

SECTION II:

**Engaging Students and the Community
through Study Abroad, Service-Learning,
and Civic Engagement**

21st Century Self-Sufficiency:

A COMMUNITY-UNIVERSITY PARTNERSHIP EXPLORES INFORMATION TECHNOLOGY'S POTENTIAL FOR EMPOWERING LOW-INCOME INDIVIDUALS AND FAMILIES

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Abstract: This paper uses data collected from a two-year community-university partnership and longitudinal study, called the Camfield Estates-MIT Creating Community Connections Project, in order to address the following questions: Can personal computing and high-speed Internet access support community building efforts? Can this access to technology empower low-income community residents to do more for themselves? The study revealed that residents who have a personal computer and Internet access in their homes feel a sense of community, experience an increase in their social contact with others, and strengthen their social ties. This research also explores whether outcomes achieved through in-home computing can promote an increased sense of empowerment and the capacity to access independently relevant information related to a resident's needs, wants or purposes.

Two Ph.D. candidate researchers from the Massachusetts Institute of Technology (MIT) worked resident the resident leadership of Camfield Estates in Boston, Massachusetts and MassHousing, a local housing authority, to form a unique community based research Camfield Estates-MIT Creating Community Connections Project.

Through this distinct community-university initiative thirty-seven participating households received a free computer and training with 20 participants completing the project requirements. 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 regular computer and Internet use and some positive correlation between in-home computing/internet use and a sense of connection to family, friends and their local community. There was no evidence that in-home computer use led to family and/or social isolation.

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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

Today, more than ever, policy makers are struggling with the challenges that new technology presents and how to best ensure access to the Internet by all. One way is to consider how a technology like the Internet can be used to address the persistent problem of how to connect low-income individuals and families with relevant information and resources. Can in-home access to personal computing and the Internet, as a linkage institution,¹ be an efficient and resourceful method for moving low-income communities, families, and individuals toward empowerment and self-sufficiency? This is a question for the discussion of policy makers at all levels. The communities that many federal programs have targeted 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). According to census statistics for Boston, the female-headed household poverty rate dropped by 2.1% from 1990 (31.1%) to 2000 (29.0%). However, in 2000, 37% of female-headed families, regardless of race, in Boston 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.²

This chapter presents one community-university partnership's effort, the Camfield Estates-MIT Creating Community Connections Project,³ to connect electronically a low-income community's residents with resources, services and one another. Beginning in the fall of 2000, in two years the Creating Community Connections Project enabled 37 families at Camfield Estates—more than 50% of the community at that time—to gain basic personal computing skills, connect to the Internet, and communicate with family members, friends and other Camfield residents. This chapter attempts to expand and extend the discussion of what modern-day strategies are necessary to help low-income community residents do more for themselves in the 21st century. I begin with the importance of refocusing efforts to make low-income residents more self-sufficient, and of using a community technology framework and strategy (community content, community networks, and community technology centers) (Beamish, 1999) to link residents to information-based resources. I follow this with a description of the mixed method approach used and findings from the Camfield Estates-MIT Creating Community Connections Project, and I close with a discussion of the potential role that the Internet can play in empowering low-income families toward becoming more self-sufficient.

SELF-SUFFICIENCY AND COMMUNITY TECHNOLOGY

The federal government, in particular the Department of Housing and Urban Development, initially narrowly defined 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 a 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).

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 access to information about what affects 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.

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, when having to do a mundane task such as searching for job opportunities the Internet provides a vehicle that is considerably faster than visiting a local agency and looking through 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 are 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. the fact that not all agencies have the infrastructure to keep employment listings current.

Through technology, a central location of listings is no longer a requirement; 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. Although this new method for job searching is convenient, it is also complex and should not become a substitute for face-to-face interactions.

