

Integrating Community Technology and Community Building: Early Results from the Camfield Estates-MIT Creating Community Connections Project

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Introduction

The Digital Divide and Community Technology

The “digital divide” is the phrase commonly used to describe the gap between those who benefit from new technologies and those who do not – or the digital “haves” and “have nots.” Since 1994, the National Telecommunications and Information Administration (NTIA) in the U.S. Department of Commerce has released five reports examining this problem, all under the heading “Falling Through the Net” (NTIA, 1995, 1997, 1999, & 2000). Each study has reached the same glaring conclusion: the digitally divided are becoming more divided.

In response to the digital divide, a number of *community technology* (Beamish, 1999; Morino, 1994) initiatives have emerged in rural and low-income communities across the country (Bishop et al., 1999; Schön et al., 1999). Community technology is defined as "using the technology to support and meet the goals of a community" (Beamish, 1999, p. 366). The primary form for these efforts has been community technology centers (CTCs), or publicly accessible facilities that provide computer and Internet access, as well as technical instruction and support. However, in light of the NTIA's and other organization's findings, it is clear that such strategies are a necessary, but not sufficient measure for bridging the digital divide (Benton Foundation, 1998). This is further exacerbated by the propensity of many community technology initiatives to be narrowly focused on providing economical access and rudimentary training, without a more pertinent emphasis on how technology can be used to serve the individual and collective interests of a community. In *From Access to Outcomes: Raising the Aspirations for Technology Investments in Low-Income Communities*, the Morino Institute (2001, p. 4) writes:

To date, most initiatives aimed at closing the digital divide have focused on providing low-income communities with greater access to computers, Internet connections, and other technologies. Yet technology is not an end in itself. The real opportunity is to lift our sights beyond the goal of expanding access to technology and focus on applying technology to achieve the outcomes we seek – that is, tangible and meaningful improvements in the standards of living of families that are now struggling to rise from the bottom rungs of our economy. (Emphasis Mine)

Now, with a myriad of efforts underway to bring information and communications technology into underserved communities on a widespread basis, the key question to be answered is: what can be done to leverage a community technological infrastructure in a way that improves the lives of individuals and families within these communities? I believe “community building” is directly relevant and central to this discussion.

The War on Poverty and Community Building

There have been a variety of efforts to revitalize America’s distressed communities and fight the war on poverty, many dating back to the late nineteenth century. Presently, these initiatives take a variety of forms including Comprehensive Community Initiatives (CCIs) (The Aspen Institute, 1997; Hess, 1999; Smock, 1997) and Empowerment Zones/Enterprises Communities (EZ/ECs) (HUD, 1999). Despite these efforts, our modern reality is that the gap between America’s rich and poor – the historical “haves” and “have nots” – still exists to this day, along various social, ethnic, and racial lines.

As strategies to fight the war on poverty have emerged and evolved over time, a general convergence has gradually occurred among community theorists, researchers, and practitioners, concerning the success factors of comprehensive *community building* (The Aspen Institute, 1997; Kingsley, McNeely & Gibson, 1999; Kretzmann & McKnight, 1993; Naparstek, Dooley & Smith, 1997; Schorr, 1997). Community building is an approach to community revitalization that is focused on "strengthening the capacity of residents, associations, and organizations to work, individually and collectively, to foster and sustain positive neighborhood change" (The Aspen Institute, 1997, p. 2).

Led primarily by community-based organizations (CBOs), or private, non-profit organizations that are representative of segments of communities, a number of success stories have emerged of community building efforts in previously impoverished inner city neighborhoods and low-income communities around the country. Unfortunately, for many Americans low-income communities and the inner city conjure images of poverty, crime, violence, vacant and abandoned buildings, joblessness, gangs, drugs, homelessness, and welfare dependency. What stands out from these new approaches to community revitalization is the acknowledgement that underserved communities possess their own indigenous resources or assets that can, and must be leveraged in order to achieve success. In *Community Building Coming of Age*, Kingsley, McNeely and Gibson (1999, p. 4) of the Urban Institute write:

Probably the feature that most starkly contrasts community building with approaches to poverty alleviation that have been typical in America over the past half-century is that its primary aim is not simply giving more money, services, or other material benefits to the poor. While most of its advocates recognize a continuing need for considerable outside assistance (public and private), community building's central theme is to obliterate feelings of dependency and to replace them with attitudes of self-reliance, self-confidence, and responsibility.

