreg/gpea2.html

Orlikowski, W. J. (1992). The Duality of Technology: Rethinking the Concept of Technology in Organizations. *Organization Science, 3*(3), 398-427.

Pearlinm, L., Lieberman, M., Menaghan, E., & Mullan, J. (1981). Mastery Scale. In J. Robinson, P & P. R. Shaver & L. S. Wrightsman (Eds.), *Measures of Personality and Social Psychological Attitudes* (Vol. 1, pp. 304-306). San Diego, CA: Academic Press.

Pinch, T. J., & Bijker, W. E. (1987). The Social Construction of Fact and Artifacts. In W. E. Bijker & T. Hughes & T. J. Pinch (Eds.), *The Social Construction of Technological Systems* (pp. 17-50). Cambridge, MA: The MIT Press.

Pinkett, R. D. (2001). *Creating Community Connections Sociocultural Constructionism and an Asset-Based Approach to Community Technology and Community Building in a Low-Income Community.* Doctoral Thesis, Massachusetts Institute of Technology, Cambridge, MA.

Policy Development and Research. (2002). *Boston in Context: A Profile of Demographic and Economic Characteristics Comparing the USA, Massachusetts, and Boston.* Boston

Redevelopment Authority,. Retrieved July 15, 2003, from the World Wide Web: http://www.cityofboston.gov/bra/PDF/Publications//pdr_561.pdf

Prell, C. (2003). Community Networking and Social Capital: Early Investigations [Electronic Version]. *Journal of Computer Mediated Communication, 8*(3).

Putnam, R. D. (1993). Prosperous Community: Social Capital and Public Life. *The American Prospect, 26*, 18-21.

Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community*. New York, NY: Simon and Schuster.

Rainie, L. (2000). *Tracking Online Life: How Women Use the Internet to Cultivate Relationships with Family and Friends.* Washington, DC: PEW Internet & American Life Project.

Resnick, P. (2000). *Who's That? Survey of Neighbors in Southeastern Michigan.* University of Michigan.

Rothenbuhler, E. (1991). The Process of Community Involvement. *Communications Monographs, 58*, 63-78.

Rothenbuhler, E. W., Mullen, L. J., DeLaurell, R., & Ryu, C. R. (1996). Communication and Community Attachment and Involvement. *Journalism and Mass Communication Quarterly, 73*, 445-466.

Saegart, S., & Thompson, P. J. (1994). *Building Social Capital in Public Housing Survey*. New York, NY: The City University of New York Graduate School and University Center.

Schuler, D. (1996). *New Community Networks: Wired for Change*. New York, NY: Addison-Wesley Publishing.

Shiffer, M. (1997). *Managing Public Discourse: Towards the Augmentation of GIS with Multimedia*. Cambridge, MA: Massachusetts Institute of Technology, Department of Urban Studies and Planning.

Shiffer, M. J. (1992). Towards a Collaborative Planning System. *Environment and Planning B: Planning and Design, 19*, 709-722.

Shlay, A. B. (1993). Family Self-Sufficiency and Housing. *Housing Policy Debate, 4*(3).

Smith, T., V. (1998). *General Social Survey*. Chicago, IL: The National Opinion Research Center.

Stamm, K. R. (1985). *Newspaper Use and Community Ties: Toward a Dynamic Theory.* Norwood, NJ: Ablex.

Stoll, C. (1995). *Silicon Snake Oil: Second Thoughts on the Information Highway.* New York, New York: Double Day.

Suchman, L., & Jordan, B. (1997). Computerization and Women's Knowledge. In P. E. Agre & D. Schuler (Eds.), *Reinventing Technology, Rediscovering Community: Critical Explorations of Computing as a Social Practice* (pp. 97-105). Greenwich, CT: Ablex Publishing.

The Cornu Management Company. (2000). *Summary Statistics Camfield Estates [Print out].* Boston, MA.

U.S. Department of Commerce. (1995). *Falling through the Net: A Survey of the "Have Nots" in Rural and Urban America.* Washington, DC: National Telecommunications and Information Administration U.S. Department of Commerce.

U.S. Department of Commerce. (1998). *Falling through the Net Ii: New Data on the Digital Divide.* Washington, DC: National Telecommunication and Information Administration U.S. Department of Commerce.

U.S. Department of Commerce. (1999). *Falling through the Net: Defining the Digital Divide. A Report on the Telecommunications and Information Technology Gap in America.* Washington, DC: U.S. Department of Commerce National Telecommunications and Information Administration.

U.S. Department of Commerce. (2000). *Falling through the Net: Toward Digital Inclusion. A Report on America's Access to Technology.* Washington, DC: U.S. Department of Commerce Economic and Statistics Administration, National Telecommunications and Information Administration.

Van der Poel, M. G. M. (1993). Delineating Personal Support Networks. *Social Networks, 15*(1), 49-70.

Wasserman, S., & Faust, K. (1994). *Social Network Analysis: Methods and Applications.* Cambridge, MA: Cambridge University Press.

Wellman, B., & Leighton, B. (1979). Networks, Neighborhoods and Communities. *Urban Affairs Quarterly, 14*, 363-390.

Wilson, W. J. (1987). *The Truly Disadvantaged: The Inner City, the Underclass and Public Policy.* Chicago, IL: The University of Chicago Press.

Wilson, W. J. (1996). *When Work Disappears: The World of the New Urban Poor*. New York, NY: Vintage Books.

Wilson, W. J., & Neckerman, K. (1986). Poverty and Family Structure: The Widening Gap between Evidence and Public Policy Issues. In D. H. Weinberg (Ed.), *Fighting Poverty: What Works and What Doesn't*. Cambridge, MA: Harvard University Press.

Zimmerman, M. A. (2000). Empowerment Theory: Psychological, Organizational and Community Levels of Analysis. In J. Rappaport & E. Seidman (Eds.), *Handbook of Community Psychology*. New York, NY: Plenum Publishers.

Zuboff, S. (1988). The Abstraction of Industrial Work, *In the Age of Smart Machine: The Future of Work and Power* (pp. 315-361). New York, NY: Basic Books.

Zuboff, S. (1991). Informate the Enterprise: An Agenda for the Twenty-First Century. *National Forum, 71*(3), 3-7.

BIBLIOGRAPHY

Albert, M., Cagan, L., Chomsky, N., Hahnel, R., King, M. H., Sargent, L., & Sklar, H. (1986). *Liberating Theory*. Boston, MA: South End Press.

Al-Kodmany, K. (1998, October 14-17). *GIS and the Artist: Shaping the Image of a Neighborhood in Participatory Environmental Design (Revised).* Paper presented at the National Center for Geographic Information Analysis, Empowerment, Marginalization and Public Participation Meeting, Santa Barbara, CA.

Anderson, E. (1992). *Streetwise: Race, Class and Change in an Urban Community*. Chicago, IL: University of Chicago Press.

Aspen Institute. (1999). *New Approaches to Evaluating Community Initiatives: Volume 1: Concepts, Methods and Contexts*. Washington, DC: Aspen Institute.

Aspen Institute. (1999). *New Approaches to Evaluating Community Initiatives: Volume 2:Theory, Measurement, and Analysis*. Washington, DC: Aspen Institute.

Balter, A. (1999). *The Basis of Access Development*. Indianapolis, IN: Sams Publishing.

Barndt, M. (1998, October 15- 17). *A Model for Evaluating Public Participation GIS Programs.* Paper presented at the National Center for Geographic Information and Analysis, Empowerment, Marginalization, and Public Participation Meeting, Santa Barbara, CA.

Bellah, R., Madsen, R., Sullivan, W. W., Swindler, A., & Tipton, S. M. (1991). The Political Economy: Market and Work, *The Good Society*. New York, NY: Alfred Knopf.

Bose, C. E. (1984). Household Resources and U.S. Women's Work: Factors Affecting Gainful Employment at the Turn of the Century. *American Sociological Review, 49*(4), 474-490.

Bratt, R. G., Keyes, L. C., with assistance from, Parks, R., Phinney, K., & Markel, D. (1997). *New Perspectives on Self-Sufficiency: Strategies of Non-Profit Housing Organizations*. Medford, MA: Department of Urban and Environmental Policy Tufts University.

Broadbent, M., & Weill, P. (1997). Management by Maxim: How Business and It Managers Can Create It Infrastructures. *Sloan Management Review, 38*(3), 77-92.

Brown, L. D. (1983). Participatory Research and Community Planning. In L. D. Brown (Ed.), *Managing Conflict at Organizational Interfaces*. Reading, MA: Addison-Wesley.

Burrell, G., & Morgan, G. (1979). Sociological Paradigms and Organizational Analysis, *Elements of the Sociology of Corporate Life*. London, England: Heinemann.

Burt, R. S. (1999). The Social Capital of Opinion Leaders. *The Annals of the American Academy*

of Political and Social Science, 566, 37-54.

Burt, R. S. (2000). *The Network Structure of Social Capital*. Unpublished manuscript.

Butler, S. M. (1991). The Conceptual Evolution of Enterprise Zones. In R. E. Green (Ed.), *Enterprise Zones: New Directions in Economic Development*. Newbury Park, NJ: Sage Publications.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and Quasi-Experimental Designs for Research American Educational Research Association*. Chicago, IL: Rand McNally College Publishing Company.

Cancian, F. M. (1993). Conflicts between Activist Research and Academic Success: Participatory Research and Alternative Strategies. *The American Sociologist, 24*(1), 92-106.

Chaskin, R., & Brown, P. (1996). Theories of Neighborhood Change. In R. Stone (Ed.), *Core Issues in Comprehensive Community-Building Initiatives* (pp. 1-15). Chicago, IL: Chapin Hill.

Christenson, J. A., & Robinson Jr, J. W. (Eds.). (1980). *In Search of Community Development*. Ames, IA: The Iowa State University Press.

City of Boston. (1994). *Boston's Empowerment Zone Strategic Plan [Summary]*, (Packet). Boston, MA.

Cohill, A. M., & Kavanaugh, A. L. (Eds.). (1997). *Community Networks: Lessons from Blacksburg, Virginia*. Norwood, MA: Artech House.

Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology, 94*(supplement s-95-s120).

Dionne, E. J. (1992). The Quest for Community (Again). *The American Prospect, 3*(10), 48-54.

Downs, A. (1997). The Challenge of Our Declining Big Cities. *Housing Policy Debate, 8*(2), 359-408.

Earl, M., & Bensaou, M. (1998). The Right Mind-Set for Managing Information Technology. *Harvard Business Review,* 119-128.

Egenhofer, M. J., & Kuhn, W. (1990). Interaction with Geographic Information Systems Via Spatial Queries. *Journal of Visual Languages and Computing, 1*(4), 389-413.

Evans, P. B., & Wurster, T. S. (1997). Strategy and the New Economics of Information. *Harvard Business Review*, 71-82.

Ferreira, J., Jr. (1990). Database Management Tools for Planning. *Journal of American Planning Association, 1*(1), 78.

Fotheringham, A. S., & Rogerson, P. (Eds.). (1994). *Spatial Analysis and GIS*. Bristol, PA: Taylor & Francis.

Friedenberger, J. (1991). Participatory Research and Grassroots Development: A Case Study from Harlem. *City and Society, 5*(1), 64-75.

Gans, H. J. (1995). *The War against the Poor: The Underclass and Anti-Poverty Policy*. New York, NY: Basic Books.

Goetze, R. (1979). *Understanding Neighborhood Change: The Role of Expectations in Urban Revitalization*. Cambridge, MA: Ballinger Press Publishing Company.

Gore, A., Vice President. (1994). *A National Commitment to Community Development* [Electronic]. ShelterForce, Mar/Apr. Retrieved November 12, 2001, from the World Wide Web: http://www.nhi.org/online/issues/74/gore.html

Hallman, H. W. (1973). The Neighborhood as an Organizational Unit: A Historical Perspective. In G. Frederickson (Ed.), *Neighborhood Control in the 1970's: Politics, Administration and Citizen Participation*. New York, NY: Chandler Publications.

Halpern, R. (1995). *Rebuilding the Inner City: A History of Neighborhood Initiatives to Address Poverty in the United States*. New York, NY: Columbia University Press.

Hampton, K., & Wellman, B. (2000). *Examining Community in Digital Neighborhoods: Early Results from Canada's Wired Suburb Project*: University of Toronto, Center for Urban Community Studies.

Harrison, B. (1974). Ghetto Economic Development: A Survey. *Journal of Economic Literature, 12*(1), 1-37.

Hess, D. R. (1999). *Community Organizing, Building and Developing: Their Relationship to Comprehensive Community Initiatives.* Paper presented at the Online Conference on Community Organizing and Development, Toledo, OH.

Hooper, M. D. (1990, May-June). Rattling Sabre: New Ways to Compete on Information. *Harvard Business Review,* 118-125.

Horan, T. A. (2000). *Digital Places: Building Our City of Bits* (D101). Washington, DC: The Urban Land Institute.

Howard, D. (1998, October 15 -17). *Geographic Information Technologies and Community Planning: Spatial Empowerment and Public Participation.* Paper presented at the National Center for Geographic Information and Analysis on Empowerment,

Marginalization and Public Participation Meeting, Santa Barbara, CA.

Hutchinson, S., & Daniel, L. (2000). *Inside ArcView GIS* (3rd ed.). New York, NY: OneWorld Press.

Huxhold, W. E. (1991). Geographic Information Systems Defined, *An Introduction to Urban Geographic Information Systems.* New York, NY: Oxford University Press.

Jennings, J. (1992). *The Politics of Black Empowerment: The Transformation of Black Activism in Urban America.* Detroit, MI: Wayne State University Press.

Jennings, J. (1999). Persistent Poverty in the United States: Review of Theories and Explanations. In L. Kushnick & J. Jennings (Eds.), *A New Introduction to Poverty: The Role of Race, Power and Politics* (pp. 13-38). New York, NY: New York University Press.

Jennings, J. (1999). *The End of Welfare as We Know It? Or Ending Neighborhoods as We Have Come to Know Them?* McLean, VA: Newsletter of the Neighborhood Funders Group Reports.

Justice Policy Institute. (2002). *Cellblocks or Classrooms? The Funding of Higher Education and Corrections and It's Impact on African American Men.* Washington, DC: Justice Policy Institute.

Keller, S. (1965). *Neighbors, Neighboring and Neighborhoods in Sociological Perspective: A Discussion of Concepts and Selected Findings.* Athens, Greece: Athens Technological Institute.

Kemp, J. (1991, May 26). How We Trap America's Poor in the 'Other Economy'. *The Washington Post,* pp. D1.

Keyes, L. (1992). Organizational Issues, *Strategies and Saints: Fighting Drugs in Subsidized Housing* (pp. 195-216). Washington, DC: Urban Institute Press.

Kim, K. (1998, October 14-17). *Using GIS Technologies to Empower Community Based Organizations in Hawaii.* Paper presented at the National Center for Geographic Information Analysis, Empowerment, Marginalization and Public Participation Meeting, Santa Barbara, CA.

King, M. H. (1981). *Chain of Change: Struggles for Black Community Development.* Boston, MA: South End Press.

Kraut, R., Lundmark, V., Kiesler, S., Mukhopadhyay, T., & Scherlis, W. (1997). *Why People Use the Internet.* Pittsburgh, PA: Carnegie Mellon University.

Laituri, M. (1998, October 14 -17). *Marginal Societies and Geographic Information Systems.* Paper presented at the National Center for Geographic Information Analysis, Empowerment, Marginalization and Public Participation Meeting, Santa Barbara, CA.

Leitner, H., Elwood, S., Sheppard, E., McMaster, S., & McMaster, R. (2000). Modes of GIS Provision and Their Appropriateness for Neighborhood Organizations: Examples from Minneapolis and St. Paul, Minnesota. *Journal of the Urban and Regional Information Systems Association, 12*(4), 45 - 58.

Lemann, N. (1994, January 1). The Myth of Community Development. *New York Times Magazine, 143,* 26.

Lemberg, D. (1996). *Gentleman Adventurers in the Information Age: Accessibility, Activity, and Urban Futures.* Paper presented at the Spatial Technologies, Geographic Information and the City, Baltimore, MD.

Lofland, L. H. (Ed.). (1998). *The Public Realm: Exploring the City's Quintessential Social Territory*. New York, NY: Aldine De Gruyter.

Lynch, K. (1960). *The Image of the City*. Cambridge, MA: The MIT Press.

Mapping Science Committee Board. (1993). *Toward a Coordinated Spatial Data Infrastructure for the Nation* (Report). Washington, DC: Mapping Science Committee Board on Earth Sciences and Resources Commission on Geosciences, Environment and Resources National Research Council National Academy Press.

Mark, J., Ellis, J., Wise, B., & Chow, C. (1998). *Impact of CTCNet Affiliates: Findings from a National Survey of Users of Community Technology Centers*. Newton, MA: Educational Development Center.