The Digital Divide and the Role of Community Technology

The digital divide, as it is commonly called, is defined as the disparity in computer and Internet access and use between various social, economic, and racial groups within the United States. The National Telecommunications and Information Administration (NTIA) concluded that the divide has been getting progressively wider (1995, 1998, 1999). In their latest report (2000), analysts from NTIA 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 providing access to computers and related technology at schools, community centers, libraries and churches, etc. (Beamish, 1999; Morino, 1994; Pinkett, 2001), and by creating community-specific 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 technology centers (CTCs). 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 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, Corneise, & Wahl, 1997), and research conducted by others involved with community technology initiatives 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 the ability of CTCs to sustain staff, resources and programming. Although technology in the home can be looked at as an alternative to the technology diffusion approach of CTCs, 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.

Based on existing literature and this current study it is believed that the use of community technology, personal computing and Internet access is an efficient and resourceful method for linking low-income communities, families, and individuals to relevant information necessary for making an informed decision about what can affect their lives.

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.

A Community Technology Center's primary function is to build human capital by assisting its users in their efforts to establish and/or nurture a certain standard of technological proficiency. 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 sustaining interest in, and the perceived utility of, technology. Without relevant timely content, it is virtually impossible for technology to play a role in a low-income community's efforts toward self-sufficiency. Community networks build social capital by enabling 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. Social capital refers here to features of social organization, such as trust, norms and networks, which can improve the efficiency of society, facilitating and coordinating actions (Putnam, 1993).

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.

Partnering with Camfield Estates and Implementation Objectives

Camfield Estates, originally Camfield Gardens, was built in 1971. By the late '70s and well into the '80s Camfield experienced many of the troubles that plagued low-income communities generally—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 HUD/MassHousing's Demonstration Disposition⁴ or "DemoDispo" Program to have their property rebuilt. 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. 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 methods by which some Camfield residents would be

able to address this challenge. After identifying Camfield Estates as the research site, a detailed plan was developed for accomplishing seven implementation objectives:

1. offer new computers as opposed to old or refurbished computers,
2. have the computer put into residents' homes,
3. provide high-speed Internet connectivity,
4. provide Internet access supported by a dedicated web portal and online community,
5. engage participants in the design and implementation,
6. provide training and support to increase participant fluency in the use of technology, and
7. raise the necessary funds for the project.

The Creating Community Connections System (C3) and Participant Training

The on-line community and web portal was named the Creating Community Connections (C3) System.⁵ The C3 system is a password-protected system designed to support specifically asset- and information-based community building, empowerment and self-sufficiency. 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 and file storage. The dedicated on-line community had capabilities that were geared for Camfield residents to be able to communicate, discuss issues and share files. Moreover, users were able to post important dates and events. This functionality was intended to support personal connections to other residents and to support exchange of important information (for a more comprehensive discussion of this system and rationale for particular functionalities, see Pinkett, 2001).

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

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.⁶

Participants also received mandatory training on the Creating Community Connections (C3) System which included how to use the Camfield website and how to explore its functionality and specific components. The C3 System is based on the principles of sociocultural constructionism⁷ (Pinkett, 2001). It is a database-backed web system designed to establish and strengthen relationships among community residents, local businesses, and neighborhood organizations and institutions (e.g., libraries, schools, etc.). Monthly non-mandatory workshops were also conducted, related to educational, financial, government, and housing services. These workshops were specifically designed to address and provide the necessary skills to participants who wanted to learn how to search for specific information on the Internet.

The Camfield Estates Neighborhood Technology Center (CENTC) has a unique support structure. MassHousing, as the primary funding agency, 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.

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.

METHODS

A mixed-methods approach was used, which allowed various competing research methods to be triangulated, thus increasing the validity and credibility of results (Gaber & Gaber, 1997). This approach allowed the capture of not only the breadth of the study through the quantitative results, but also the depth of the study through qualitative results. The primary source of data for this manuscript is from the longitudinal survey research designed study of the Camfield Estates-MIT Creating Community Connections Project. The qualitative data was gathered through face-to-face survey interviews conducted both before and after the project by the co-researchers and trained research assistants over a 12- to 14-month period. The survey instrument included closed- and open-ended questions, which took approximately two hours to complete. The survey instrument covered a number

of areas; for the purpose of this study, items on the pre- and post-surveys captured 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 collected only at time one. The post-survey data was collected in follow-up interviews in the fall of 2001. The interviews were relatively informal and usually conducted in the participant's home. Web logs of participant Internet access activities were analyzed, including statistics gathered regarding hits to the Camfield Estates website. In addition to individual interviews, qualitative data included field observations of community meetings and other resident gatherings. Additional targeted qualitative information was gathered on family uses and the mentor relationship that developed between a participant and the co-researchers.