As community building initiatives are undertaken in inner city and urban centers across the country, the key question to be answered is: what can be done to further advance these efforts in a new and innovative way? I believe “community technology” lies at the heart of the answer to this question.

Community Technology and Community Building: The Camfield Estates-MIT Creating Community Connections Project

This paper shares the theoretical framework, research design and methodology, project methodology, and early results of an integrated community technology and community building initiative, the Camfield Estates-MIT Creating Community Connections Project. It is anticipated that future publications will offer lessons learned and recommendations for future initiatives.

Started in January 2000, the Camfield Estates-MIT project, a partnership between the Camfield Tenants Association (CTA) and the Massachusetts Institute of Technology (MIT), has taken place at Camfield Estates, a 102-unit, predominantly African-American, low- to moderate-income housing development in the South End/Roxbury section of Boston, Massachusetts. The initiative as one of its goals to establish Camfield Estates as a model for other housing developments across the country as to how individuals, families, and a community can make use of information and communications technology to support their interests and needs. To achieve this goal, a community technological infrastructure has been established at Camfield that combines the three primary models for *community technology* (Morino, 1994; Beamish, 1999) – a *community network* whereas state-of-the-art desktop computers, software, and high-speed Internet connectivity have been offered to every family, a *community technology center (CTC)*, the Neighborhood Technology Center (NTC), located on the premises in the community center, and *community content* delivered through a community-based web system, the Creating Community Connections (C3) System, that I have co-designed with Camfield residents specifically to create connections in the community between residents, local associations and institutions (e.g., libraries, schools, etc.), and neighborhood businesses – along with a *community building* agenda. These combined elements have endeavored to achieve a social and cultural resonance that integrates both community technology and community building by focusing on indigenous assets as opposed to perceived needs.

Theoretical Framework: Sociocultural Constructionism and an Asset-Based Approach to Community Technology and Community Building

The integration of these domains has been informed by the theoretical framework of *sociocultural constructionism and an asset-based approach to community technology and community building* (Pinkett, 2001; Turner & Pinkett, 2000). Sociocultural constructionism and an asset-based approach to community technology and community building involve participants as active agents of changes, rather than passive beneficiaries or clients, and as the active producers of information and content, rather than passive consumers or recipients. This orientation is grounded in the theories of *sociocultural constructionism* (Pinkett, 2000) and *asset-based community development (ABCD)* (Kretzmann & McKnight, 1993).

Sociocultural Constructionism

Sociocultural constructionism (Pinkett, 2000), a synthesis of the theories of *social constructionism* (Shaw, 1995) and *cultural constructionism* (Hooper, 1998), is rooted in the theory of *constructionism*, a design-based approach to learning, drawing on research showing that people learn best when they are active participants in design activities (Papert, 1993), and that these activities give them a greater sense of control over (and personal involvement in) the learning process (Resnick, Bruckman, & Martin, 1996). *Sociocultural constructionism* 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" (Pinkett, 2000, pp. 4-5). In the context of community technology, sociocultural constructionism advocates the following guidelines:

- *Empower Individuals and Communities* – Community technology has been referred to as "a process to serve the local geographic community - to respond to the needs of that community and build solutions to its problems" (Morino, 1994, p. 1). A sociocultural constructionist approach, as it endeavors to achieve social and cultural resonance, simultaneously seeks to empower individuals and communities to identify their interests and how technology can support those interests.
- *Engage People as Active Producers, Not Consumers* – Based on its constructionist underpinnings and emphasis on independent and shared constructive activity, sociocultural constructionism promotes community members as the active producers of their own information and content, rather than passive consumers or recipients. This includes individual expression of one's knowledge, interests, and abilities, as well as communication and information exchange at the community level.
- *Emphasize Outcomes, Instead of Access* – Access does not imply use and use does not imply meaningful use. Sociocultural constructionism posits that one pathway to achieving individual and community development is to position technology as a tool for achieving outcomes in areas such as education, health care, and employment, instead of a tool for access, merely for the sake of access.

These guidelines reflect some of the lessons learned from the community technology movement thus far.