Markus, M. L. (1996). The Futures of It Management. *The DATA BASE for Advances in Information Systems, 27*(4), 68 - 84.

MassHousing. (1998). *HUD/MHFA Demonstration Disposition Program [Briefing]*. Boston, MA: Massachusetts Housing Finance Agency.

MassHousing. (2001). *Demonstration Disposition (DemoDispo) Program History*. Boston, MA: Massachusetts Housing Finance Agency.

Mcknight, J. L. (1987). Regenerating Community. *Social Policy, 17*(3), 54-58.

Medoff, P., & Holly, S. (1994). *Streets of Hope: The Fall and Rise of an Urban Neighborhood.* Boston, MA: The South End Press.

Mitchell, W. J. (1995). *City of Bits: Space, Place, and the Infoban.* Cambridge, MA: MIT Press.

Monmonier, M. S. (1991). *How to Lie with Maps.* Chicago, IL: University of Chicago Press.

Morino Institute. (2001). *From Access to Outcomes: Raising the Aspirations for Technology Initiatives in Low-Income Communities.* Reston, VA: Morino Institute.

Moss, M., & Townsend, A. M. (2000). The Internet Backbone and the American Metropolis. *The Information Society, 16*, 35-47.

Nakagawa, K., & O'Connell, M. (1988). *Getting Connected: How to Find out About Groups and Organizations in Your Neighborhood.* Chicago, IL: Northwestern University, Center or Urban Affairs and Policy Research.

Nedovic, Z. (1999, 12-13-99). *Urban and Regional Planning* [electronic]. URISA Journal University Consortium GIS. Retrieved December 11, 2001, from the World Wide Web: http://www.ucgis.org/apps_white/urban.html)

Newman, K. S. (1999). *No Shame in My Game: The Working Poor in the Inner City.* New York, NY: Vintage Books.

Nie, N. (2001). Sociability, Interpersonal Relations, and the Internet. *American Behavioral Scientist, 45*(3).

Novuris, M. J. (Ed.). (1993). *SPSS for Windows: Base Systems User's Guide, Release 5.0.* Chicago, IL: SPSS Corporation.

Nowak, J. (1997). Neighborhood Initiative and the Regional Economy. *Economic Development Quarterly, 11*(1), 3-10.

Obermeyer, N. J. (1998, October 14 - 17). *HUD's Community Connection for Local Empowerment.* Paper presented at the National Center for Geographic Information Analysis, Empowerment, Marginalization and Public Participation Meeting, Santa Barbara, CA.

Obermeyer, N. J. (2000). Review of High Technology in Low-Income Communities: Prospects for the Positive Use of Information Technology. *Journal of the Urban and Regional Information Systems Association*, 61 - 62.

O'Connor, A. (1995). *Evaluating Comprehensive Community Initiatives: A View from History.* New Approaches to Evaluating Community Initiatives. Retrieved March 11, 2001, from the World Wide Web: www.aspenroundtable.org/vol1/oconnor.htm.

Orlikowski, W. J. (1996). Improvising Organizational Transformation over Time: A Situated Change Perspective. *Information Systems Research, 7*(1), 63-92.

Ottensmann, J. R. (1992). Central City Dominance in Metropolitan Areas and the Availability of Affordable Housing. *Journal of Planning Education and Research, 11*(2), 96-104.

Peattie, L. (1994). An Approach to Urban Research in the Nineties. *Planning Theory, 12*, 1-28.

Pickles, J. (1994). Representations in and Electronic Age: Geography, GIS and Democracy. In J. Pickles (Ed.), *Ground Truth: The Social Implications of Geographic Information Systems* (pp. 1-30). New York, NY: Guilford Press.

Pindyck, R. S., & Rubinfeld, D. L. (1998). *Econometric Models and Economic Forecasts* (4th ed.). Boston, MA: Irwin McGraw-Hill.

Pinkett, R. D., & O'Bryant, R. L. (2001, November 4-6). *Building Community, Empowerment and Self-Sufficiency: Early Results from the Camfield Estates-MIT Creating Community Connections Project.* Paper presented at the Digital Communities 2001 Conference, Evanston, IL.

Porter, M. E. (1994). The Competitive Advantage of the Inner-City. Boston, MA: Harvard Business School.

Porter, M. E., & Habiby, A. (1999, May). *A Window on the New Economy Understanding the Economic Potential of Inner Cities*. Inc Magazine. Retrieved December 11, 2002, from the World Wide Web: http://www.inc.com/articles/ops/operations/real_estate/778.html

Putnam, R. D. (1995). Bowling Alone: America's Declining Social Capital. *Journal of Democracy, 6*(1), 65-78.

Resnick, M., & Rusk, N. (1996). Access Is Not Enough: Computer Clubhouses in the Inner City. *American Prospect, 27*, 60-68.

Resnick, M., Rusk, N., & Cooke, S. (1998). The Computer Clubhouse: Technological Fluency in the Inner City. In D. Schön & B. Sanyal & W. J. Mitchell (Eds.), *High Technology in Low-Income Communities: Prospects for the Positive Use of Information Technology* (pp. 263-286). Cambridge, MA: MIT Press.

Resnick, P., & King, M. (1997). The Rainbow Pages: Building Community with Voice Technology. In P. E. Agre & D. Schuler (Eds.), *Reinventing Technology, Rediscovering Community: Critical Explorations of Computing as a Social Practice*. Greenwich, CT: Ablex Publishing Corporation.

Roberts, M. (1996). Empowering Communities of Color through Computer Technology. *The Trotter Review: The Information Superhighway and Communities of Color, 9*(2), 22 - 25.

Rohe, W. M., & Kleit, R. G. (1999). Housing, Welfare Reform, and Self-Sufficiency: An Assessment of the Family Self-Sufficiency Program. *Housing Policy Debate, 10*(2), 333-369.

Rothenbuhler, E. W. (1995). Understanding and Constructing Community: Communication Approach. In P. Adams & K. Nelson (Eds.), *Reinventing Human Services: Community and Family Centered Practice (Modern Applications of Social Work)*. New York, NY: Aldine De Gruyter.

Sampson, R. J. (1999). *What "Community Supplies" Urban Problems and Community Development* (0185718156). Washington, DC: The Brookings Institute Press.

Schön, D., Sanyal, B., & Mitchell, W. J. (Eds.). (1999). *High Technology in Low-Income Communities: Prospects for the Positive Use of Information Technology*. Cambridge, MA: MIT Press.

Scott, W. R. (1990). Technology and Structure: An Organizational Level Perspective. In P. Goodman & L. Sproull (Eds.), *Technology and Organizations* (pp. 109-143). San Fransisco, CA: Jossey-Bass.

Shaw, A. (1995). *Social Constructionism and the Inner City: Designing Environments for Social Development and Urban Renewal.* Doctoral Thesis, Massachusetts Institute of Technology, Cambridge, MA.

Shaw, A., & Shaw, M. (1999). Social Empowerment through Community Networks. In D. Schön & B. Sanyal & W. J. Mitchell (Eds.), *High Technology in Low-Income Communities: Prospects for the Positive Use of Information Technology*. Cambridge, MA: MIT Press.

Shiffer, M. J. (1995). Interactive Multimedia Planning Support: Moving from Stand-Alone Systems to the World Wide Web. *Environment and Planning B: Planning and Design, 22*, 649-664.

Shiffer, M. J. (1999). Planning Support Systems for Low-Income Communities. In D. Schön & B. Sanyal & W. J. Mitchell (Eds.), *High Technology in Low-Income Communities: Prospects for the Positive Use of Information Technology* (pp. 191-211). Cambridge, MA: MIT Press.

Shiffer, M. J. (1999). Managing Public Discourse: Towards the Augmentation of GIS with Multimedia. In P. A. Longley & M. F. Goodchild & D. J. Maguire & D. W. Rhind (Eds.), *Geographical Information Systems: Principles Techniques, Applications and Management* (2 ed., pp. 723-732). New York, NY: John Wiley & Sons.

Skjaeveland, O., Garling, T., & Maeland, J. G. (1996). A Multidimensional Measure of Neighboring. *American Journal of Community Psychology, 24*(3).

Sleeper, J. (1994). *Rebuilding the Ghetto Does Work* [Electronic]. Shelter Force Online. Retrieved November 12, 2001, from the World Wide Web: http://www.nhi.org/online/issues/74/sleeper.html

Stoecker, R. (1977). The Fallacy of Community Control. In J. Cowley & A. Kan & J. Mayo &

M. Thompson (Eds.), *Community or Class Struggle*. London, England: Stage.

Stoecker, R. (1997). The CDC Model of Urban Redevelopment: A Critique and an Alternative. *Journal of Urban Affairs, 19*(1), 1-22.

Taub, R. P. (1984). *Paths of Neighborhood Change: Race and Crime in Urban America.* Chicago, IL: University of Chicago Press.

Teitz, M. B. (1989). Neighborhood Economics: Local Communities and Regional Markets. *Economic Development Quarterly, 3*(2), 111-122.

U.S. Department of Commerce. (2000). *State of the Cities Report 2000: Mega Forces Shaping the Future of Nations' Cities*. Washington, DC: U.S. Department of Housing and Urban Development.

U.S. Department of Housing and Urban Development. (1984). *Building Communities Together Empowerment Zones & Enterprise Communities [Application Guide]*. Washington, DC: U.S. Department of Housing and Urban Development and Agriculture.

U.S. Department of Housing and Urban Development. (2000). *The State of the Cities 2000.* Washington, DC: U.S. Department of Housing and Urban Development.

Venkatraman, N., & Henderson, J. C. (1998). Real Strategies for Virtual Organizing. *Sloan Management Review, 40*(1), 33-48.

Vidal, A. C. (1990). *Rebuilding Communities: A National Study of Urban Community Development Corporations*. New York, NY: Community Development Research Center Graduate School of Management and Urban Policy, New School for Social Research.

Vidal, A. C. (1994). Reintegrating Disadvantaged Communities into the Fabric of Urban Life: The Role of Community Development. *Housing Policy Debate, 6*(1), 169-230.

Webber, M. M. (1996). *Tenacious Cities [Research Notes].* Paper presented at the Spatial Technologies, Geographic Information, and the City. National Center for Geographic Information Analysis Conference, Baltimore, MD.

Weis, C. H. (1998). *Design of the Evaluation* (2 ed.). Upper Saddle River, NJ: Prentice Hall.

Wellman, B., & Haythornwaite, C. (Eds.). (2002). *The Internet in Everyday Life*. Malden, MA: Blackwell Publishers.

Wellman, B., & Wortley, S. (1990). Different Strokes from Different Folks: Community Ties and Social Support. *American Journal of Sociology, 96*(558-588).

Wiewel, W., Brown, B., & Morris, M. (1989). The Linkage between Regional and Neighborhood Development. *Economic Development Quarterly, 3*(2), 94-110.

Worboys, M. F. (1995). *GIS: A Computing Perspective*. Bristol, PA: Taylor and Francis.

Zdenek, R. O. (1994). *Toward Comprehensive Approaches for Strengthening Communities* [Electronic]. Retrieved November 12, 2001, from the World Wide Web: http://www.nhi.org/online/issues/74/zdenek.html

Zimmerman, M. A. (1995). Psychological Empowerment: Issues and Illustrations. *American Journal of Community Psychology, 23*(5), 581.

APPENDIX A: INFORMED CONSENT

Massachusetts Institute of Technology
The Media Laboratory and the Department of Urban Studies and Planning
77 Massachusetts Avenue • Cambridge, Massachusetts • 02139

Camfield Estates-MIT Creating Community Connections Project

Informed Consent

I have been asked to voluntarily participate in a research project, which is described below. I may terminate participation in this project at anytime without prejudice. The researchers will explain the project in detail to me. I should feel free to ask questions. If I have any questions later, Randal Pinkett can be reached by email at: rpinkett@media.mit.edu or telephone at (617) 253-4191 and/or Richard O'Bryant by email at: obryant@mit.edu or telephone at (617) 253-7295.

Description of the Project
I have been asked to take part in a research study that is examining the role of computer information technology in the home of a low-income housing development's residents as it relates to building community and empowerment. If I decide to take part in this study I will be asked to fill out a pre-study survey questionnaire, participate in basic computer training, allow for on-line monitoring of my computer use, and to fill out a post-study survey questionnaire. I may be required to fill out a questionnaire and respond to emails from the researchers, periodically during the study, as they deem necessary. I understand that the training period will require a maximum of four hours per week for eight weeks, depending on my level of proficiency. I understand that on-line monitoring will consist of tracking the sites study participants visit on the World Wide Web. I also understand that no-effort will be made nor will it be possible to identify any single individuals' pattern of use. I also understand that the study period will last no more than eighteen-months.

Risks or Discomforts/Benefits of the Study
I recognize that by participating in this study I will receive free basic computer training, training in specialized applications and free use of a computer. I understand that I will be able to keep the computer at the completion of the study. I understand that I will receive free Internet service for two full years. I also understand that I can terminate my participation in the study at any time but I may be requested to return the computer given to me back to the researchers.

Confidentiality
My participation in this study and the data gathered through the surveys and on-line monitoring will be kept completely and strictly confidential. No effort will be made on the part of researchers to match my name with surveys and on-line information. This consent form will be kept separate from the surveys and on-line information gathered.

Voluntary Participation
I have volunteered to participate in this study and can choose to return my computer and withdraw at anytime without penalty. If I decide not to continue to participate I will return my computer to Randal Pinkett or Richard O'Bryant and my free Internet service will be terminated.

Rights and Complaints

If I have any concerns or complaints regarding how this study is being performed, or if I believe I have been injured in any way I may anonymously contact Randal Pinkett or Richard O'Bryant at (617) 253-4191 or (617) 253-7295 respectively.

In the unlikely event of physical injury resulting from participation in this research, I understand that medical treatment will be available from the M.I.T. Medical Department, including first aid emergency treatment and follow-up care as needed, and that my insurance carrier may be billed for the cost of such treatment. However, no compensation can be provided for medical care apart from the foregoing. I further understand that making such medical treatment available; or providing it does not imply that such injury is the Investigator's fault. I also understand that by my participation in this study I am not waiving any of my legal rights*.

I understand that I may also contact the Chairman of the Committee on the Use of Humans as Experimental Subjects, M.I.T. 253-6787, if I feel I have been treated unfairly as a subject."

*Further information may be obtained by calling the Institute's Insurance and Legal Affairs Office at 253-2822.

I HAVE READ THIS CONSENT FORM. MY QUESTIONS HAVE BEEN ANSWERED. MY SIGNATURE ON THIS FORM MEANS THAT I UNDERSTAND THE INFORMATION AND I CONSENT TO PARTICIPATE IN THIS STUDY.

Signature of Participant _____ Date _____

Printed Full Name _____

Signature of
Principal Investigator _____ Date _____

Printed Full Name _____

APPENDIX B: QUESTIONNAIRE

Date:_____ **Interviewer Code:**_____ **Respondent Code:**_____

Start Time: _____

Camfield Estates-MIT Creating Community Connections Project Survey

Fall 2000 Pre-Survey

This interview is part of a new initiative and research project at Camfield Estates, in collaboration with Massachusetts Institute of Technology (MIT), called the Camfield Estates-MIT Creating Community Connections Project. This project has the following goals and objectives:

- λ *To promote a stronger, healthier community at Camfield Estates.*
- λ *To establish greater levels of empowerment and self-sufficiency among residents at Camfield Estates.*
- λ *To create connections between residents at Camfield Estates, local organizations, neighborhood businesses, and other community members.*
- λ *To enable residents at Camfield Estates to be the creators and producers of their own information and content on the Internet.*

This project has the full support of the Camfield Tenants Association (CTA), the Camfield Estates Neighborhood Technology Center (NTC), as well as the following corporate and non-profit partners: W.K. Kellogg Foundation, Hewlett-Packard Company, RCN Telecom Services, and YouthBuild-Boston.

Through this project, Camfield Estates will become a model for other housing developments across the country as to how individuals, families, and a community can make productive use of information and communications technology.

I'll read each question to you and sometimes ask you to choose from a list of possible answers; for other questions, I will simply write down your responses. All of your answers will be kept strictly confidential. You can refuse to continue with this interview at any point. However, we can only offer the computer and Internet service to those that complete the interview.

SECTION A - COMMUNITY INTERESTS AND SATISFACTION

I would like to begin by asking you some general questions about Camfield Estates.

A1. What is the best thing about living in Camfield Estates?

_____

_____

_____

A2. What are the problems facing the Camfield Estates community?

_____

_____

_____

A3. What ideas do you have for making Camfield Estates a better place to live?

_____

_____

_____

A4. Please rank the following issues in terms of their importance to you, ranging from 1, which corresponds to the issue that is most important to you, to 9, which corresponds to the issue that is least important to you.