FINDINGS AND ANALYSIS

There were 37 participating Camfield households, which constituted 54% of 69 eligible households. Twenty of the 37 participating households were classified as full participants. Full participants were those individuals who completed the required training and follow-up interviews, and received uninterrupted Internet connectivity. Individuals that did not meet all three of the full participant requirements were not classified as full participants.⁸ The average project participant was a single (including widowed or divorced), African American female, between the ages of 40 and 69, and at least one child under 18 in the household. The average household income was under \$30,000 and many of the project participants had some formal education ranging from high school to no more than two years of college.

Sixty-two percent of participants considered themselves beginners at the start of the project, 27% reported intermediate experience with computers, and 11% considered their skills advanced. Pre-survey data revealed that among the 37 participants 46% reported that they owned a computer and 54% did not. Beginners were least likely to own a computer while intermediate and advanced were more likely to own a computer. Out of the 37 participants that considered themselves beginners, 35% were single African American and/or Hispanic female with related children under 18 years of age.

In April of 2001, the most common websites visited by participants were community/cultural, E-Commerce and entertainment. One of the e-commerce sites, vstore.com, focused specifically on starting an online business. Unfortunately, in May of 2001, the Internet service provider discontinued operation of the transparent-proxy server that was collecting web traffic information.

Respondents that completed the post-survey reported using their computers an average of 3.8 hours per day. Fifty-five percent and 35% of post-survey respondents

reported using their computer with the Internet everyday and almost everyday, respectively. The twelve most frequently performed Internet tasks from most frequent to least frequent were browsing; sending/receiving email; work/school related tasks; games; researching a topic, hobby or interest; accessing educational resources for children; communicating with family/friends; continuing education; using Microsoft Office applications; using instant messaging programs; career or job exploration; and business or entrepreneurial activity.

Sense of Connectedness and Social Contact

Research suggests that the Internet decreases social contact and causes isolation (see Kraut et al., 1998; Nie & Erbring, 2000; Stoll, 1995). As discussed earlier, relationships and social networks are an important aspect of self-sufficiency because self-sufficiency does not mean total isolation. In fact, from a socio-economic perspective, total isolation can make one less self-sufficient. Therefore, it was important through this study to understand whether the presence of Internet access in the homes of low-income residents increased or decreased social isolation. In this study 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 residents than they did before receiving Internet access (see Table 1). This feeling of connectedness was enhanced by the ease of information access from Internet and e-mail use. As one 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 participants felt equally (37%) or more connected (21%) to the Camfield Tenant Association (CTA) board. "To obtain information regarding Camfield, I usually go to our site," acknowledged one participant. Finally, residents felt equally (32%) or more (53%) connected locally, and equally (26%) or more (53%) connected beyond their local area to family members. This was confirmed by one 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."

Table 1: Full participants' feeling of connectedness* since receiving a computer and Internet access, and Internet and e-mail use

Question ^a	Responses			E-mail Use	Correlation Coefficients
	More Connected	Equally Connected	Less Connected		
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)

*This measure is coded as 1 = not sure, 2 = less connected, 3 = equally connected, 4 = more connected

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

It was also found that social contact increased not only between participant families but also between participants and other Camfield residents. For example, participants' average visits to one another's homes and average times talking to one another on the phone increased over the 10- to 12-month period in which this study took place. The increase was proportionally similar for full participants and other Camfield residents. Contrary to public perception and the findings of some

researchers such as Nie and Erbring (2000) that Internet and e-mail use would decrease human contact, participants in this study actually reported greater levels of connectedness and social contact.