Asset-Based Community Development

Asset-based community development (ABCD), a particular model, or technique, for community building, assumes that social and economic revitalization starts with what is already present in the community – not only the capacities of residents as individuals, but also the existing commercial, associational and institutional foundation (Turner & Pinkett, 2000). Asset-based community development seeks to leverage the resources within a community by "mapping" these assets and then "mobilizing" them to facilitate productive and meaningful connections. Kretzmann and McKnight (1993) have identified three characteristics of asset-based community development:

- *Asset-based* – Asset-based community development begins with what is present in the community (assets), as opposed to what is absent or problematic in the community (needs). It is focused on indigenous assets as opposed to perceived needs. An asset-based approach involves community residents, organizations, institutions (e.g., libraries, schools, etc.), and businesses.
- *Internally focused* – Asset-based community development calls upon community members to identify their interests and build upon their capacity to solve problems. One of the distinguishing characteristics of the ABCD approach is its heavy emphasis on leveraging that which is in the community first, before looking to (but not excluding) outside entities and/or resources.
- *Relationship driven* – Community building has also been defined as "any identifiable set of activities pursued by a community in order to increase the social capacity of its members" (Mattesich & Monsey, 1997, pp. 8-9). Consequently, asset-based community development encourages the ongoing establishment of productive relationships among community members, as well as the associated trust and norms necessary to maintain and strengthen these relationships.

These principles acknowledge and embrace the traditions of successful community revitalization efforts from the past. Together, sociocultural constructionism and asset-based community development help operationalize a methodology for integrating community technology and community building.

Research Design and Methodology

Research Question and Hypothesis

The research question for this study is: *In what ways can community social capital be increased and community cultural capital activated through the integration of a community technology and community building initiative in a low- to moderate-income housing development and its surrounding environs.* A closely related subtheme is to understand the challenges and opportunities of operationalizing a sociocultural constructionist and asset-based approach to community technology and community building.

My hypothesis is that the sociocultural constructionist framework, coupled with an asset-based approach to community technology and community building, can positively contribute to increasing *community social capital* and activating *community cultural capital*, as a result of residents' involvement as active, rather than passive, participants in the process. I define *community social capital*, which is based on the concept of *social capital* (Coleman, 1988; Mattesich & Monsey, 1997; Putnam, 1993; Putnam, 1995), as the extent to which members of a community can work and learn together effectively. I define *community cultural capital*, which is related to the concept of *cultural capital* (Bourdieu & Passeron, 1977; Lamont & Lareau, 1988; Zweigenhaft, 1993), as various forms of knowledge, skills, abilities, and interests, which have particular relevance or value within a community.

Research Methods

In order to obtain a holistic picture of the changing environment at Camfield Estates, I employed a mixed-methods approach that combined quantitative with qualitative research methods. A mixed-methods approach allows various competing methods to be triangulated, thus increasing the validity and credibility of results (Gaber & Gaber, 1997). It is a research strategy that captured the nuances of the aforementioned phenomenon I sought to understand, in a way that would not have been possible using any single method. In the context of this paper, the quantitative and qualitative research methods included the following: 1) a survey instrument administered via face-to-face interviews in a pre/post manner spanning from August 2000 to August 2001, and 2) regular, ongoing, direct observation at the research site.

Survey Instruments

The preliminary and post-assessment survey instruments were administered via face-to-face interviews with the head-of-household from each of the families participating in Round I of the Camfield Estates-MIT project. The preliminary assessment was conducted in August 2000 with 32 heads-of-household, just prior to the beginning of the courses. The post-assessment was conducted in August 2001 with 26 heads-of-household, all of whom completed the courses. Note that preliminary interviews with the 27 families participating in Round II of the project were conducted in January 2001, with post-interviews scheduled for January 2002, and preliminary interviews for Round III are tentatively scheduled for the fall 2001, with post-interviews tentatively scheduled for the fall 2002.