_____ Employment	_____ Safety/environment	_____ Health care
_____ Housing	_____ Child Care	_____ Community activism
_____ Political involvement	_____ Parenting	_____ Education

A5. Please respond to the following questions, according to the following scale:
(Circle one for each item)

	Very happy	Somewhat happy	Somewhat unhappy	Very unhappy	Don't know
a. How do you feel about living in Camfield Estates?	1	2	3	4	5
b. If for some reason you had to leave Camfield Estates and live somewhere else, how would you feel?	1	2	3	4	5

A6. Please respond to the following questions, according to the following scale:
(Circle one for each item)

	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very Dissatisfied	Don't know
a. How satisfied are you with life at Camfield Estates?	1	2	3	4	5
b. How satisfied are you with the Camfield Estates housing development/buildings?	1	2	3	4	5

A7. Would you say that you always, sometimes, or never feel a part of the local community in Camfield Estates? *(Circle one)*

a. Always b. Sometimes c. Never d. Don't know

A8. Another way to ask the previous question is, imagine that the people of Camfield Estates are a circle. Would you put yourself inside the circle, on the edge of the circle, or outside the circle? *(Circle one)*

a. Inside b. On the edge c. Outside d. Don't know

A9. How do you feel about being from Camfield Estates? Would you say that you are proud, have mixed feelings, are indifferent, or are ashamed? *(Circle one)*

a. Proud b. Mixed feelings c. Indifferent d. Ashamed e. Don't know

A10. Do you expect to remain at Camfield Estates? *(Circle one)*

a. Yes b. No c. Not sure/maybe

If no, when do you expect to leave?_____

A11. What is it about Camfield Estates or your situation that will cause you to stay or move?

_____

_____

_____

A12. When you think of your neighborhood, for the most part, which of the following are you thinking about? *(Circle one)*

a. Just your building
b. Just your building and the buildings right next to yours
c. Just your block
d. Just your block and the blocks right next to your block, or
e. An area further away than that
f. Don't know

A13. When you think about your neighbors, for the most part, which of the following are you thinking about? *(Circle one)*

a. Just the people in your building
b. Just the people in your building and the buildings right next to yours
c. Just the people on your block
d. Just the people on your block and the blocks right next to your block
e. These people and some who live further away than that
f. Don't know

A14. When someone asks you the name of your neighborhood, what name do you usually give?

_____

SECTION B - PEOPLE IN RESPONDENT'S LIFE

Now I would like to ask you about various people in your life. The purpose of this section is to understand whom your are close to and how you communicate with them, among other things. For example, face-to-face communication, phone communication, postal mail communication, and electronic mail communication. Please note that for each question, you do not need to give me a full name — only a first name and last initial. For example John D., instead of John Doe. Alternatively, you can give me their initials. For example, J. D., instead of John Doe.

NOTE: One name per line.

B1. From time to time, most people discuss important matters with other people. Who are the people with whom you discuss matters important to you?

B2. When you feel just a bit down or depressed whom do you turn to when you want to talk about it?

B3. If you need to borrow a large sum of money, say $1,000, whom would you ask for help?

B4. When people go out of town for a while, they sometimes ask someone to take care of their home for them — for example, to water the plants, pick up the mail, feed a pet, or just check on things. Who would you ask to take care of your home if you went out of town?

B5. Who from outside your home has recently helped you with tasks around the home, such as painting, moving furniture, cooking, cleaning, or major or minor repairs?

B6. Who has recently helped you with significant, unpaid, childcare?

B7. Who are the people you really enjoy socializing with?

B8. Please list anyone you use the Internet or e-mail to communicate with whom you feel especially close to?

B9. Please list anyone who is especially close to you who you have not listed in one of the previous questions?

SECTION C - DETAILED INFORMATION OF PEOPLE IN RESPONDENT'S LIFE

Now I would like to ask you for some more detailed information about the people you just identified.

NOTE: 1 day = 1 communication; If respondent gives a range for questions C10-C15 take the maximum.

C1. What best describes [person]'s relationship to you? (For example, spouse, sister, son, neighbor, etc.)

C2. Is [person] male or female?

C3. How old is [person]?

C4. How or where did you first meet [person]?

C5. Does [person] currently live in Camfield Estates?

C6. If no, where does [person] live?

C7. How many years have you known [person]?
NOTE: If less than one year, express number as a fraction of a year (e.g., 5 months = 5/12 years)

C8. Does [person] have access to the Internet at home?

C9. Does [person] have access to the Internet at work?

C10. In the last 90 days, how many times have you communicated face-to-face with [person]?

C11. In the last 90 days, how many times have you communicated by phone with [person]?

C12. In the last 90 days, how many times have you communicated by postal mail with [person]?

C13. In the last 90 days, how many times have you communicated by e-mail with [person]?

C14. In the last 90 days, how many times have you communicated using the Internet other than e-mail with [person]?

C15. In the last 90 days, have many times have you communicated with [person] by any other means that those just mentioned?

SECTION D - RELATIONSHIPS WITH PEOPLE AT CAMFIELD ESTATES

Now I would like to ask you about your relationships with people at Camfield Estates. The following is a list of people who live in Camfield Estates. Please take the time to look over the complete list and select as many of the following people whom you recognize by name by placing an "X" in the first column. For those people you recognized from Camfield Estates, place an "X" in the remaining columns according to each of the following criteria:

D1. Those whom you talk to on what you would consider to be a regular basis?

D2. Those whom you have invited into your home in the last six months?

D3. Those whom have invited you into their home in the last six months?

D4. Those whom you have contacted using e-mail in the last six months?

D5. Those whom you have called on the phone in the last six months?

SECTION E - NEIGHBORS AT CAMFIELD ESTATES

Now I would like to ask you about your neighbors at Camfield Estates.

E1. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

	Never	Once/ year	Few times/ year	Once/ month	Once/ week	Almost everyday	Don't Know
a. How often do you lend to neighbors?	1	2	3	4	5	6	7
b. How often do you turn to neighbors for help or advice?	1	2	3	4	5	6	7
c. How often do you socialize with a neighbor? (For example, sit with other mothers while watching kids outside, walk kids to school with another mother, go shopping)	1	2	3	4	5	6	7

E2. How friendly are your neighbors? *(Circle one)*

a. Very friendly b. Friendly c. Neither d. Unfriendly e. Very Unfriendly

E3. Do you ever organize or help to organize any social events in Camfield Estates? (For example, festivals, baby showers, birthday parties) *(Circle one)*

a. Yes b. No

E4. Do you ever organize or help to organize any social events in Roxbury? (For example, festivals, baby showers, birthday parties) *(Circle one)*

a. Yes b. No

If yes, what activities do you organize and where?_____

_____

_____

E5. In the past twelve months, excluding your immediate household, have you helped any of your neighbors in any of the following ways? *(Circle all that apply)*

a. Listened to their problems
b. Helped them with household chores, shopping, repairs, house-sat, or lent them tools or supplies
c. Cared for a member of their family, either a child or an adult
d. Helped them find work
e. Lent them money
f. None of the above

E6. In the past twelve months, excluding your immediate household, have any of your neighbors helped you in any of the following ways? *(Circle all that apply)*

a. Listened to your problems
b. Helped you with household chores, shopping, repairs, house-sat, or lent you tools or supplies
c. Cared for a member of your family, either a child or an adult
d. Helped you find work
e. Lent you money
f. None of the above

SECTION F - AWARENESS OF COMMUNITY RESOURCES

Now I would like to ask you about your awareness of various resources in the community.

F1. Please rate your awareness of the following community resources, according to the following scale: *(Circle one for each item)*

	Very well informed	Well informed	Somewhat informed	Not informed
a. Skills and abilities of other residents at Camfield Estates	1	2	3	4
b. Associations and organizations that serve the community	1	2	3	4
c. Volunteer opportunities in the community	1	2	3	4
d. Institutions located in the community (For example, libraries and schools)	1	2	3	4
e. Social services and programs provided for the community	1	2	3	4
f. Community projects, activities, and events	1	2	3	4
g. Businesses located in the community	1	2	3	4
h. Products and services sold by local businesses	1	2	3	4
i. Employment opportunities in the community	1	2	3	4

F2. How do you feel about your awareness of the community resources listed above? *(Circle one)*

a. Very satisfied
b. Somewhat satisfied
c. Somewhat dissatisfied
d. Very dissatisfied
e. Don't know

SECTION G - IMPRESSIONS OF CAMFIELD ESTATES

Now I would like to ask you about your impressions of Camfield Estates.

G1. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

	Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
a. I think Camfield Estates is a good place to live	1	2	3	4	5
b. People in Camfield Estates share the same values	1	2	3	4	5
c. My neighbors and I want the same things for Camfield Estates	1	2	3	4	5
d. I can recognize most of the people who live in Camfield Estates	1	2	3	4	5

		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
e.	I feel at home in Camfield Estates	1	2	3	4	5
f.	Very few of my neighbors at Camfield Estates know me	1	2	3	4	5
g.	I care about what neighbors at Camfield Estates think of my actions	1	2	3	4	5
h.	I have influence over what Camfield Estates is like	1	2	3	4	5
i.	If there is a problem in Camfield Estates, people who live here can get it solved	1	2	3	4	5
j.	It is very important to me to live in Camfield Estates	1	2	3	4	5
k.	I have an active part in keeping Camfield Estates going	1	2	3	4	5
l.	People in Camfield Estates get along with each other	1	2	3	4	5
m.	I expect to live in Camfield Estates for a long time	1	2	3	4	5
n.	Most people in Camfield Estates are active in groups outside the local area	1	2	3	4	5
o.	Camfield Estates is a good place for my kids to grow up and thrive	1	2	3	4	5
p.	Camfield Estates is a close-knit community	1	2	3	4	5
q.	I wish I had more contact with people in Camfield Estates	1	2	3	4	5
r.	It is hard to make good friends at Camfield Estates	1	2	3	4	5
s.	It is safe to walk in Camfield Estates at night	1	2	3	4	5
t.	The people in Camfield Estates do not have very much in common	1	2	3	4	5
u.	I feel an obligation to make a contribution to Camfield Estates	1	2	3	4	5
v.	If others in Camfield Estates wanted to do something that I thought would improve the neighborhood, I would probably be willing to work together with them	1	2	3	4	5
w.	If I had to go away for the day, I could count on my neighbors at Camfield Estates to take care of my children	1	2	3	4	5

		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
x.	If I were sick, I could count on my neighbors at Camfield Estates to shop for groceries for me	1	2	3	4	5
y.	If I had to borrow about $25 for an emergency, one of my neighbors at Camfield Estates would lend me the money	1	2	3	4	5
z.	When I am away from home, I can count on my neighbors at Camfield Estates to keep their eyes open for possible trouble	1	2	3	4	5

SECTION H - COMMUNITY INVOLVEMENT

Now I would like to ask you about your community involvement.

H1. Please respond to the following questions, according to the following scale:
(Circle one for each item)

		Never	Seldom	Occasionally	Frequently
a.	How often would you say you keep up with the local news in Camfield Estates?	1	2	3	4
b.	How often would you say you have ideas for improving things in Camfield Estates?	1	2	3	4
c.	How often do you get together with people who know what's going on in Camfield Estates?	1	2	3	4
d.	How often do you work to bring about changes in Camfield Estates?	1	2	3	4
e.	How often do you watch the local news on TV to find out what's going on in your community?	1	2	3	4

H2. Identify your membership, your level of involvement, and your leadership role, if any, with the following groups, according to the following scale:

	MEMBERSHIP (Circle one for each item)		*LEVEL OF INVOLVEMENT (Circle one for each item)*			*LEADERSHIP (Circle one for each item)*	
	Member of this group?		Never attend	Attend occasionally	Attend regularly/ frequently	Hold or have held a leadership position?	
1. Youth groups (For example, Boy/Girl Scouts)	Yes	No	1	2	3	Yes	No

	MEMBERSHIP (Circle one for each item)		*LEVEL OF INVOLVEMENT (Circle one for each item)*			*LEADERSHIP (Circle one for each item)*	
	Member of this group?		Never attend	Attend occasionally	Attend regularly/ frequently	Hold or have held a leadership position?	
2. Community organizations (Outside Camfield Estates)	Yes	No	1	2	3	Yes	No
3. Music, art, drama, or dance groups	Yes	No	1	2	3	Yes	No
4. School clubs/student governments	Yes	No	1	2	3	Yes	No
5. School services groups (For example, tutoring, parent association)	Yes	No	1	2	3	Yes	No
6. Local political groups	Yes	No	1	2	3	Yes	No
7. Hobby or garden clubs	Yes	No	1	2	3	Yes	No
8. Social clubs based on country or city of origin	Yes	No	1	2	3	Yes	No
9. Church/Temple/Mosque activities or groups	Yes	No	1	2	3	Yes	No
10. Discussion group/reading club/support group	Yes	No	1	2	3	Yes	No
11. Sports teams	Yes	No	1	2	3	Yes	No
12. Neighborhood patrol/watch	Yes	No	1	2	3	Yes	No
13. Community planning board	Yes	No	1	2	3	Yes	No
14. Police precinct (For example, council, auxiliary, other)	Yes	No	1	2	3	Yes	No
15. Labor unions/professional groups	Yes	No	1	2	3	Yes	No
16. Camfield Tenants Association (CTA)	Yes	No	1	2	3	Yes	No
17. Neighborhood/block association	Yes	No	1	2	3	Yes	No
18. Other groups	Yes	No	1	2	3	Yes	No

H3. Have you engaged in any of the following activities in the past year? *(Circle one for each item)*

a.	Signed a petition	Yes	No
b.	Wrote a letter to a public official	Yes	No
c.	Phoned or went to see a public official	Yes	No
d.	Boycotted a product	Yes	No
e.	Organized a group of people around some political issue	Yes	No
f.	Volunteered time to an organization	Yes	No
g.	Went to a demonstration	Yes	No
h.	Went to a political rally or meeting	Yes	No
i.	Organized a political rally or meeting	Yes	No
j.	Collected signatures for a petition drive	Yes	No
k.	Wrote a letter to an editor of a newspaper	Yes	No
l.	Gave money to a voluntary organization for a special cause	Yes	No
m.	Ran a fundraising campaign for a voluntary organization	Yes	No
n.	Gave money to a political campaign	Yes	No
o.	Worked on a political campaign	Yes	No
p.	Ran for public office	Yes	No
q.	Voted in a tenants association meeting	Yes	No
r.	Voted in a general election	Yes	No
s.	Visited child's school	Yes	No
t.	Participated in voter registration drive/campaign	Yes	No

H4. Counting everything, about how many hours of unpaid volunteer work have you done in the past month?

_____ (hours)

H5. Do you feel you are involved as much as you could be in the Camfield Estates' community? Yes No

H6. If not, what is keeping you from being more involved?

_____

H7. What do you think is the most important reason people are not involved in the Camfield Estates' community?

a.	Not enough time	d.	Don't have child care
b.	Not clear about issues	e.	Issues are not important
c.	Not interested	f.	All of the above

SECTION I – EMPOWERMENT

Now I would like to ask you about empowerment.

I1. What does being empowered mean to you?

_____

_____

_____

I2. What does community empowerment mean to you?

_____

_____

_____

I3. Do you feel empowered to change conditions in your community? Yes No

I4. If no, what do you think is needed for you to feel empowered to change conditions in your community?

_____

_____

I5. Do you feel that having more information about what affects your life is needed for empowerment? Yes No

I6. If yes, what kind of information about what effects your life is needed for empowerment?

_____

_____

I7. Please respond to the following statements, according to the following scale:
(Circle one for each item)

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
a. Voting is important to effect change in society	1	2	3	4	5
b. Voting in national elections is important	1	2	3	4	5
c. Voting in local elections is important	1	2	3	4	5
d. What happens in my life is largely a matter of chance	1	2	3	4	5

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
e.	The world is much too complicated for me to understand	1	2	3	4	5
f.	I have little influence over the things that happen to me	1	2	3	4	5
g.	I feel I can make a change in my community if I can make myself heard	1	2	3	4	5
h.	The average citizen can have an influence on government affairs	1	2	3	4	5
i.	Consumers have to pay whatever price a business sets because it's too difficult to price compare or shop around	1	2	3	4	5
j.	There is very little consumers can do to keep prices from going higher	1	2	3	4	5
k.	The quality of life at Camfield is up to the residents	1	2	3	4	5
l.	It is relatively easy to get enough information about what is happening at Camfield to be able to make a change	1	2	3	4	5
m.	It is relatively easy to get enough information about what is happening in the community to be able to make a change	1	2	3	4	5
n.	It is relatively easy to get information about what is happening at Camfield from the Camfield Tenants Association	1	2	3	4	5
o.	Getting information about what is happening at Camfield from the Camfield Tenants Association is important for community empowerment	1	2	3	4	5
p.	Having access to a computer in my home is important for empowerment.	1	2	3	4	5
q.	Having access to the Internet in my home is important for empowerment.	1	2	3	4	5
r.	Having access to a computer in my home is important for community empowerment.	1	2	3	4	5
s.	Having access to the Internet in my home is important for community empowerment.	1	2	3	4	5

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
t.	It is relatively easy to get information about what is happening at Camfield from the management company	1	2	3	4	5
u.	Getting information about what is happening at Camfield from the management company is important for community empowerment	1	2	3	4	5
v.	Getting information about my community from Boston City Hall is relatively easy	1	2	3	4	5
w.	Getting information about my community from Boston City Hall is important for community empowerment	1	2	3	4	5

SECTION J – SELF-SUFFICIENCY

Now I would like to ask you about self-sufficiency.