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). 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. Participants' 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 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 their participation provided and the development of their technological skill sets. One participant expressed pride and a sense of independence obtained through the project, stating "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."

Further this quote 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, the following remark captures the potential role of technology in another 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."

Knowledge gained about technology and the desire (goal) to learn was evident in the following respondent's 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 one 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.

Full participants' awareness of "associations and organizations that serve the community" increased over the 12-month period from 25 to 55 percent. Awareness of "volunteer opportunities in the community" and awareness of "social services and programs provided for the community" both increased 40 percentage points from the pre-survey (time1) to post-survey (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 2, rose 20% from time 1 to time 2.

Table 2: Awareness of community resources*

Responded ^a very well or well informed			
	Time 1	Time 2	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 Difference is significant at the 0.10 level for small sample size (2-tailed)

c Difference is significant at the 0.05 level (2-tailed)

d Difference is significant at the 0.01 level (2-tailed)

* This measure is coded as 0 = not informed, 1 = somewhat informed, 2 = well informed, 3 = very well informed

Full participants responded that computer access was instrumental in their becoming more aware of available resources in their neighborhood and surrounding community. As discussed earlier, access to relevant information is an important component in the self-sufficiency model. This access is critical to an individual's ability to make informed decisions about how to deal with what affects his or her life and the lives of one's family. 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.

The responses of full participants showed awareness of resources outside of the Camfield community. Specific to ownership and use of information, a respondent remarked about electronic communication as having an 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.

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 and self-sufficiency.

DISCUSSION AND CONCLUSION

Universities are continually grappling with ways to positively contribute to society. A community-university partnership is one approach. Moreover, through

community based research, community-university partnerships develop data that can inform public policy debate. Given this 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 digital divide and inform the public policy process. This study revealed that once participants recognized the relevance of IT to their daily lives, including the ability to access as well as connect to family and friends, their computer use increased. Perhaps the cost of IT, and not a lack of relevancy, is a more likely inhibitor for IT use. Households with only one wage earner 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 \$40 to \$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) means that information technology may ultimately lose 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 comprehensive computer training.

As discussed earlier, 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. Reported usage gives important insight into the regularity with which the computer and Internet were used as a resource. Moreover, these findings also seem to refute some of the other studies that suggest Internet use and email contribute to social isolation. 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 on-line community connections and whether or not those on-line connections translate into something meaningful for the user.

The empowerment and self-sufficiency findings suggest that a personal computer and Internet access can play a role in empowering low-income individuals in becoming more self-sufficient. Moreover, Internet access 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 their residents have relied historically on third-party organizations to assist them in finding jobs, housing, services and other information. A personal computer and

Internet access, along with comprehensive training, can help low-income residents to do more of these types of tasks on their own.

Empowerment and self-sufficiency are topics that are difficult to quantify because the definition of each can have different meanings for different people. 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. At the very least it can be said that Internet use did not take away from a participant's sense of community, empowerment or self-sufficiency as others have suggested.

In closing, 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 more self-sufficient and empowered and to live in safe, supportive and involved communities. This special community-university partnership, Camfield Estates-MIT Creating Community Connections Project, supports the residents of Camfield Estates' efforts toward identifying solutions to longstanding socio-economic challenges for them and other low-income 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.

Endnotes

1. Linkage institution is defined in this instance as an entity that plays the role of connecting individuals and communities with information and resources (i.e., job opportunities, housing opportunities, economic opportunities, health care information, educational resources, etc.) which traditionally requires intervention by an outside agency or organization.
2. Self-sufficiency for this paper is defined as a way of life that reduces or minimizes external support in order to survive and thrive.
3. www.camfieldestates.net
4. 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.
5. This system was created and designed by co-researcher Dr. Randal Pinkett.
6. 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.
7. Sociocultural constructionism is a theory, expanded by Dr. Randal Pinkett (2001), 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” (p. 29).
8. For the remainder of this manuscript the distinction between full participant and participant is intentional.

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