The preliminary and post-assessment surveys were based on the following instruments: *Community Networking Initiative (CNI) Survey* (Bishop et al., 1999), *Netville Wired Suburb Survey* (Hampton & Wellman, 1998), *Building*

Social Capital in Public Housing Survey (Saegart & Thompson, 1994), *Social Capital Community Benchmark Survey* (Minicucci, 2000), *Who's That? Survey of Neighbors in Southeastern Michigan* (Resnick, 2000), Rothenbuhler (1991) and Stamm's (1985) measures of community involvement, *Blacksburg Electronic Village (BEV) Community Survey* (Kavanaugh & Patterson, 1999) and the *Neighborhood Study Questionnaire* (Mueller, Briggs & Sullivan, 1997). The respective areas covered by the preliminary and post-assessments are shown in Table 1 (note that the areas of empowerment and self-sufficiency were also covered as part of a study being conducted by Richard O'Bryant, Ph.D. candidate in the MIT Department of Urban Studies and Planning, pertaining to these issues).

The preliminary assessment survey instrument was piloted with eight members of the tenants association at Roxse Homes, a neighboring housing development to Camfield Estates. The final preliminary survey instrument was administered by three members of the project team, including myself. The final post-survey instrument was administered by the same three members of the project team, two members of the staff at NTC, one member of the staff at Camfield, and one volunteer. Each interview took place either in the respondent's residence or in the meeting room at the Camfield community center, and lasted between approximately one and five hours.

Survey Area	Description	Pre?	Post?
Demographics	Gathered information related to gender, ethnicity, marital status, age, education, employment status, income, etc.	✓	✓
Community Interests and Satisfaction	Measured community interests, identification, and overall satisfaction.	✓	✓
Social Networks	Gathered detailed information of strong ties (e.g., degree of face-to-face, phone, postal mail, e-mail, and other Internet communication, including demographic measures for each tie), as well as general information of weak ties at Camfield Estates (e.g., name recognition, and frequency and extent of socialization/communication with each tie).	✓	✓
Neighboring	Measured obligations and expectations of trustworthiness, as well as frequency and extent of socialization, communication, and reliance on neighbors.	✓	✓
Community Impressions	General impressions of the property, the buildings, the people and the community at Camfield.	✓	✓
Awareness of Community Resources	Measured awareness of skills and abilities of other residents, local organizations, neighborhood businesses, and more.	✓	✓
Community Involvement and Attachment	Measured community involvement (cognitive ties), community attachment (affective ties), political involvement, and volunteerism; also assessed membership, level of involvement and leadership role (if any) in various civic, religious, and professional groups.	✓	✓
Computer Experience and Training Interests	Assessed prior computer experience, training availability and interests, and intended uses.	✓	
Hobbies, Interests and Information Needs	Identified hobbies, interests, and information needs (online and offline).	✓	
Camfield Estates-MIT Project	Obtained general information about the impact of the Camfield Estates-MIT Creating Community Connections Project.		✓
Training Experience	Assessed participants' experience in the introductory courses.		✓
Computer and Internet Use	Assessed general patterns of use including locally-focused and creative uses of technology.		✓

Table 1: Preliminary Assessment and Post-Assessment Survey Areas

Direct Observation

Direct observation of the environment at Camfield Estates was conducted on an ongoing basis. I attended various meetings, activities, and events taking place on the property, including: CTA board meetings, CTA general meetings, CTA committee meetings, NTC structured time (when courses are offered), NTC unstructured time (open hours), social events and activities for youth, adults, and seniors, and more.

These visits were augmented by information obtained directly from CTA, the staff at NTC, and the property management company, such as attendance records at CTA meetings, CTA calendar of activities and events, NTC course schedules, NTC attendance records, NTC course progress reports, Roxbury-area safety and crime reports, and more. Lastly, NTC staff and employees of the property management company were also interviewed on an ongoing, informal basis to obtain their perspective on the project and its impact.

Data Collection and Analysis

Quantitative data from the interviews were entered during the interviews into a pre-formatted Excel spreadsheet, while qualitative responses were entered during the interviews into a pre-formatted Word document. A suite of Visual Basic scripts were then developed by undergraduate researchers and myself to electronically process, tabulate and summarize the quantitative data, as well as collate the qualitative responses into a single Word document for subsequent coding. The quantitative data was analyzed in SPSS including descriptive statistics and paired-sample T tests. Qualitative data resulting from face-to-face visits, telephone follow-up with families, or general visits to the property were recorded via field notes. Reports generated by CTA or NTC were obtained directly from these organizations. Based on the results from these various sources, an overall analysis was conducted to synthesize the findings.