J1. What does the term family self-sufficiency mean to you?

_____

_____

_____

J2. Do you feel that you and your family are self-sufficient? Yes No

J3. If no, what do you think is needed for you and your family to feel self-sufficient?

_____

_____

J4. Do you feel that having more information about what affects your life is needed for family self-sufficiency? Yes No

J5. If yes, what kind of information about what affects your life is needed for family self-sufficiency?

_____

J6. Do you feel having access to a computer in your home is important for family self-sufficiency? Yes No

J7. Do you feel having access to the Internet in your home is important for family self-sufficiency? Yes No

J8. Please rank the following items for importance to achieving family self-sufficiency, ranging from 1 which corresponds to the issue that is most important to you, to 9 which corresponds to the issue that is least important to you.

_____ Employment	_____ Safety/environment	_____ Community involvement
_____ Housing	_____ Human services	_____ Empowerment
_____ Assets/savings	_____ Personal relationships	_____ Personal attributes (e.g., motivation, desire, positive personality, etc.)

Now I would like to ask you questions in relation to housing and food.

J9. Which do you currently do? *(Circle one)* Own Rent

J10. Do you currently have a section 8? *(Circle one)* Certificate Unit Neither

J11. Have you lived at Camfield for more than three years? *(Circle one)* Yes No

J12. How often do you shop for groceries at a local corner store? *(Circle one)*

a. Always b. Most of the time c. Sometimes d. Never e. Don't Know

J13. How often do you shop for groceries at a supermarket? *(Circle one)*

a. Always b. Most of the time c. Sometimes d. Never e. Don't Know

J14. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I would like to own my home	1	2	3	4	5
b.	I feel like I might have to move in the next 1 to 2 years	1	2	3	4	5
c.	My family and I currently eat healthy most of the time	1	2	3	4	5
d.	My family and I often eat fast food (For example, sub shops, McDonald's, Burger King, etc.)	1	2	3	4	5
e.	I feel I can get healthy food from the local corner store	1	2	3	4	5
f.	I feel I can get healthy food from the supermarket	1	2	3	4	5

Now I would like to ask you questions about safety and the environment at Camfield Estates.

J15. Please respond to the following statements, according to the following scale:
(Circle one for each item)

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I feel safe on the grounds of Camfield Estates	1	2	3	4	5
b.	I feel safe walking in the neighborhood surrounding Camfield Estates	1	2	3	4	5
c.	I know what the most common crimes committed in Roxbury are	1	2	3	4	5
d.	I see security guards at Camfield Estates regularly	1	2	3	4	5
e.	I see Boston Police Officers in Roxbury regularly	1	2	3	4	5
f.	Management at Camfield responds in a timely manner when called	1	2	3	4	5
g.	Security at Camfield responds in a timely manner when called	1	2	3	4	5
h.	The Camfield Tenants Association responds in a timely manner when called	1	2	3	4	5
i.	Residents should manage Camfield Estates themselves	1	2	3	4	5
j.	Residents have the necessary training and preparation to manage Camfield	1	2	3	4	5
k.	Gangs are a problem at Camfield Estates	1	2	3	4	5
l.	Gangs are a problem in Roxbury	1	2	3	4	5

Now I would like to ask you questions about your knowledge of where human services are.

J16. Please respond to the following statements, according to the following scale:
(Circle one for each item)

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I know where the local social service agencies are in my neighborhood (For example, housing, youth, health, etc.)	1	2	3	4	5
b.	I use the social service agencies in my neighborhood often	1	2	3	4	5
c.	I feel comfortable going into most of the social service agencies in my neighborhood	1	2	3	4	5

J17. Which of the following City of Boston services, programs and/or departments have you heard of or used: *(check each that apply)*

___ Access Boston 2000-2010 Citywide Transportation Plan
___ Animal Control
___ Archives
___ Assessing
___ Auditing
___ Basic City Services
___ Bids
___ Board of Appeal
___ Boston 2:00 to 6:00 After-School Initiative
___ Boston 400
___ Boston Employment Commission
___ Boston Housing Authority
___ Boston Management Consortium
___ Boston Redevelopment Authority
___ Boston Residents Jobs Policy Program
___ Boston Water and Sewer Commission
___ Boston Youth Clean-Up Corps
___ Budget Management
___ Business Development
___ Cabinets
___ Can Share
___ Cable Communications
___ Chief Financial Officer
___ Chief Operating Officer
___ Child Care
___ Children and Families
___ City Clerk
___ Civil Rights
___ Community Centers
___ Consumer Affairs
___ Credit Union
___ Cultural Affairs
___ Elderly Commission
___ Elections
___ Emergency Center
___ Emergency Medical Services
___ Emergency Shelter
___ Employee Assistance Program
___ Environment
___ Film Bureau
___ Fire Department
___ Graffiti Busters
___ Harbor Islands
___ Housing Today
___ Human Services
___ Human Resources
___ Inspectional Services
___ Intergovernmental Relations
___ Jobs and Community Services
___ Job Listings
___ Labor Relations
___ Law
___ Libraries
___ Licensing Board
___ Management Information Services
___ Marriage Licenses
___ Minority and Women Business Enterprise
___ Neighborhood Development
___ Neighborhood Services
___ Neighborhoods
___ New Bostonians
___ OCP (Office of Community Partnership)
___ Office for Children and Families
___ Parking Tickets
___ Parks and Recreation
___ Police Department
___ Press Office
___ Public Health Commission
___ Public Works
___ Purchasing
___ Registry Division
___ Registry of Deeds
___ Rental Housing Resource Center
___ Retirement Board
___ SafeFutures
___ Special Events
___ Storm/Emergency Center
___ Transportation
___ Treasury
___ TRAC (Taxpayer Referral Assistance Program)
___ Veterans' Services
___ Women's Commission
___ Worker's Compensation Service
___ Special Events
___ Storm/Emergency Center

Now I would like to ask you questions about inspiration.

J18. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
a. I feel I can do whatever I set my mind to	1	2	3	4	5
b. I have a number of good qualities	1	2	3	4	5
c. There is little I can do to change many of the important things in my life	1	2	3	4	5
d. Sometimes I feel I am being pushed around in life	1	2	3	4	5
e. I often feel motivated to accomplish what I have to do	1	2	3	4	5
f. What happens in the future mostly depends on me	1	2	3	4	5

Now I would like to ask you questions about education and job skill level.

J19. Are you currently enrolled in a school or college? *(Circle one)* Yes No

J20. Are currently enrolled in an adult education program? *(Circle one)* Yes No

J21. If no, would you be interested in enrolling in an adult education program? *(Circle one)* Yes No Maybe

J22. Are you currently enrolled in a job skills training program? *(Circle one)* Yes No

J23. How many jobs do you have? _____

J24. How many hours per week are you currently employed? *(Circle one)*

a. Less than 20 hours/week
b. More than 20 and less than 40 hours/week
c. 40 hours/week
d. More than 40 hours/week
e. Retired
f. Not employed

J25. Do you currently take public transportation to work? *(Circle one)* Yes No

J26. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I would like to get a better job	1	2	3	4	5
b.	I feel I can find a new job if I need to	1	2	3	4	5
c.	I currently know what job skills are required for any job I am interested in	1	2	3	4	5
d.	I would like to improve my job skills	1	2	3	4	5
e.	I would like to continue advancing my education	1	2	3	4	5
f.	I feel I need a car to get to the good jobs	1	2	3	4	5
g.	I feel I can get to the good jobs by public transportation	1	2	3	4	5

SECTION K – COMPUTER EXPERIENCE

Now I would like to ask you questions about your computer experience and training interests.

K1. Do you own a computer? *(Circle one)* Yes No

K2. How many hours per week can you devote to participating in 8 weeks of training? *(Circle one)*

a. None
b. 1 to 2 hours per week
d. 3 to 4 hours per week
e. 5 to 6 hours per week

K3. What time of day would you prefer for training to be scheduled? *(Circle all that apply)*

a. Mornings
b. Afternoons
c. Evenings

K4. Which days of the week would you prefer for training to be scheduled? *(Circle all that apply)*

a. Monday
b. Tuesday
c. Wednesday
d. Thursday
e. Friday
f. Saturday

K5. How would you rate your computer skills? *(Circle One)*

a. Beginner
b. Intermediate
c. Advanced

K6. What topics would you like to see addressed through training? *(Circle all that apply)*

a. Protecting my children from certain online content
b. Managing my finances
c. How to shop for groceries online
d. How to access community information online
e. How to access government information online
f. How to find jobs online
g. How to help my children in school
h. How to start a business
i. How to create my own website
j. All of the above
k. Other:_____ (please specify)

K7. What classes do you think NTC should offer to adults (18 years and older)? *(Circle all that apply)*

a.	Databases	f.	Keyboarding	k.	Word Processing
b.	Job Readiness	g.	Presentation software	l.	Programming
c.	Networking	h.	Operating Systems	m.	Website Design
d.	Society Issues	i.	Spreadsheets	n.	Other:_____
e.	Hardware	j.	Browsing the Internet		(please specify)

K8. Do you use a computer at any of the following locations? *(Circle all that apply)*

a. Work
b. Camfield Estates Neighborhood Technology Center (NTC)
c. Another Neighborhood Technology Center
d. School (For example, a college or university)
e. Public facility (For example, the library)
f. Other (please specify):_____

K9. Please indicate your awareness of the following computer and Internet terms, according to the following scale: *(Circle one for each item)*

	Never heard of	Heard of, never used	Tried a few times	Use regularly
a. Internet	1	2	3	4
b. World Wide Web	1	2	3	4
c. Netscape/Internet Explorer	1	2	3	4
d. America Online	1	2	3	4
e. Electronic Mail (e-mail)	1	2	3	4
f. Electronic Newsgroups, Bulletin Boards	1	2	3	4
g. Multi-User Dungeons (MUDs)	1	2	3	4
h. Internet Relay Chat (IRC)	1	2	3	4
l. Telnet	1	2	3	4
j. Word Processing	1	2	3	4
k. Spreadsheets	1	2	3	4
l. Databases	1	2	3	4
m. Presentation Software	1	2	3	4
n. Computer Games	1	2	3	4
o. Video Games (For example, Nintendo, Sony Playstation, etc.)	1	2	3	4

K10. How many household members are interested in attending training?_____

K11. What about computers are you most eager to learn (as many items as you would like)?

_____

_____

K12. On a typical day, how do you think having a new computer and Internet access will change your life?

_____

_____

K13. How would you like to see this project help improve the community at Camfield Estates?

_____

_____

K14. How would you plan to use the computer *(circle all that apply)*?

a. Continuing education
b. Access educational resources for children
c. Business
d. Career opportunities
e. Create personal website
f. Games
g. Access community information
h. Contribute/publish information
i. Communicate with family/friends
j Other :_____
(please specify)

SECTION L – HOBBIES, INTERESTS AND INFORMATION NEEDS

Now I would like to ask you questions about your hobbies and interests, as well as the kinds of things you would like to see on the Camfield Estates website.

L1. What are your interests and/or hobbies?

_____

L2. How do you usually get information about things that are going on in the community?

_____

L3. What community information do you think should be more accessible, that is, easier to find and use?

_____

L4. What community organizations do you think should be more accessible, that is, easier to find, communicate with, and get information about?

_____

L5. Can you think of any information that might be especially useful in dealing with problems you or others face in this community?

_____

L6. Is there any information you would like to share with others by using computers and the Internet? If so, what?

_____

L7. Would you like to participate on a committee to oversee the Camfield Estates-MIT project? Yes No

L8. What would you like to see made available on the Camfield Estates website? Please rank the following items, ranging from 1, which corresponds to the most important, to 5, which corresponds to the least important.

_____ Employment opportunities
_____ Volunteer opportunities
_____ Local news
_____ Regional and national news
_____ Classifieds (want ads)
_____ Sports
_____ Weather
_____ Electronic commerce
_____ Safety
_____ Heath care
_____ Camfield resident's information (e.g., skills and interests)
_____ Community calendar of activities and events
_____ Government information (e.g., City of Boston)
_____ Business information (e.g., products/services)
_____ Organization information (For example, social service agencies)
_____ Online forums and discussion groups
_____ Arts and entertainment
_____ Education

SECTION M – DEMOGRAPHICS

Now I would like to ask you a few general questions.

M1. Gender: *(Circle one)* Male Female

M2. How do you identify your race or ethnic background? *(Circle one)*

a. Black/African-American
b. African-Caribbean
c. Asian/Pacific Islander
d. Spanish/Hispanic/Latino(a)
e. White/Caucasian
f. Native American/American Indian
g. Mixed/multiracial
h. Other (please specify): _____

M3. Are you the head of the household? *(Circle one)* Yes No

M4. What is your marital status? *(Circle one)*

a. Married
b. Single
c. Divorced
d. Window(er)

M5. What is your date of birth?_____

M6. Number of adults 18 and older living permanently in this residence including yourself:____

M7. Number of children under the age of 18 living permanently in this residence:____

M8. What year did you first move into Camfield Estates?_____

M9. What is the highest grade of school or year of college you have completed?

a. Less than high school
b. High school diploma or GED
c. Less than two years of college
d. More than two years and less than four years of college
e. Two Year College degree
f. Four Year College degree
g. Postgraduate degree

M10. How do you get to work (circle all that apply)?

a. Automobile
b. Bus
c. Train
e. Walk
f. Bicycle
g. Other (please specify):_____

M11. What is the nearest major intersection to your place of work? _____

M12. On a typical day, about how long does it take you to get to work?_____ (minutes)

Finally, I would like to ask you questions about income and assets. (Allow subject to write answers)

M13. Please respond to the following statements, according to the following scale:

Owning or improving the following is important: *(Circle one for each item)*

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	Stocks	1	2	3	4	5
b.	Bonds	1	2	3	4	5
c.	Mutual Funds	1	2	3	4	5
d.	Certificate of Deposit	1	2	3	4	5
e.	Savings account	1	2	3	4	5
f.	Checking account	1	2	3	4	5
g.	Life Insurance	1	2	3	4	5
h.	Health Insurance	1	2	3	4	5
i.	Dental Insurance	1	2	3	4	5
j.	Auto Insurance	1	2	3	4	5
k.	Renters/Homeowners Insurance	1	2	3	4	5

M14. How many credit cards do you have? _____

M15. Do you currently own a car? *(Circle one)* Yes No

M16. If no, do you have access to a car? *(Circle one)* Yes No

M17. Is your combined household income less than $18,000 per year?

Yes No Refused to answer

M18. Which of the following categories does you annual total household income fall in: *(Circle one)*

a. Less than $10,000
b. $10,000 - $14,999
c. $15,000 - $19,999
e. $20,000 - $24,999
e. $25,000 - $29,999
f. $30,000 - $34,999
g. Greater than $35,000

Thank you very much for participating in this survey. Are there any questions you would like to ask, or comments you would like to make?

End Time: _____

Date:_____ **Interviewer Code:**_____ **Respondent Code:**_____

Start Time: _____

Camfield Estates-MIT Creating Community Connections Project Survey

Fall 2001 Post-Survey

This is the second part of the interview for the Camfield Estates-MIT Creating Community Connections Project. This project continues to have the following goals and objectives:

- λ *To promote a stronger, healthier community at Camfield Estates.*
- λ *To establish greater levels of empowerment and self-sufficiency among residents at Camfield Estates.*
- λ *To create connections between residents at Camfield Estates, local organizations, neighborhood businesses, and other community members.*
- λ *To enable residents at Camfield Estates to be the creators and producers of their own information and content on the Internet.*

This project continues to have the full support of the Camfield Tenants Association (CTA), the Camfield Estates Neighborhood Technology Center (NTC), as well as the following corporate and non-profit partners: W.K. Kellogg Foundation, Hewlett-Packard Company, RCN Telecom Services, and YouthBuild Boston.

Through this project, Camfield Estates will become a model for other housing developments across the country as to how individuals, families, and a community can make productive use of information and communications technology.

I'll read each question to you and sometimes ask you to choose from a list of possible answers; for other questions, I will simply write down your responses. All of your answers will be kept strictly confidential. You can refuse to continue with this interview at any point. However, we can only allow you to keep the computer and Internet service if you complete this second interview.

SECTION A1 – CAMFIELD ESTATES-MIT PROJECT

I would like to begin first with some introductory questions

A1.1 How have things been going with your computer and Internet access since you completed the training?

_____

_____

_____

A1.2 Do you think anything has changed for you or your family as a result of receiving a new computer and Internet access? If yes, what has changed? If no, why has nothing changed?

_____

_____

_____

A1.3 Do you think anything has changed at Camfield as a result of this project? If yes, what has changed? Why (how do you explain why)? If no, why has nothing changed? Should anything be done?

_____

_____

_____

SECTION A - COMMUNITY INTERESTS AND SATISFACTION

I would like to begin by asking you some general questions about Camfield Estates.

A1. N/A
A2. N/A
A3. N/A

A4. Please rank the following issues in terms of their importance to you, ranging from 1, which corresponds to the issue that is most important to you, to 9, which corresponds to the issue that is least important to you.

_____ Employment	_____ Safety/environment	_____ Health care
_____ Housing	_____ Child care	_____ Community activism
_____ Political involvement	_____ Parenting	_____ Education

A5. Please respond to the following questions, according to the following scale:
(Circle one for each item)

	Very happy	Somewhat happy	Somewhat unhappy	Very unhappy	Don't know
a. How do you feel about living in Camfield Estates?	1	2	3	4	5
b. If for some reason you had to leave Camfield Estates and live somewhere else, how would you feel?	1	2	3	4	5

A6. Please respond to the following questions, according to the following scale:
(Circle one for each item)

	Very satisfied	Somewhat satisfied	Somewhat dissatisfied	Very Dissatisfied	Don't know
a. How satisfied are you with life at Camfield Estates?	1	2	3	4	5
b. How satisfied are you with the Camfield Estates housing development/buildings?	1	2	3	4	5

A7. Would you say that you always, sometimes, or never feel a part of the local community in Camfield Estates? *(Circle one)*

a. Always b. Sometimes c. Never d. Don't know

A8. Another way to ask the previous question is, imagine that the people of Camfield Estates are a circle. Would you put yourself inside the circle, on the edge of the circle, or outside the circle? *(Circle one)*

a. Inside b. On the edge c. Outside d. Don't know

A9. How do you feel about being from Camfield Estates? Would you say that you are proud, have mixed feelings, are indifferent, or are ashamed? *(Circle one)*

a. Proud b. Mixed feelings c. Indifferent d. Ashamed e. Don't know

A10. N/A
A11. N/A

A12. When you think of your neighborhood, for the most part, which of the following are you thinking about? *(Circle one)*

a. Just your building
b. Just your building and the buildings right next to yours
c. Just your block
d. Just your block and the blocks right next to your block, or
e. An area further away than that
f. Don't know

A13. When you think about your neighbors, for the most part, which of the following are you thinking about? *(Circle one)*

a. Just the people in your building
b. Just the people in your building and the buildings right next to yours
c. Just the people on your block
d. Just the people on your block and the blocks right next to your block
e. These people and some who live further away than that
f. Don't know

A14. When someone asks you the name of your neighborhood, what name do you usually give?

_____

SECTION B - PEOPLE IN RESPONDENT'S LIFE

Now I would like to ask you about various people in your life. The purpose of this section is to understand whom your are close to and how you communicate with them, among other things. For example, face-to-face communication, phone communication, postal mail communication, and electronic mail communication. Please note that for each question, you do not need to give me a full name — only a first name and last initial. For example John D., instead of John Doe. Alternatively, you can give me their initials. For example, J. D., instead of John Doe.

NOTE: One name per line.

B1. From time to time, most people discuss important matters with other people. Who are the people with whom you discuss matters important to you?

B2. When you feel just a bit down or depressed whom do you turn to when you want to talk about it?

B3. If you need to borrow a large sum of money, say $1,000, whom would you ask for help?

B4. When people go out of town for a while, they sometimes ask someone to take care of their home for them — for example, to water the plants, pick up the mail, feed a pet, or just check on things. Who would you ask to take care of your home if you went out of town?

B5. Who from outside your home has recently helped you with tasks around the home, such as painting, moving furniture, cooking, cleaning, or major or minor repairs?

B6. Who has recently helped you with significant, unpaid, childcare?

B7. Who are the people you really enjoy socializing with?

B8. Please list anyone you use the Internet or e-mail to communicate with whom you feel especially close to?

B9. Please list anyone who is especially close to you who you have not listed in one of the previous questions?

SECTION C - DETAILED INFORMATION OF PEOPLE IN RESPONDENT'S LIFE

Now I would like to ask you for some more detailed information about the people you just identified.

NOTE: 1 day = 1 communication; If respondent gives a range for questions C10-C15 take the maximum.

C1. What best describes [person]'s relationship to you? (For example, spouse, sister, son, neighbor, etc.)

1	==	Kin, Immediate
2	==	Kin, Extended
3	==	Neighbor
4	==	Friend
5	==	Co-Worker

C2. Is [person] male (M) or female (F)?

C3. How old is [person]?

C4. How or where did you first meet [person]?

1	==	Family
4	==	Friend
5	==	Co-Worker
6	==	Church

C5. Does [person] currently live in Camfield Estates?

Y	==	Yes
N	==	No
DK	==	Don't Know

C6. If no, where does [person] live?

B	==	Boston, Massachusetts
M	==	Massachusetts
O	==	Out of State
DK	==	Don't Know

C7. How many years have you known [person]?

NOTE: If less than one year, express number as a fraction of a year (e.g., 5 months = 5/12 years)

C8. Does [person] have access to the Internet at home?

Y	==	Yes
N	==	No
DK	==	Don't Know

C9. Does [person] have access to the Internet at work?

Y	==	Yes
N	==	No
DK	==	Don't Know

C10. In the last 90 days, how many times have you communicated face-to-face with [person]?

C11. In the last 90 days, how many times have you communicated by phone with [person]?

C12. In the last 90 days, how many times have you communicated by postal mail with [person]?

C13. In the last 90 days, how many times have you communicated by e-mail with [person]?

C14. In the last 90 days, how many times have you communicated using the Internet other than e-mail with [person]?

C15. In the last 90 days, have many times have you communicated with [person] by any other means that those just mentioned?

SECTION D - RELATIONSHIPS WITH PEOPLE AT CAMFIELD ESTATES

Now I would like to ask you about your relationships with people at Camfield Estates. The following is a list of people who live in Camfield Estates. Please take the time to look over the complete list and select as many of the following people whom you recognize by name by placing an "X" in the first column. For those people you recognized from Camfield Estates, place an "X" in the remaining columns according to each of the following criteria:

D1. Those whom you talk to on what you would consider to be a regular basis?

D2. Those whom you have invited into your home in the last six months?

D3. Those whom have invited you into their home in the last six months?

D4. Those whom you have contacted using e-mail in the last six months?

D5. Those whom you have called on the phone in the last six months?

SECTION E - NEIGHBORS AT CAMFIELD ESTATES

Now I would like to ask you about your neighbors at Camfield Estates.

E1. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

	Never	Once/ year	Few times/ year	Once/ month	Once/ week	Almost everyday	Don't Know
a. How often do you lend to neighbors?	1	2	3	4	5	6	7
b. How often do you turn to neighbors for help or advice?	1	2	3	4	5	6	7
c. How often do you socialize with a neighbor? (For example, sit with other mothers while watching kids outside, walk kids to school with another mother, go shopping)	1	2	3	4	5	6	7

E2. How friendly are your neighbors? *(Circle one)*

a. Very friendly b. Friendly c. Neither d. Unfriendly e. Very Unfriendly

E3. N/A

E4. N/A

E5. In the past twelve months, excluding your immediate household, have you helped any of your neighbors in any of the following ways? *(Circle all that apply)*

a. Listened to their problems
b. Helped them with household chores, shopping, repairs, house-sat, or lent them tools or supplies
c. Cared for a member of their family, either a child or an adult
d. Helped them find work
e. Lent them money
f. None of the above

E6. In the past twelve months, excluding your immediate household, have any of your neighbors helped you in any of the following ways? *(Circle all that apply)*

a. Listened to your problems
b. Helped you with household chores, shopping, repairs, house-sat, or lent you tools or supplies
c. Cared for a member of your family, either a child or an adult
d. Helped you find work
e. Lent you money
f. None of the above

SECTION F - AWARENESS OF COMMUNITY RESOURCES

Now I would like to ask you about your awareness of various resources in the community.

F1. Please rate your awareness of the following community resources, according to the following scale: *(Circle one for each item)*

	Very well informed	Well informed	Somewhat informed	Not informed
a. Skills and abilities of other residents at Camfield Estates	1	2	3	4
b. Associations and organizations that serve the community	1	2	3	4
c. Volunteer opportunities in the community	1	2	3	4
d. Institutions located in the community (For example, libraries and schools)	1	2	3	4
e. Social services and programs provided for the community	1	2	3	4
f. Community projects, activities, and events	1	2	3	4
g. Businesses located in the community	1	2	3	4
h. Products and services sold by local businesses	1	2	3	4
i. Employment opportunities in the community	1	2	3	4

F2. How do you feel about your awareness of the community resources listed above? *(Circle one)*

a. Very satisfied
b. Somewhat satisfied
d. Somewhat dissatisfied
d. Very dissatisfied
e. Don't know

F3. Please rate the usefulness of the Camfield Estates website in heightening your awareness and utilization of the following community resources, according to the following scale *(Circle one for each item)*

	Very useful	Somewhat useful	Not useful	Don't Know
a. Skills and abilities of other residents at Camfield Estates	1	2	3	4
b. Associations and organizations that serve the community	1	2	3	4
c. Volunteer opportunities in the community	1	2	3	4
d. Institutions located in the community (For example, libraries and schools)	1	2	3	4
e. Social services and programs provided for the community	1	2	3	4
f. Community projects, activities, and events	1	2	3	4
g. Businesses located in the community	1	2	3	4
h. Products and services sold by local businesses	1	2	3	4
i. Employment opportunities in the community	1	2	3	4

SECTION G - IMPRESSIONS OF CAMFIELD ESTATES

Now I would like to ask you about your impressions of Camfield Estates.

G1. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
a.	I think Camfield Estates is a good place to live	1	2	3	4	5
b.	People in Camfield Estates share the same values	1	2	3	4	5
c.	My neighbors and I want the same things for Camfield Estates	1	2	3	4	5
d.	I can recognize most of the people who live in Camfield Estates	1	2	3	4	5
e.	I feel at home in Camfield Estates	1	2	3	4	5
f.	Very few of my neighbors at Camfield Estates know me	1	2	3	4	5
g.	I care about what neighbors at Camfield Estates think of my actions	1	2	3	4	5
h.	I have influence over what Camfield Estates is like	1	2	3	4	5
i.	If there is a problem in Camfield Estates, people who live here can get it solved	1	2	3	4	5
j.	It is very important to me to live in Camfield Estates	1	2	3	4	5
k.	I have an active part in keeping Camfield Estates going	1	2	3	4	5
l.	People in Camfield Estates get along with each other	1	2	3	4	5
m.	I expect to live in Camfield Estates for a long time	1	2	3	4	5
n.	Most people in Camfield Estates are active in groups outside the local area	1	2	3	4	5
o.	Camfield Estates is a good place for my kids to grow up and thrive	1	2	3	4	5
p.	Camfield Estates is a close-knit community	1	2	3	4	5
q.	I wish I had more contact with people in Camfield Estates	1	2	3	4	5
r.	It is safe to walk in Camfield Estates at night	1	2	3	4	5
s.	The people in Camfield Estates do not have very much in common	1	2	3	4	5

		Agree strongly	Agree somewhat	Disagree somewhat	Disagree strongly	Don't know
t.	I feel an obligation to make a contribution to Camfield Estates	1	2	3	4	5
u.	If others in Camfield Estates wanted to do something that I thought would improve the neighborhood, I would probably be willing to work together with them	1	2	3	4	5
v.	If I had to go away for the day, I could count on my neighbors at Camfield Estates to take care of my children	1	2	3	4	5
w.	If I were sick, I could count on my neighbors at Camfield Estates to shop for groceries for me	1	2	3	4	5
x.	If I had to borrow about $25 for an emergency, one of my neighbors at Camfield Estates would lend me the money	1	2	3	4	5
y.	When I am away from home, I can count on my neighbors at Camfield Estates to keep their eyes open for possible trouble	1	2	3	4	5

SECTION H - COMMUNITY INVOLVEMENT

Now I would like to ask you about your community involvement.

H1. Please respond to the following questions, according to the following scale:
(Circle one for each item)

		Never	Seldom	Occasionally	Frequently
a.	How often would you say you keep up with the local news in Camfield Estates?	1	2	3	4
b.	How often would you say you have ideas for improving things in Camfield Estates?	1	2	3	4
c.	How often do you get together with people who know what's going on in Camfield Estates?	1	2	3	4
d.	How often do you work to bring about changes in Camfield Estates?	1	2	3	4
e.	How often do you watch the local news on TV to find out what's going on in your community?	1	2	3	4

H2. Identify your membership, your level of involvement, and your leadership role, if any, with the following groups, according to the following scale:

	MEMBERSHIP (Circle one for each item)		*LEVEL OF INVOLVEMENT (Circle one for each item)*			*LEADERSHIP (Circle one for each item)*	
	Member of this group?		Never attend	Attend occasionally	Attend regularly/ frequently	Hold or have held a leadership position?	
1. Youth groups (For example, Boy/Girl Scouts)	Yes	No	1	2	3	Yes	No
2. Community organizations (Outside Camfield Estates)	Yes	No	1	2	3	Yes	No
3. Music, art, drama, or dance groups	Yes	No	1	2	3	Yes	No
4. School clubs/student governments	Yes	No	1	2	3	Yes	No
5. School services groups (For example, tutoring, parent association)	Yes	No	1	2	3	Yes	No
6. Local political groups	Yes	No	1	2	3	Yes	No
7. Hobby or garden clubs	Yes	No	1	2	3	Yes	No
8. Social clubs based on country or city of origin	Yes	No	1	2	3	Yes	No
9. Church/Temple/Mosque activities or groups	Yes	No	1	2	3	Yes	No
10. Discussion group/reading club/support group	Yes	No	1	2	3	Yes	No
11. Sports teams	Yes	No	1	2	3	Yes	No
12. Neighborhood patrol/watch	Yes	No	1	2	3	Yes	No
13. Community planning board	Yes	No	1	2	3	Yes	No
14. Police precinct (For example, council, auxiliary, other)	Yes	No	1	2	3	Yes	No
15. Labor unions/professional groups	Yes	No	1	2	3	Yes	No
16. Camfield Tenants Association (CTA)	Yes	No	1	2	3	Yes	No
17. Neighborhood/block association	Yes	No	1	2	3	Yes	No
18. Other groups	Yes	No	1	2	3	Yes	No

H3. Have you engaged in any of the following activities in the past year? *(Circle one for each item)*

a.	Signed a petition	Yes	No
b.	Wrote a letter to a public official	Yes	No
c.	Phoned or went to see a public official	Yes	No
d.	Boycotted a product	Yes	No
e.	Organized a group of people around some political issue	Yes	No
f.	Volunteered time to an organization	Yes	No
g.	Went to a demonstration	Yes	No
h.	Went to a political rally or meeting	Yes	No
i.	Organized a political rally or meeting	Yes	No
j.	Collected signatures for a petition drive	Yes	No
k.	Wrote a letter to an editor of a newspaper	Yes	No
l.	Gave money to a voluntary organization for a special cause	Yes	No
m.	Ran a fundraising campaign for a voluntary organization	Yes	No
n.	Gave money to a political campaign	Yes	No
o.	Worked on a political campaign	Yes	No
p.	Ran for public office	Yes	No
q.	Voted in a tenants association meeting	Yes	No
r.	Voted in a general election	Yes	No
s.	Visited child's school	Yes	No
t.	Participated in voter registration drive/campaign	Yes	No
u.	Have you engaged in any political activity online in the past year such as sending an e-mail to a politician or government representative, voting online, or obtaining information about an elected official?	Yes	No

H4. Counting everything, about how many hours of unpaid volunteer work have you done in the past month?

_____ (hours)

H5. N/A
H6. N/A
H7. N/A

SECTION I – EMPOWERMENT

Now I would like to ask you about empowerment.