Project Methodology and Timeline

Under CTA's leadership, in spring 2000 a committee was established to oversee the project, which consisted of four Camfield residents, Richard O'Bryant and me. My role and Richard O'Bryant's role are accurately described as "participatory researchers," (Brown, 1983; Friedenberger, 1991) "action researchers," (O'Brien, 1998) or "participatory action researchers" (Cancian, 1993; Peattie, 1994; W. Whyte, 1991), defined by Friedenberger as an "ethnographic method for the collection of data in the field... that contributes to planned social change" (1991, p. 1). The project also involved the integral participation of representatives from Massachusetts Housing Finance Agency (MHFA), the financier of the property, Williams Consulting Services, the company that staffs the Neighborhood Technology Center (NTC) at Camfield, and the full-time Director of Community Outreach at Camfield, who was formerly the resident social services coordinator for the development.

The project's implementation team consisted of four Camfield residents (college age), with direct support from Richard and me. Throughout the summer 2000 we met on a bi-weekly basis to discuss and identify strategies for conducting the initiative, and on a monthly basis with the entire CTA board and CTA project committee. We official started in June 2000, by outlining the following goals and objectives:

- *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.
- To establish Camfield Estates as 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.

Based on these goals and objectives, we subsequently outlined a methodology and timeline to integrate community technology and community building, consisting of five interrelated, cyclical, and at times parallel phases, as shown in Figure 1 and Figure 2. An overview of each phase is presented below.

Phase I:

Pre-Assessment and Awareness

Phase II: Community Technology –

Introductory/Specialized Courses and C3

Phase III: Community Building –

General and Specific Asset-Mapping

Phase IV:

Online and Offline Asset-Mobilization

Phase V:

Post-Assessment and Evaluation

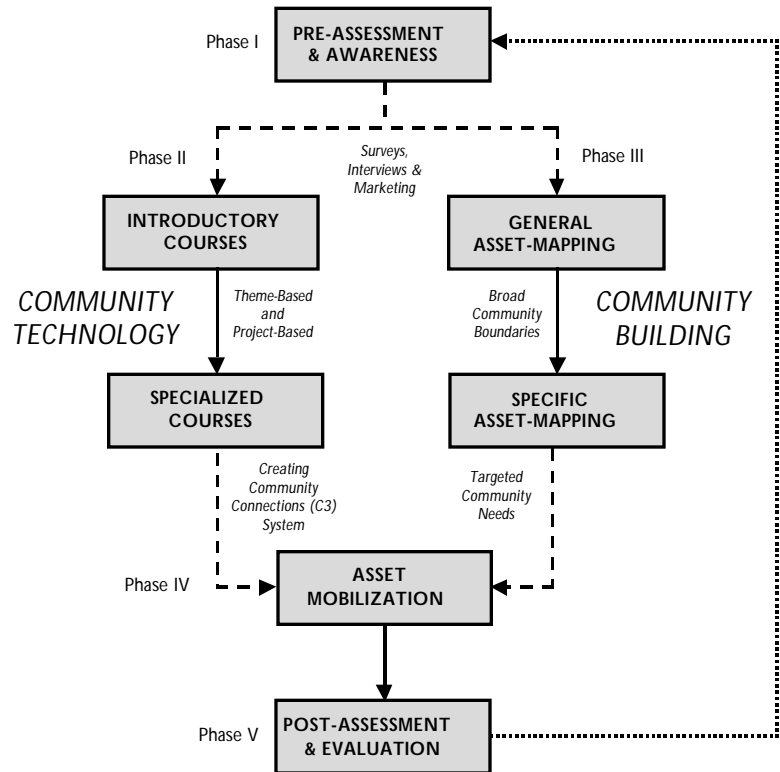


Figure 1: Project Methodology

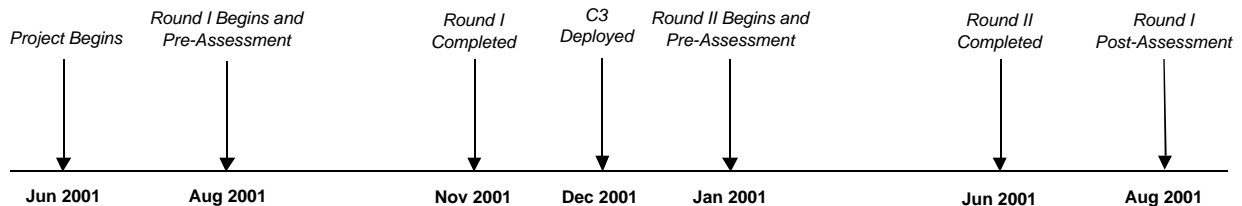


Figure 2: Project Timeline

Phase I: Pre-Assessment and Awareness

During summer 2000, the project team developed a preliminary assessment survey instrument for two related, yet distinctly different purposes. First, to obtain formative data that would guide the project's implementation. With community building identified as an agreed-upon goal at the project's inception, both Camfield residents and MIT researchers were able to provide specific input to the survey's design in this regard. This ensured the results not only benchmarked certain outcomes, but also advanced the initiative toward achieving these outcomes. Second, to obtain baseline data for the research study.

During that same period, an awareness campaign was conducted to inform residents about the initiative. A series of mailings were distributed describing the project's goals and objectives, and offering a new computer, software, high-speed Internet connection (pre-paid for two years) and comprehensive courses at NTC for adults 18-years and older who completed the courses, completed the preliminary and post-interviews, and signed an informed consent form granting permission to track the web-traffic at Camfield through a proxy server (aggregate patterns of use only, and not individually attributable). An open forum was also held in the community center for questions and answers. While families were encouraged to attend the training, at least one adult from each household had to fulfill these requirements in order to receive the computer, software, and Internet access. Given the fact that NTC was primarily used by youth at this time (O'Bryant, 2001), the committee decided to restrict participation to adults only, as we believed it would motivate parents to attend the training for the benefit of their children. August 2000 marked the deadline to sign-up for the project, and 32 of the 66 families at Camfield elected to participate in Round I.

Phase II: Community Technology – Introductory/Specialized Courses and the Creating Community Connections (C3) System

The Creating Community Connections (C3) System is a web-based, community building system designed to establish and strengthen relationships between community residents, local businesses, and neighborhood institutions (e.g., libraries, schools, etc.) and organizations. C3 is built using the ArsDigita Community System (ACS), an open-source software platform.

From June to August 2000, the project team held weekly meetings to discuss design considerations for the Camfield website including the site-map, graphics, layout, and user interface. An important component of these discussions was also determining which of the C3 modules would be incorporated into the first release of the Camfield site, given the community building objectives for the project. Eventually, the following modules were selected: *resident profiles, business and organization database, geographic information system (GIS) maps, calendar of events, discussion forums, news and announcements, e-mail lists, chat rooms, file storage, and site-wide search*. Scheduled for possible later introduction were the *job and volunteer opportunity postings*, and possibly the *personalized web portals and web-based e-mail*, pending use of the system.

From September to October 2000, introductory courses were offered at NTC to Round I participants. For the introductory courses, we employed an activity-based curriculum as a way to combine a variety of learning objectives, rather than focusing on narrow skill development such as how to use a mouse or a keyboard. For example, to teach participants how to use a browser and the printer, they were instructed to use a search engine to locate information on a topic of interest to them, print out each of their results, and summarize which search terms and associated results they found to be useful.

Designed by Williams Consulting Services (2000), the curriculum lasted ten weeks (two sessions per week, two hours per session), and covered a variety of areas related to computer and Internet use. In November 2000, two additional specialized courses were offered on how to use the Creating Community Connections (C3) System, made

available through the Camfield Estates website (<http://www.camfieldestates.net>). The C3 curriculum was co-designed by Williams Consulting and MIT.

In November 2000, 26 families completed the courses and received a computer, software, and subsequent high-speed Internet access, having fulfilled the aforementioned requirements (6 heads-of-household were unable to complete the courses due to health-related concerns or scheduling conflicts and were deferred to the next cohort of participants). In January 2001, a second awareness campaign was aimed at the 48 families still eligible for the project (the number of occupied units had increased from 66 to 80), including another round of mailings and meetings. In preparation for this campaign, residents from Round I were asked to speak with neighbors about their experience during the courses. During the holiday season, there were a number of events such as a seniors holiday dinner where elderly participants were asked to give testimonials as a way of encouraging their peers to sign up for Round II. Furthermore, with close to one-third of the development up-and-running with a new computer, software, and high-speed Internet access in their homes, we expected general word-of-mouth to spawn significant interest in Round II from residents who decided to pass on the program during the first awareness campaign.