I1. N/A
I2. N/A
I3. N/A
I4. N/A
I5. N/A
I6. N/A

I7. Please respond to the following statements, according to the following scale:
(Circle one for each item)

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	Voting is important to effect change in society	1	2	3	4	5
b.	Voting in national elections is important	1	2	3	4	5
c.	Voting in local elections is important	1	2	3	4	5
d.	What happens in my life is largely a matter of chance	1	2	3	4	5
e.	The world is much too complicated for me to understand	1	2	3	4	5
f.	I have little influence over the things that happen to me	1	2	3	4	5
g.	I feel I can make a change in my community if I can make myself heard	1	2	3	4	5
h.	The average citizen can have an influence on government affairs	1	2	3	4	5
i.	Consumers have to pay whatever price a business sets because it's too difficult to price compare or shop around	1	2	3	4	5
j.	There is very little consumers can do to keep prices from going higher	1	2	3	4	5
k.	The quality of life at Camfield is up to the residents	1	2	3	4	5
l.	It is relatively easy to get enough information about what is happening at Camfield to be able to make a change	1	2	3	4	5
m.	It is relatively easy to get enough information about what is happening in the community to be able to make a change	1	2	3	4	5
n.	It is relatively easy to get information about what is happening at Camfield from the Camfield Tenants Association	1	2	3	4	5

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
o.	Having access to a computer in my home is important for empowerment	1	2	3	4	5
p.	Having access to the Internet in my home is important for empowerment	1	2	3	4	5
q.	Having access to a computer in my home is important for community empowerment	1	2	3	4	5
r.	Having access to the Internet in my home is important for community empowerment	1	2	3	4	5
s.	It is relatively easy to get information about what is happening at Camfield from the management company	1	2	3	4	5
t.	Getting information about what is happening at Camfield from the management company is important for community empowerment	1	2	3	4	5
u.	Getting information about my community from Boston City Hall is relatively easy	1	2	3	4	5
v.	Getting information about my community from Boston City Hall is important for community empowerment	1	2	3	4	5

SECTION J – SELF-SUFFICIENCY

Now I would like to ask you about self-sufficiency.

J1. N/A
J2. N/A
J3. N/A
J4. N/A
J5. N/A
J6. N/A
J7. N/A

J8. Please rank the following items for importance to achieving <u>family</u> <u>self-sufficiency</u>, ranging from 1 which corresponds to the issue that is most important to you, to 9 which corresponds to the issue that is least important to you.

_____ Employment	_____ Safety/environment	_____ Community involvement
_____ Housing	_____ Human services	_____ Empowerment
_____ Assets/savings	_____ Personal relationships	_____ Personal attributes (e.g., motivation, desire, positive personality, etc.)

Now I would like to ask you questions in relation to housing and food.

J9. N/A
J10. N/A
J11. N/A
J12. How often do you shop for groceries at a local corner store? *(Circle one)*

a. Always b. Most of the time c. Sometimes d. Never e. Don't Know

J13. How often do you shop for groceries at a supermarket? *(Circle one)*

a. Always b. Most of the time c. Sometimes d. Never e. Don't Know

J14. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I would like to own my home	1	2	3	4	5
b.	I feel like I might have to move in the next 1 to 2 years	1	2	3	4	5
c.	My family and I currently eat healthy most of the time	1	2	3	4	5
d.	My family and I often eat fast food (For example, sub shops, McDonald's, Burger King, etc.)	1	2	3	4	5
e.	I feel I can get healthy food from the local corner store	1	2	3	4	5
f.	I feel I can get healthy food from the supermarket	1	2	3	4	5

Now I would like to ask you questions about safety and the environment at Camfield Estates.

J15. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I feel safe on the grounds of Camfield Estates	1	2	3	4	5
b.	I feel safe walking in the neighborhood surrounding Camfield Estates	1	2	3	4	5
c.	I know what the most common crimes committed in Roxbury are	1	2	3	4	5
d.	I see security guards at Camfield Estates regularly	1	2	3	4	5
e.	I see Boston Police Officers in Roxbury regularly	1	2	3	4	5
f.	Management at Camfield responds in a timely manner when called	1	2	3	4	5
g.	Security at Camfield responds in a timely manner when called	1	2	3	4	5

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
h.	The Camfield Tenants Association responds in a timely manner when called	1	2	3	4	5
i.	Residents should manage Camfield Estates themselves	1	2	3	4	5
j.	Residents have the necessary training and preparation to manage Camfield	1	2	3	4	5
k.	Gangs are a problem at Camfield Estates	1	2	3	4	5
l.	Gangs are a problem in Roxbury	1	2	3	4	5

Now I would like to ask you questions about your knowledge of where human services are.

J16. Please respond to the following statements, according to the following scale:
(Circle one for each item)

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I know where the local social service agencies are in my neighborhood (For example, housing, youth, health, etc.)	1	2	3	4	5
b.	I use the social service agencies in my neighborhood often	1	2	3	4	5
c.	I feel comfortable going into most of the social service agencies in my neighborhood	1	2	3	4	5

J17. Which of the following City of Boston services, programs and/or departments have you heard of or used: *(check each that apply)*

___ Access Boston 2000-2010 Citywide Transportation Plan
___ Animal Control
___ Archives
___ Assessing
___ Auditing
___ Basic City Services
___ Bids
___ Board of Appeal
___ Boston 2:00 to 6:00 After-School Initiative
___ Boston 400
___ Boston Employment Commission
___ Boston Housing Authority
___ Boston Management Consortium
___ Boston Redevelopment Authority
___ Boston Residents Jobs Policy Program
___ Boston Water and Sewer Commission
___ Boston Youth Clean-Up Corps
___ Budget Management
___ Business Development
___ Cabinets
___ Can Share
___ Cable Communications
___ Chief Financial Officer
___ Chief Operating Officer
___ Child Care
___ Children and Families
___ City Clerk
___ Civil Rights
___ Community Centers
___ Consumer Affairs
___ Credit Union
___ Cultural Affairs
___ Elderly Commission
___ Elections
___ Emergency Center
___ Emergency Medical Services
___ Emergency Shelter
___ Employee Assistance Program
___ Environment
___ Film Bureau
___ Fire Department
___ Graffiti Busters
___ Harbor Islands
___ Housing Today
___ Human Services
___ Human Resources
___ Inspectional Services
___ Intergovernmental Relations
___ Jobs and Community Services
___ Job Listings
___ Labor Relations
___ Law
___ Libraries
___ Licensing Board
___ Management Information Services
___ Marriage Licenses
___ Minority and Women Business Enterprise
___ Neighborhood Development
___ Neighborhood Services
___ Neighborhoods
___ New Bostonians
___ OCP (Office of Community Partnership)
___ Office for Children and Families
___ Parking Tickets
___ Parks and Recreation
___ Police Department
___ Press Office
___ Public Health Commission
___ Public Works
___ Purchasing
___ Registry Division
___ Registry of Deeds
___ Rental Housing Resource Center
___ Retirement Board
___ SafeFutures
___ Special Events
___ Storm/Emergency Center
___ Transportation
___ Treasury
___ TRAC (Taxpayer Referral Assistance Program)
___ Veterans' Services
___ Women's Commission
___ Worker's Compensation Service
___ Special Events
___ Storm/Emergency Center

Now I would like to ask you questions about inspiration.

J18. Please respond to the following statements, according to the following scale: *(Circle one for each item)*

	Strongly agree	Agree	Neither	Disagree	Strongly disagree
a. I feel I can do whatever I set my mind to	1	2	3	4	5
b. I have a number of good qualities	1	2	3	4	5
c. There is little I can do to change many of the important things in my life	1	2	3	4	5
d. Sometimes I feel I am being pushed around in life	1	2	3	4	5
e. I often feel motivated to accomplish what I have to do	1	2	3	4	5
f. What happens in the future mostly depends on me	1	2	3	4	5

Now I would like to ask you questions about education and job skill level.

J19. Are you currently enrolled in a school or college? *(Circle one)* Yes No

J20. Are currently enrolled in an adult education program? *(Circle one)* Yes No

J21. If no, would you be interested in enrolling in an adult education program? *(Circle one)* Yes No Maybe

J22. Are you currently enrolled in a job skills training program? *(Circle one)* Yes No

J23. How many jobs do you have? _____

J24. How many hours per week are you currently employed? *(Circle one)*

a. Less than 20 hours/week
b. More than 20 and less than 40 hours/week
c. 40 hours/week
d. More than 40 hours/week
e. Retired
f. Not employed

J25. Do you currently take public transportation to work? *(Circle one)* Yes No

J26. Please respond to the following statements, according to the following scale:
(Circle one for each item)

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I would like to get a better job	1	2	3	4	5
b.	I feel I can find a new job if I need to	1	2	3	4	5
c.	I currently know what job skills are required for any job I am interested in	1	2	3	4	5
d.	I would like to improve my job skills	1	2	3	4	5
e.	I would like to continue advancing my education	1	2	3	4	5
f.	I feel I need a car to get to the good jobs	1	2	3	4	5
g.	I feel I can get to the good jobs by public transportation	1	2	3	4	5

SECTION K – NTC TRAINING EXPERIENCE

I would like to ask you questions about your computer training experience at NTC as it relates to the Camfield- MIT project.

K1. Are you utilizing the training received in your everyday life? If so, How?

_____

_____

_____

K2-K4. Please respond to the following statements, according to the following scale:
(Circle one for each item)

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
K2.	Instruction I received at NTC was adequate for my skill level	1	2	3	4	5
K3.	The instruction content was adequate for my skill level	1	2	3	4	5
K4.	The facilities and equipment were adequate for instruction	1	2	3	4	5

K5. What, if anything, would you change surrounding the training?

_____

_____

_____

K6. What advice would give to a new student to the course?

K7. How have you utilized the Camfield website?

K8. What types of tutorials would you find useful for NTC staff to add to the website?

K9. How has the training experience changed your life? How has the training changed your perception of what you personally can do with technology?

K10. What follow up courses/experiences are you planning on engaging in based on your training experience?

SECTION L1 - COMPUTER AND INTERNET USE: GENERAL

I would like to ask you questions about your general computer and Internet use.

L1. Which of the following best describes how often you use your computer, without the Internet (i.e. no web browser)?

a. Never
b. Once/year
c. Few times/year
d. Once/month
e. Almost everyday
f. Everyday
g. Don't know

L2. Which of the following best describes how often you use your computer and the Internet (i.e. with a web browser)?

a. Never b. Once/year c. Few times/year d. Once/month
e. Almost everyday f. Everyday g. Don't know

L3. How many hours per day do you use your computer? _____

L4. When did you last use your computer at home?

Date: _____ Time of Day: _____

L5. What were you doing with your computer the last time you used it?

_____

_____

_____

L6. What tasks do you perform regularly using your computer? More specifically, what creative tasks do you perform regularly (i.e. designing a flyer, building a website, etc.)?

_____

_____

_____

L7. Is there anything you would like to do with your computer or the Internet that you haven't done yet? What has prevented you from doing it?

_____

_____

_____

L8. Please identify the frequency with which you use your computer for the following activities:

	Never	Seldom	Occasionally	Frequently
a. Browse the Internet	1	2	3	4
b. Use an office application (i.e. word processing, spreadsheets, etc.)	1	2	3	4
c. Home banking	1	2	3	4
d. Work or school-related tasks	1	2	3	4
e. Send/receive electronic mail	1	2	3	4
f. Use an instant messenger	1	2	3	4
g. Play games	1	2	3	4
h. Participate in online discussion groups	1	2	3	4
i. Purchase something online	1	2	3	4
j. Communicate with family/friends	1	2	3	4
k. Continuing education	1	2	3	4
l. Career or job exploration	1	2	3	4
m. Access educational resources for children	1	2	3	4
n. Business or entrepreneurial activity	1	2	3	4
o. Research a topic, hobby or interest	1	2	3	4
p. Place telephone calls	1	2	3	4
q. Investing	1	2	3	4
r. Access social service information	1	2	3	4
s. Access healthcare information	1	2	3	4
t. Search for housing	1	2	3	4
u. Online chat	1	2	3	4
v. Design a flyer, poster, or newsletter	1	2	3	4
w. Design a document or presentation for family/friends	1	2	3	4
x. Create an online photo album	1	2	3	4
y. Design a web page	1	2	3	4
z. Contribute content to the Camfield website (i.e. calendar, business and organization database, etc.)	1	2	3	4
aa. Contribute content to another website (i.e. articles, commentary/suggestions, etc.)	1	2	3	4

SECTION L2 - COMPUTER AND INTERNET USE: LOCAL

I would like to ask you questions about your computer and Internet use as it relates to national and local Boston area information

L9. How often do you go online to obtain national information such as news, sports, etc.?

a. Never b. Seldom c. Occasionally d. Frequently

L10. From where do you obtain this information online?

_____

_____

_____

L11. How often do you go online to obtain information local to the City of Boston such as news, activities and events, weather, etc.?

a. Never b. Seldom c. Occasionally d. Frequently

L12. From where do you obtain this information online?

_____

_____

_____

L13. How often do you go online to obtain information local to Camfield Estates such as news, activities and events, meeting schedules, etc.?

a. Never b. Seldom c. Occasionally d. Frequently

L14. From where do you obtain this information online?

_____

_____

_____

L15. Please identify the websites you visit regularly? For what purpose?

_____

_____

_____

L16. Please indicate which of the following statements best describes your views since you have received your computer and Internet access. Have you become less, equally, or more connected with the following groups, or not sure:

	Less	Not Sure	N/A	Equally	More
a. People like you?	1	2	3	4	5
b. People not like you?	1	2	3	4	5
c. Family/friends in your local area?	1	2	3	4	5
d. Family/friends not in your local area?	1	2	3	4	5
e. Co-workers?	1	2	3	4	5
f. People at your place of worship?	1	2	3	4	5
g. Residents at Camfield?	1	2	3	4	5
h. Camfield Tenants Association board?	1	2	3	4	5
i. Cornu Management company?	1	2	3	4	5
j. People inside your local community?	1	2	3	4	5
k. People outside your local community?	1	2	3	4	5
l. Your child's school or local school groups?	1	2	3	4	5

L17. Please indicate which of the following statements best describes your views since you have received your computer and Internet access.

	Less	Equally	More	Not Sure	N/A
a. Have you become more, equally, or less involved in issues that interest you involved?	1	2	3	4	5
b. Have you become less, equally, or more aware of what's going on at Camfield?	1	2	3	4	5
c. Have you attended less, equally, or more numbers of meetings and events at Camfield?	1	2	3	4	5
d. Have you attended less, equally, or more numbers of meetings and events of local organizations to which you belong?	1	2	3	4	5

Now I would like to ask you about Empowerment from technology

L18. Please respond to the following statements, according to the following scale:
(Circle one for each item)

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	I feel empowered knowing how to use a computer and the Internet	1	2	3	4	5
b.	Having a computer helps make managing personal affairs easier	1	2	3	4	5
c.	I feel connected to more information with access to the Internet	1	2	3	4	5
d.	With Internet access I find it easier to get information about what effects my life	1	2	3	4	5
e.	With Internet access I have more awareness of resources in my community	1	2	3	4	5
f.	With Internet access I have more awareness of human services in my community	1	2	3	4	5
g.	With Internet access I have more awareness of health care services in my community	1	2	3	4	5
h.	I use the Internet for some of my banking needs	1	2	3	4	5
i.	I use the Internet for some of my investment needs	1	2	3	4	5
j.	I don't use the Internet for some of my banking and investment needs because I am concerned about security	1	2	3	4	5
k.	I find it easy and empowering to participate in online voting	1	2	3	4	5
l.	I find using the Camfield Estates web site informative	1	2	3	4	5
m.	Internet access makes it easier to read the daily newspaper	1	2	3	4	5
n.	I use the Internet for some of my grocery shopping needs	1	2	3	4	5
o.	I use the Internet for some of my retail (clothes, books, music, movie tickets, etc.) shopping needs	1	2	3	4	5
p.	I use email to keep in touch with some of my family and friends	1	2	3	4	5
q.	I feel I can use the Internet to find a house or apartment if I	1	2	3	4	5

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
	need to					
r.	I feel I can use the Internet to find a job or a better job if I need too	1	2	3	4	5
s.	I feel inspired to learn more about computers	1	2	3	4	5
t.	I find it easy to find out what is happening at Boston City Hall on the Internet	1	2	3	4	5
u.	I find it easy to find out what is happening at the Massachusetts State House on the Internet	1	2	3	4	5
v.	Having a computer and access to the Internet has inspired me to want to find out more about what is happening in the world	1	2	3	4	5

SECTION M – DEMOGRAPHICS

Finally, I would like to ask you questions about income and assets. (Allow subject to write answers)

M1. N/A
M2. N/A
M3. N/A
M4. N/A
M5. N/A
M6. N/A
M7. N/A
M8. N/A
M9. N/A
M10. N/A
M11. N/A
M12. N/A

M13. Please respond to the following statements, according to the following scale:

Owning or improving the following is important: *(Circle one for each item)*

		Strongly agree	Agree	Neither	Disagree	Strongly disagree
a.	Stocks	1	2	3	4	5
b.	Bonds	1	2	3	4	5
c.	Mutual Funds	1	2	3	4	5
d.	Certificate of Deposit	1	2	3	4	5
e.	Savings account	1	2	3	4	5
f.	Checking account	1	2	3	4	5
g.	Life Insurance	1	2	3	4	5
h.	Health Insurance	1	2	3	4	5
i.	Dental Insurance	1	2	3	4	5
j.	Auto Insurance	1	2	3	4	5
k.	Renters/Homeowners Insurance	1	2	3	4	5

M14. How many credit cards do you have? _____

M15. Do you currently own a car? *(Circle one)* Yes No

M16. If no, do you have access to a car? *(Circle one)* Yes No

M17. Is your combined household income less than $18,000 per year?