To our complete surprise, after the second deadline passed for Round II, only 8 out of a possible 48 families elected to participate in project, the majority of whom were Spanish-speaking, as we were late distributing the flyers in their native-language during Round I. In other words, even the families that elected to participate in Round II were likely to have been Round I participants if the marketing materials had been distributed in Spanish on time.

Unwilling to accept these numbers as being representative of residents' interest, we embarked on a grassroots, door-to-door, outreach campaign to make sure people were fully aware of this special opportunity. As a result, we were able to increase Round II numbers from 8 to 27 families, raising the total number of families participating in the project to 59 out of 80 eligible families.

To clearly demonstrate the relevance of technology to potential participants lives, we emphasized outcomes instead of access. For example, an elderly, sick-and-shut-in woman at Camfield was one of the project's staunchest opponents. Upon initial contact, she flatly refused being involved. Rather than focusing on the computer and Internet service (access) as a selling point, one of the instructors helped her discover the information she could obtain online in areas such as health care and wellness as well as the people with whom she could communicate to improve her quality-of-life (outcomes). A few weeks later, she commented, "This computer is better than all of my medication combined!" Other initiatives have made similar observations (Cohill & Kavanaugh, 1997).

For the 19 families that did not participate in Round I and initially did not sign-up for Round II, but decided to participate after subsequent outreach, the most commonly cited reasons were:

- *Miscommunication/misunderstanding ("I never received any of the flyers")*
- *Skepticism ("It sounded too good to be true"), and*
- *They already owned a computer and weren't as quick as others to move on the opportunity*

For the 21 families that did not participate in either Round I or Round II, the most commonly cited reasons were:

- *Lack of relevance ("I just don't want to be involved")*
- *Too many responsibilities, including a few single mothers juggling multiple jobs, and*
- *Health-related condition preventing involvement such as pregnancy*

Figure 3 shows the breakdown for resident participation and non-participation in Round I and Round II.

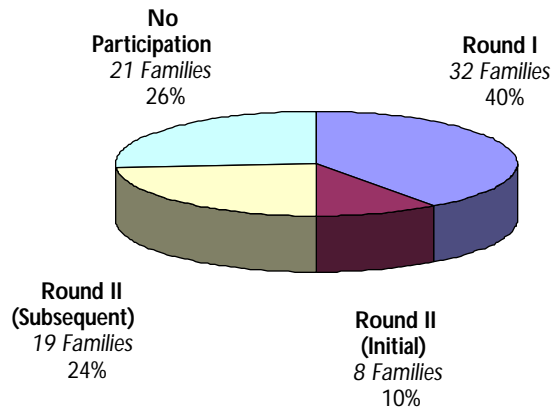


Figure 3: Resident Participation and Non-Participation Breakdown

In January 2001, Round II courses began. These courses lasted approximately sixteen weeks (one session per week, one-and-a-half hours per session), and covered roughly the same material as the Round I courses. One of the areas we improved upon between the Round I and the Round II courses was linking the curriculum to our desired outcomes. The Round I curriculum was more generic when compared to the Round II curriculum which achieved greater depth with respect to how technology can support community building. First, we dedicated more time to learning the C3 modules. For example, after participants learned how to use a browser, they were required to post subsequent technical questions to the C3 "Help" discussion forum as a way of establishing this habit and acclimating them to the system. We believed the "Help" forum was a natural entry point due to the inevitability of technical problems. This facilitated a natural transition from a familiar context into other contexts such as the "News and Announcements" or calendar of events modules. Second, we explored how the various modules could improve communication at the development inside the actual class sessions, as opposed to solely relying on residents to do so outside the classroom. For example, as part of the introductory courses, each class created an e-mail list so they could stay in touch, and each participant added their e-mail address to their class e-mail list and the residents' e-mail list. Third, we encouraged more resident interaction during classes. For example, in classes where we observed a marked skill-differential amongst participants we facilitated peer mentoring to build relationships.

In the fall 2001, the 27 families from Round II will receive their computers, software, and high-speed Internet access.

Phase III: Community Building - General and Specific Asset-Mapping

Per the asset-based community development approach, a resident-led, general asset-mapping took place during the summer 2000 with technical assistance from Richard and me. Our efforts were heavily informed by the work being conducted at the Asset-Based Community Development (ABCD) Institute at Northwestern University pertaining to asset-mapping and asset-mobilization.