Yes No Refused to answer

M18. Which of the following categories does you annual total household income fall in: *(Circle one)*

a. Less than $10,000
b. $10,000 - $14,999
c. $15,000 - $19,999
d. $20,000 - $24,999
e. $25,000 - $29,999
f. $30,000 - $34,999
g. Greater than $35,000

Thank you very much for participating in this survey. Are there any questions you would like to ask, or comments you would like to make?

End Time: _____

APPENDIX C: CAMFIELD TRANSPARENT PROXY-SERVER LOG

Webalizer Version 2.0.1 Headings Descriptions

Headings	Description
Hits	Hits represent the total number of requests made to the server during the given time period (month, day, hour etc.).
Files	Files represent the total number of hits (requests) that actually resulted in something being sent back to the user. Not all hits will send data, such as 404-Not Found requests and requests for pages that are already in the browsers cache.
Tip	By looking at the difference between hits and files, you can get a rough indication of repeat visitors, as the greater the difference between the two, the more people are requesting pages they already have cached (have viewed already).
Sites	Sites is the number of unique IP addresses/hostnames that made requests to the server. Care should be taken when using this metric for anything other than that. Many users can appear to come from a single site, and they can also appear to come from many IP addresses so it should be used simply as a rough gauge as to the number of visitors to your server.
Visits	Visits occur when some remote site makes a request for a *page* on your server for the first time. As long as the same site keeps making requests within a given timeout period, they will all be considered part of the same **Visit**. If the site makes a request to your server, and the length of time since the last request is greater than the specified timeout period (*default is 30 minutes*), a new **Visit** is started and counted, and the sequence repeats. Since only *pages* will trigger a visit, remotes sites that link to graphic and other non- page URLs will not be counted in the visit totals, reducing the number of *false* visits.
Pages	Pages are those URLs that would be considered the actual page being requested, and not all of the individual items that make it up (such as graphics and audio clips). Some people call this metric *page views* or *page impressions*, and defaults to any URL that has an extension of **.htm**, **.html** or **.cgi**.
KByte (KB)	KByte is 1024 bytes (1 Kilobyte). Used to show the amount of data that was transferred between the server and the remote machine, based on the data found in the server log.

Usage Statistics for Camfield Estates Proxy Server

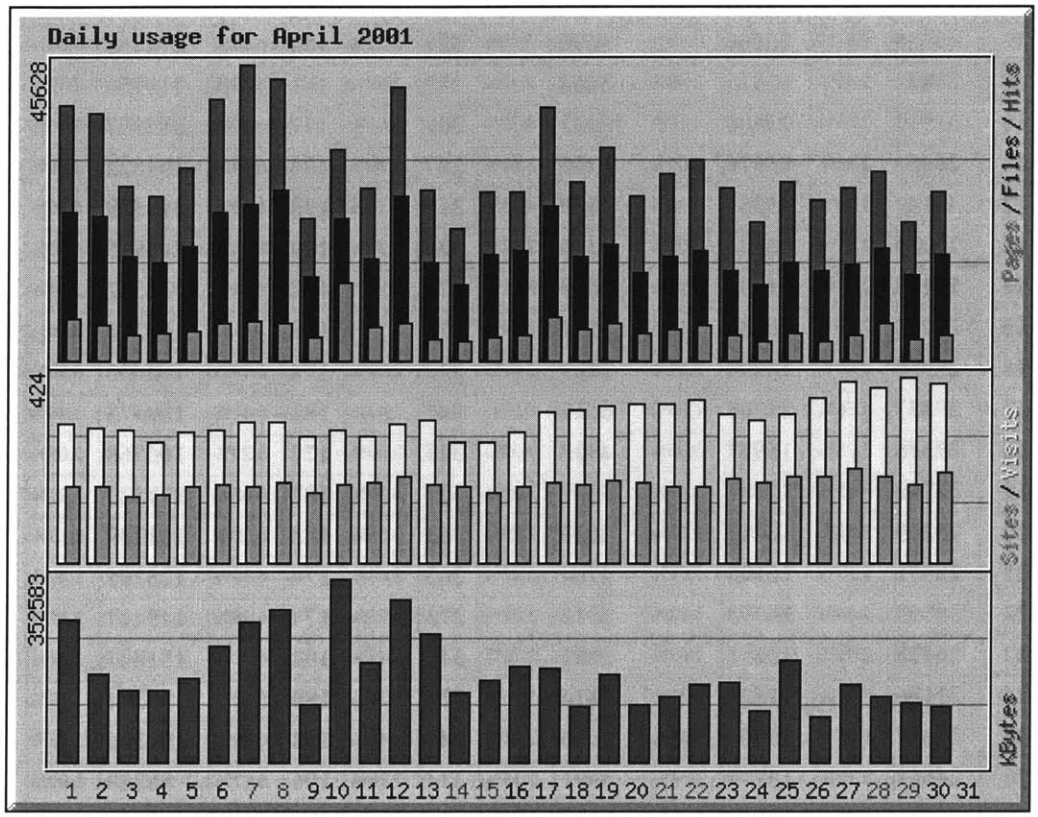
Summary Period: April 2001
Generated 22-May-2001 14:38 PDT

[Daily Statistics] [Hourly Statistics] [URLs] [Entry] [Exit] [Sites] [Users] [Countries]

Monthly Statistics for April 2001		
Total Hits		895835
Total Files		521537
Total Pages		143935
Total Visits		9938
Total KBytes		5213135
Total Unique Sites		2814
Total Unique URLs		216484
Total Unique Usernames		5
	Avg	**Max**
Hits per Hour	1244	5501
Hits per Day	29861	45628
Files per Day	17384	26100
Pages per Day	4797	12042
Visits per Day	331	424
KBytes per Day	173771	352583

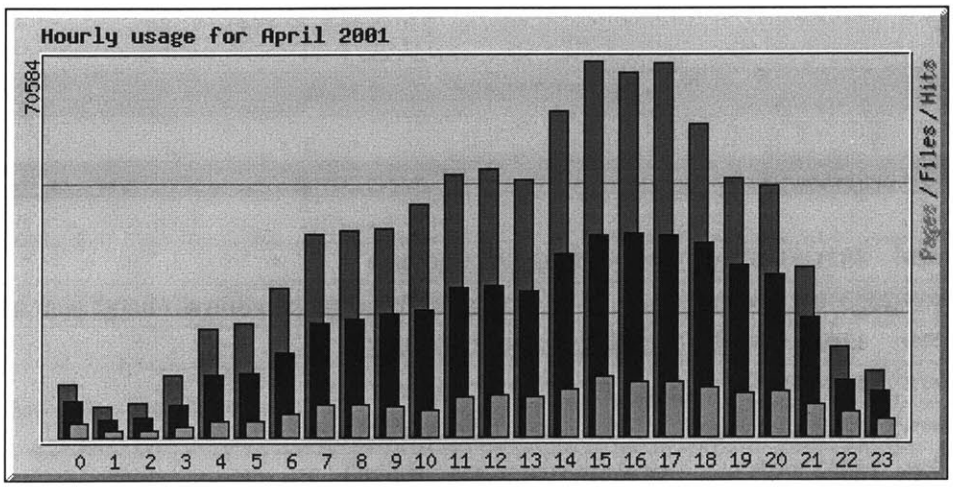
Hits by Response Code	
Undefined response code	47123
Code 200 - OK	521537
Code 201 - Created	285
Code 204 - No Content	3192
Code 206 - Partial Content	606
Code 301 - Moved Permanently	1592
Code 302 - Found	87487
Code 303 - See Other	24
Code 304 - Not Modified	208873
Code 400 - Bad Request	486
Code 401 - Unauthorized	369

Code 403 - Forbidden	**1559**
Code 404 - Not Found	**16195**
Code 405 - Method Not Allowed	**59**
Code 411 - Length Required	**1073**
Code 413 - Request Entity Too Large	**6**
Code 416 - Requested Range Not Satisfiable	**1**
Code 500 - Internal Server Error	**1629**
Code 501 - Not Implemented	**1**
Code 502 - Bad Gateway	**9**
Code 503 - Service Unavailable	**3533**
Code 504 - Gateway Timeout	**196**



Daily Statistics for April 2001

Day	Hits		Files		Pages		Visits		Sites		KBytes	
1	39284	4.39%	22780	4.37%	6289	4.37%	318	3.20%	171	6.08%	274373	5.26%
2	38020	4.24%	22289	4.27%	5492	3.82%	306	3.08%	171	6.08%	168996	3.24%
3	26890	3.00%	15885	3.05%	3829	2.66%	301	3.03%	152	5.40%	136884	2.63%
4	25392	2.83%	15175	2.91%	4284	2.98%	275	2.77%	155	5.51%	137483	2.64%
5	29624	3.31%	17502	3.36%	4370	3.04%	296	2.98%	174	6.18%	160170	3.07%
6	40262	4.49%	22840	4.38%	5801	4.03%	300	3.02%	176	6.25%	221614	4.25%
7	45628	5.09%	24008	4.60%	5966	4.14%	322	3.24%	172	6.11%	268351	5.15%
8	43255	4.83%	26100	5.00%	5698	3.96%	321	3.23%	184	6.54%	292788	5.62%
9	21842	2.44%	12913	2.48%	3468	2.41%	287	2.89%	161	5.72%	110756	2.12%
10	32510	3.63%	21808	4.18%	12042	8.37%	301	3.03%	177	6.29%	352583	6.76%
11	26454	2.95%	15676	3.01%	5235	3.64%	287	2.89%	184	6.54%	191822	3.68%
12	42141	4.70%	25357	4.86%	5849	4.06%	315	3.17%	195	6.93%	312529	6.00%
13	26084	2.91%	15144	2.90%	3266	2.27%	325	3.27%	179	6.36%	245805	4.72%
14	20196	2.25%	11633	2.23%	2899	2.01%	274	2.76%	172	6.11%	132312	2.54%
15	25958	2.90%	16432	3.15%	3511	2.44%	273	2.75%	158	5.61%	155370	2.98%
16	25955	2.90%	16894	3.24%	3889	2.70%	297	2.99%	174	6.18%	182436	3.50%
17	39057	4.36%	23765	4.56%	6664	4.63%	345	3.47%	182	6.47%	180378	3.46%
18	27336	3.05%	15927	3.05%	4923	3.42%	348	3.50%	177	6.29%	106768	2.05%
19	32740	3.65%	17787	3.41%	5599	3.89%	357	3.59%	187	6.65%	170329	3.27%
20	25299	2.82%	13412	2.57%	4037	2.80%	363	3.65%	183	6.50%	111189	2.13%
21	28571	3.19%	16100	3.09%	4704	3.27%	363	3.65%	174	6.18%	125295	2.40%
22	30789	3.44%	16793	3.22%	5312	3.69%	373	3.75%	174	6.18%	149427	2.87%
23	26428	2.95%	13691	2.63%	3891	2.70%	341	3.43%	192	6.82%	151847	2.91%
24	21186	2.36%	11532	2.21%	2814	1.96%	324	3.26%	180	6.40%	98314	1.89%
25	27457	3.06%	15051	2.89%	4186	2.91%	340	3.42%	194	6.89%	194336	3.73%
26	24667	2.75%	13775	2.64%	3091	2.15%	374	3.76%	196	6.97%	88289	1.69%
27	26525	2.96%	14658	2.81%	3965	2.75%	413	4.16%	214	7.60%	147829	2.84%
28	29157	3.25%	17222	3.30%	5759	4.00%	398	4.00%	195	6.93%	126007	2.42%
29	21109	2.36%	13222	2.54%	3195	2.22%	424	4.27%	177	6.29%	114078	2.19%
30	26019	2.90%	16166	3.10%	3907	2.71%	408	4.11%	207	7.36%	104779	2.01%



Hourly Statistics for April 2001

Hour	Hits			Files			Pages			KBytes		
	Avg	Total		Avg	Total		Avg	Total		Avg	Total	
0	333	9998	1.12%	222	6681	1.28%	86	2608	1.81%	2964	88921	1.71%
1	186	5605	0.63%	106	3202	0.61%	41	1235	0.86%	622	18657	0.36%
2	220	6605	0.74%	118	3553	0.68%	44	1323	0.92%	1199	35969	0.69%
3	393	11791	1.32%	207	6224	1.19%	68	2067	1.44%	1552	46548	0.89%
4	680	20409	2.28%	394	11821	2.27%	103	3096	2.15%	5704	171132	3.28%
5	709	21283	2.38%	399	11986	2.30%	100	3026	2.10%	4281	128442	2.46%
6	928	27847	3.11%	529	15888	3.05%	141	4230	2.94%	6097	182920	3.51%
7	1274	38241	4.27%	717	21531	4.13%	207	6224	4.32%	8414	252431	4.84%
8	1294	38822	4.33%	738	22157	4.25%	204	6127	4.26%	7473	224178	4.30%
9	1303	39101	4.36%	768	23062	4.42%	187	5629	3.91%	6710	201306	3.86%
10	1453	43613	4.87%	792	23769	4.56%	170	5124	3.56%	7865	235952	4.53%
11	1643	49310	5.50%	930	27929	5.36%	248	7462	5.18%	8537	256119	4.91%
12	1670	50118	5.59%	946	28382	5.44%	262	7879	5.47%	9623	288695	5.54%
13	1600	48013	5.36%	904	27141	5.20%	251	7548	5.24%	8762	262861	5.04%
14	2034	61023	6.81%	1144	34333	6.58%	293	8793	6.11%	10190	305710	5.86%
15	2352	70584	7.88%	1259	37775	7.24%	376	11296	7.85%	13516	405468	7.78%
16	2273	68199	7.61%	1272	38170	7.32%	336	10094	7.01%	10852	325563	6.25%
17	2339	70185	7.83%	1253	37617	7.21%	339	10177	7.07%	11161	334833	6.42%
18	1947	58426	6.52%	1209	36282	6.96%	311	9340	6.49%	10706	321183	6.16%
19	1616	48486	5.41%	1075	32266	6.19%	272	8184	5.69%	10513	315396	6.05%
20	1572	47185	5.27%	1014	30420	5.83%	283	8514	5.92%	9907	297196	5.70%
21	1057	31712	3.54%	743	22313	4.28%	201	6057	4.21%	8602	258045	4.95%
22	567	17033	1.90%	352	10563	2.03%	153	4611	3.20%	4771	143126	2.75%
23	408	12246	1.37%	282	8472	1.62%	109	3291	2.29%	3750	112485	2.16%

Top 100 of 216484 Total URLs					
#	Hits		KBytes		URL
1	12885	1.44%	5821	0.11%	http://service.bfast.com/bfast/serve
2	9000	1.00%	235390	4.52%	http://www.vstore.com/cgi-bin/pagegen/vstoretravel/whoosh/page.html
3	5126	0.57%	1361	0.03%	http://http.pager.yahoo.com/notify/
4	4059	0.45%	1989	0.04%	http://pager.blackplanet.com/pager.html
5	3638	0.41%	1746	0.03%	http://arc5.msn.com/ADSAdClient31.dll
6	2928	0.33%	24402	0.47%	http://www.qvc.com/scripts/detail.dll
7	2839	0.32%	677	0.01%	http://isapidata.weatherbug.com/WxAlertIsapi/WxAlertIsapi.dll
8	2444	0.27%	862	0.02%	http://lcdata.launch.com/servlet/rateme
9	2386	0.27%	1560	0.03%	http://lcplaylist.launch.com/servlet/playlist
10	2342	0.26%	2429	0.05%	http://adforce.imgis.com/
11	2239	0.25%	3127	0.06%	http://lcsonginfo.launch.com/servlet/songinfo
12	2103	0.23%	8265	0.16%	http://www.launch.com/music/launchcast/player/not_adframe/0,4112,,00.html
13	2002	0.22%	555	0.01%	http://lcdata.launch.com/servlet/skipsong
14	1526	0.17%	1878	0.04%	http://www.clickxchange.com/ft.phtml
15	1432	0.16%	3755	0.07%	http://data.alexa.com/data
16	1394	0.16%	722	0.01%	http://doubleclick.shockwave.com/adx/headline.shock.wave/home5
17	1369	0.15%	9407	0.18%	http://servedby.advertising.com/site
18	1253	0.14%	7634	0.15%	http://us.f106.mail.yahoo.com/ym/ShowLetter
19	1249	0.14%	471	0.01%	http://zone.msn.com/Gl_SinglePlayer.asp
20	1123	0.13%	755	0.01%	http://ad.doubleclick.net/adi/shock.wave/home
21	1036	0.12%	843	0.02%	http://lote.netfirms.com/verify.dat
22	1036	0.12%	270	0.01%	http://www.camfieldestates.net/css/camfield.css
23	1034	0.12%	1942	0.04%	http://espanol.chat.yahoo.com/c/ad.html
24	975	0.11%	368	0.01%	http://isapidata.weatherbug.com/WxDataISAPI/WxDataISAPI.dll
25	931	0.10%	23374	0.45%	http://www.camfieldestates.net/
26	913	0.10%	1452	0.03%	http://www.gohip.com/be3/banner.html
27	891	0.10%	478	0.01%	http://prc2.utopiad.com/ScoutUpdates/scoutConfig.jsp
28	838	0.09%	228	0.00%	http://ad.linksynergy.com/fs-bin/show
29	804	0.09%	367	0.01%	http://service.bfast.com/bfast/serve/mid5960107
30	799	0.09%	231	0.00%	http://uk.nedstat.net/scripts/nedstat.dll
31	791	0.09%	575	0.01%	http://ads.admonitor.net/adengine.cgi
32	785	0.09%	464	0.01%	http://ad.dialpad.com/hserver/AREA
33	778	0.09%	412	0.01%	http://ad.doubleclick.net/adi/fcwatch.dart/
34	770	0.09%	163	0.00%	http://www.shareasale.com/m-bannerhit.cfm
35	716	0.08%	16540	0.32%	http://aolmail.aol.com/mail.dci

36	715	0.08%	968	0.02%	http://88x31.ads.clicks.net/img.fx
37	712	0.08%	233	0.00%	http://whosonline.blackplanet.com/two.html
38	655	0.07%	8708	0.17%	http://us.update.companion.yahoo.com/slv/v3/1.html
39	646	0.07%	1977	0.04%	http://www.gohip.com/browser/
40	610	0.07%	8058	0.15%	http://search.msn.com/results.asp
41	609	0.07%	1432	0.03%	http://personaltools.blackplanet.com/MyPersonalNav/
42	577	0.06%	389	0.01%	http://adtegrity.spinbox.net/
43	574	0.06%	368	0.01%	http://ad.doubleclick.net/adi/fcvideoskin.dart/
44	573	0.06%	28200	0.54%	http://www.msn.com/
45	562	0.06%	398	0.01%	http://...../Black_Planet/Black_PlanetROS/Black_PlanetROS/19036
46	556	0.06%	6387	0.12%	http://notes.blackplanet.com/
47	554	0.06%	188	0.00%	http://isonline.blackplanet.com/iso.html
48	551	0.06%	162	0.00%	http://www.whispa.com/tracking/exposure.dll
49	551	0.06%	466	0.01%	http://zone.msn.com/adlinksp.asp
50	550	0.06%	1365	0.03%	http://www.blackplanet.com/Members/BottomNav/refresh.html
51	530	0.06%	2573	0.05%	http://www.commission-junction.com/banners/tracker.exe
52	511	0.06%	269	0.01%	http://cs.wwf.com/html.ng/keyword
53	503	0.06%	2037	0.04%	http://friends.blackplanet.com/MyFriends/
54	492	0.05%	795	0.02%	http://windowsupdate.microsoft.com/ident.cab
55	479	0.05%	598	0.01%	http://dialpad.com/displayad.html
56	462	0.05%	207	0.00%	http://msg.edit.yahoo.com/config/get_buddylist
57	462	0.05%	209	0.00%	http://update.pager.yahoo.com/clients.html
58	461	0.05%	1480	0.03%	http://www.msn.com/glb/mc.vbs
59	457	0.05%	978	0.02%	http://cgi.sexswap2.com/AdSwap.dll
60	447	0.05%	478	0.01%	http://bannerserver.gator.com/bannerserver/bannerserver.dll
61	442	0.05%	900	0.02%	http://www.msn.com/glb/info_expand.asp
62	441	0.05%	17031	0.33%	http://lw11fd.law11.hotmail.msn.com/cgi-bin/HoTMaiL
63	433	0.05%	121	0.00%	http://us.update.companion.yahoo.com/slv/not3
64	430	0.05%	122	0.00%	http://e1.update.companion.yahoo.com/slv/not3
65	429	0.05%	111	0.00%	http://data.coremetrics.com/eluminate
66	420	0.05%	14224	0.27%	http://www.blackplanet.com/Members/Home/
67	411	0.05%	110	0.00%	http://www.adsearches.com/cgi-bin/cimpression.cgi
68	408	0.05%	3038	0.06%	http://e1.update.companion.yahoo.com/slv/v3/1.html
69	406	0.05%	2909	0.06%	http://servedby.advertising.com/mnum
70	398	0.04%	5224	0.10%	http://468x60.ads.clicks.net/img.fx
71	398	0.04%	85	0.00%	http://isapidata.weatherbug.com/forecastISAPI/ForecastISAPI.dll
72	396	0.04%	890	0.02%	http://ff.uproar.com/servlet/uproar.familyFeudServlet.FamilyFeudServlet
73	391	0.04%	5467	0.10%	http://www.qvc.com/scripts/common.dll
74	388	0.04%	169	0.00%	http://www.launch.com/music/launchcast/not_blank/0,5396,333366,00.html
75	386	0.04%	206	0.00%	http://hottopics.alexa.com/kw_server
76	385	0.04%	204	0.00%	http://doubleclick.shockwave.com/adx/headline.shock.wave/home2
77	384	0.04%	107	0.00%	http://www.qvc.com/includes/liveperson.js

78	379	0.04%	9530	0.18%	http://lw10fd.law10.hotmail.msn.com/cgi-bin/HoTMaiL
79	375	0.04%	9327	0.18%	http://lw11fd.law11.hotmail.msn.com/cgi-bin/dasp/EN/hotmail___0.js
80	375	0.04%	753	0.01%	http://lw11fd.law11.hotmail.msn.com/cgi-bin/dasp/EN/hotmail___3.css
81	369	0.04%	131	0.00%	http://www.gohip.com/be3/
82	367	0.04%	2383	0.05%	http://www.utopiad.com/VBrowser5.0/wsjStock.jsp
83	363	0.04%	259	0.00%	http://ad.doubleclick.net/adi/total.nbci.com/game
84	362	0.04%	9880	0.19%	http://lw11fd.law11.hotmail.msn.com/cgi-bin/getmsg
85	360	0.04%	6829	0.13%	http://www.yahoo.com/
86	359	0.04%	96	0.00%	http://www.gohip.com/browser/empty.html
87	353	0.04%	85	0.00%	http://address.yahoo.com/yab
88	338	0.04%	956	0.02%	http://www.master-cash.de/cgi-bin/cash.cgi
89	337	0.04%	728	0.01%	http://cgi.sexswap.com/AdSwap.dll
90	333	0.04%	306	0.01%	http://notes.blackplanet.com/css/notes_style.css
91	317	0.04%	828	0.02%	http://chat.msn.com/radio/radio_data.htm
92	316	0.04%	88	0.00%	http://update.pager.yahoo.com/pgdownload/components.html
93	312	0.03%	153	0.00%	http://www.blackplanet.com/Members/BottomNav/css/nav.css
94	309	0.03%	82	0.00%	http://www.eshopxml.msn.com/trackofferimpression.asp
95	307	0.03%	96	0.00%	http://command.weatherbug.com/connection/connectionv2.7
96	306	0.03%	166	0.00%	http://www.launch.com/music/launchcast/widget/base.swf
97	304	0.03%	157	0.00%	http://tally.farmclub.com/cgi-bin/dl.cgi
98	297	0.03%	148	0.00%	http://ads.boston.com/html.ng/SpaceDesc
99	296	0.03%	187	0.00%	http://ad.doubleclick.net/adi/defjam.dart/
100	294	0.03%	1592	0.03%	http://login.yahoo.com/config/login

Top 10 of 216484 Total URLs By KBytes

#	Hits		KBytes		URL
1	9000	1.00%	235390	4.52%	http://www.vstore.com/cgi-bin/pagegen/vstoretravel/whoosh/page.html
2	1	0.00%	41814	0.80%	http://mssjus.www.conxion.com/download/motocross2k/trial/1.0/win98/en-us/mcm2trial.exe
3	573	0.06%	28200	0.54%	http://www.msn.com/
4	2928	0.33%	24402	0.47%	http://www.qvc.com/scripts/detail.dll
5	2	0.00%	23845	0.46%	ftp://ftp2.dlink.com/Multimedia/mp3/dmp110/Driver/DMP110_Driver_1511.exe
6	931	0.10%	23374	0.45%	http://www.camfieldestates.net/
7	1	0.00%	20000	0.38%	http://www.wu-tang.com/Gravel.rm
8	1	0.00%	19139	0.37%	http://pqsdldfp.shopintuit.com/dld/00tax/trial/wti200000a144.exe
9	441	0.05%	17031	0.33%	http://lw11fd.law11.hotmail.msn.com/cgi-bin/HoTMaiL
10	716	0.08%	16540	0.32%	http://aolmail.aol.com/mail.dci

Top 10 of 673 Total Entry Pages

#	Hits		Visits		URL
1	931	0.10%	357	6.23%	http://www.camfieldestates.net/
2	411	0.05%	356	6.22%	http://www.adsearches.com/cgi-bin/cimpression.cgi
3	338	0.04%	286	4.99%	http://www.master-cash.de/cgi-bin/cash.cgi
4	791	0.09%	242	4.23%	http://ads.admonitor.net/adengine.cgi
5	190	0.02%	154	2.69%	http://focusin.ads.targetnet.com/ads/ad.cgi
6	462	0.05%	138	2.41%	http://update.pager.yahoo.com/clients.html
7	573	0.06%	121	2.11%	http://www.msn.com/
8	130	0.01%	110	1.92%	http://216.109.74.89/creative/display_banner.html
9	106	0.01%	101	1.76%	http://cgi.adultlinks.net/display.fcgi
10	89	0.01%	93	1.62%	http://www.vortical.net/

Top 10 of 1481 Total Exit Pages

#	Hits		Visits		URL
1	411	0.05%	356	5.47%	http://www.adsearches.com/cgi-bin/cimpression.cgi
2	338	0.04%	275	4.22%	http://www.master-cash.de/cgi-bin/cash.cgi
3	791	0.09%	239	3.67%	http://ads.admonitor.net/adengine.cgi
4	190	0.02%	152	2.33%	http://focusin.ads.targetnet.com/ads/ad.cgi
5	130	0.01%	115	1.77%	http://216.109.74.89/creative/display_banner.html
6	131	0.01%	113	1.73%	http://directory.com/
7	5126	0.57%	112	1.72%	http://http.pager.yahoo.com/notify/
8	106	0.01%	100	1.54%	http://cgi.adultlinks.net/display.fcgi
9	115	0.01%	99	1.52%	http://209.25.173.4/main2.html
10	89	0.01%	90	1.38%	http://www.vortical.net/

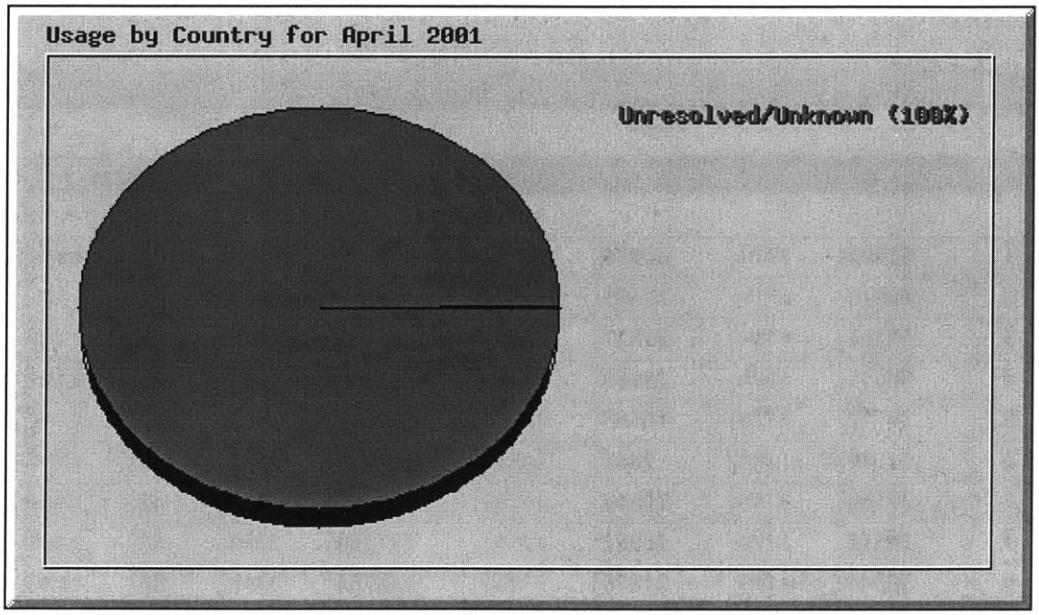
Top 30 of 2814 Total Sites								
#	Hits		Files		KBytes		Visits	
1	62992	7.03%	40955	7.85%	495874	9.51%	126	1.27%
2	58638	6.55%	28163	5.40%	338275	6.49%	23	0.23%
3	57161	6.38%	39827	7.64%	347450	6.66%	77	0.77%
4	49016	5.47%	27405	5.25%	495318	9.50%	55	0.55%
5	42689	4.77%	20984	4.02%	152072	2.92%	39	0.39%
6	38344	4.28%	21870	4.19%	168764	3.24%	86	0.87%
7	37180	4.15%	20364	3.90%	243659	4.67%	42	0.42%
8	29772	3.32%	16688	3.20%	287607	5.52%	14	0.14%
9	29515	3.29%	16982	3.26%	171758	3.29%	43	0.43%
10	29129	3.25%	19835	3.80%	129033	2.48%	26	0.26%
11	22547	2.52%	10178	1.95%	98816	1.90%	41	0.41%
12	20930	2.34%	14950	2.87%	98188	1.88%	17	0.17%
13	17859	1.99%	11223	2.15%	119048	2.28%	47	0.47%
14	17369	1.94%	12342	2.37%	86549	1.66%	20	0.20%
15	14536	1.62%	11230	2.15%	73343	1.41%	10	0.10%
16	14267	1.59%	6085	1.17%	55040	1.06%	99	1.00%
17	14261	1.59%	7358	1.41%	57541	1.10%	9	0.09%
18	13181	1.47%	6659	1.28%	58356	1.12%	26	0.26%
19	11741	1.31%	9327	1.79%	52213	1.00%	21	0.21%
20	11599	1.29%	9847	1.89%	257442	4.94%	249	2.51%
21	11550	1.29%	6327	1.21%	76700	1.47%	8	0.08%
22	11231	1.25%	7050	1.35%	48290	0.93%	8	0.08%
23	11174	1.25%	4891	0.94%	36883	0.71%	18	0.18%
24	10670	1.19%	5769	1.11%	99104	1.90%	25	0.25%
25	10659	1.19%	6044	1.16%	115276	2.21%	6	0.06%
26	10462	1.17%	6207	1.19%	51118	0.98%	83	0.84%
27	10326	1.15%	4559	0.87%	45391	0.87%	53	0.53%
28	9497	1.06%	3986	0.76%	12011	0.23%	40	0.40%
29	8774	0.98%	5118	0.98%	44086	0.85%	8	0.08%
30	8677	0.97%	5319	1.02%	33961	0.65%	8	0.08%

Top 10 of 2814 Total Sites By KBytes

#	Hits		Files		KBytes		Visits	
1	62992	7.03%	40955	7.85%	495874	9.51%	126	1.27%
2	49016	5.47%	27405	5.25%	495318	9.50%	55	0.55%
3	57161	6.38%	39827	7.64%	347450	6.66%	77	0.77%
4	58638	6.55%	28163	5.40%	338275	6.49%	23	0.23%
5	29772	3.32%	16688	3.20%	287607	5.52%	14	0.14%
6	11599	1.29%	9847	1.89%	257442	4.94%	249	2.51%
7	37180	4.15%	20364	3.90%	243659	4.67%	42	0.42%
8	29515	3.29%	16982	3.26%	171758	3.29%	43	0.43%
9	38344	4.28%	21870	4.19%	168764	3.24%	86	0.87%
10	42689	4.77%	20984	4.02%	152072	2.92%	39	0.39%

Top 5 of 5 Total Usernames

#	Hits		Files		KBytes		Visits	
1	12	0.00%	12	0.00%	265	0.01%	2	0.02%
2	5	0.00%	5	0.00%	119	0.00%	1	0.01%
3	1	0.00%	1	0.00%	0	0.00%	1	0.01%
4	1	0.00%	1	0.00%	0	0.00%	1	0.01%
5	1	0.00%	1	0.00%	7	0.00%	1	0.01%



Top 1 of 1 Total Countries

#	Hits		Files		KBytes		Country
1	**895835**	100.00%	**521537**	100.00%	**5213135**	100.00%	Unresolved/Unknown

Generated by **Webalizer Version 2.01**