We conducted our asset-mapping in two steps: general and specific. General asset-mapping began in June 2000, and consisted of identifying all the associations, institutions (e.g., libraries, schools, etc.), and businesses within a specified radius of Camfield, and gathering basic information about these entities. We gathered the following information for associations and institutions: name, address, contact, telephone number, fax number, e-mail address,

website address, mission, and up to four program/service descriptions according to a pre-defined typology (e.g., religious, social service, etc.). For businesses, we gathered the following information: name, address, district, hours of operation, telephone number, fax number, e-mail address, website address, and primary and secondary product/service descriptions according to a pre-defined typology (e.g., market/grocery, restaurant, etc.).

This broad attempt to identify community resources was done to obtain local information of potential benefit to residents that would eventually be made available through C3, and as a preparatory step for asset-mobilization to be conducted after analyzing the results of the preliminary assessment. Not surprisingly, the process of gathering this information served to heighten residents' awareness of assets in their own neighborhood. For example, the first-pass general asset-map was conducted within a few square blocks of the property. Residents soon discovered there were very few organizations and institutions and only a small cluster of businesses in this catchment area. The decision was then made to expand the radius of the asset-map to 1.5 miles, which captured approximately 757 businesses, 178 organizations, 67 churches, and 29 schools, as shown in Figure 4.

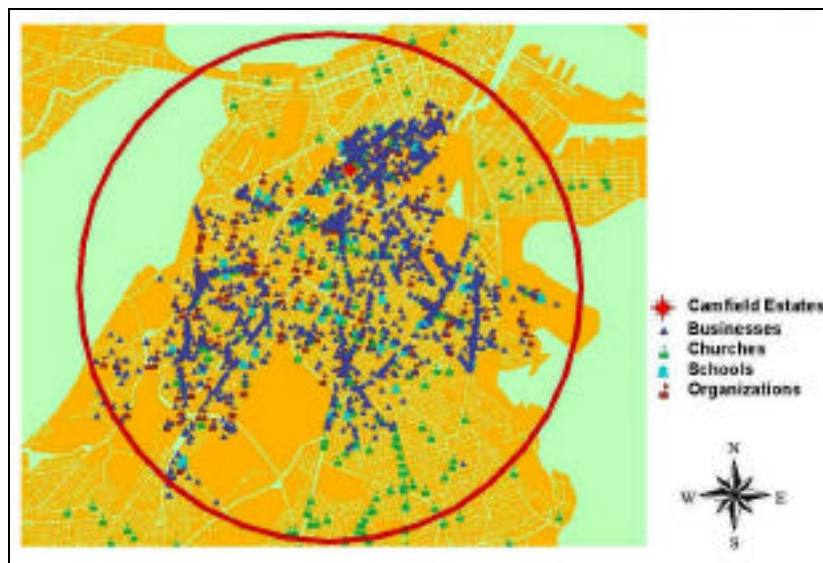


Figure 4: Camfield Estates Catchment Area

Recognizing that much of the information we needed to gather was likely to exist already, we made every effort to avoid reinventing the wheel. Consequently, we conducted our general asset-mapping by gathering as many relevant and up-to-date publications, directories, listings, and databases as possible, with a particular focus on gathering these items in electronic format to avoid unnecessary data entry. Despite these efforts, the process did involve a limited amount of data entry, as well as occasional outreach via telephone to verify certain pieces of information.

Once gathered, this information was formatted and entered into an Excel spreadsheet that could be easily uploaded to C3. This was not necessarily the best approach to gathering community information in terms of keeping it up-to-date, especially since it is likely to be subject to change and rendered obsolete. Nonetheless, we have found both the process of residents exploring the assets in their community and the product of the resulting database to be very useful. Alternatively, many municipalities and cities are known to maintain and offer similar databases to the public. This is an option we have yet to explore.

Specific asset-mapping began in November 2000, and consisted of mapping the formal and informal skills of residents as well as a more detailed mapping of a targeted sample of the organizations, institutions, and businesses previously identified during general asset-mapping, to be conducted after compiling the results of the preliminary assessment. As mentioned earlier, the former activity took place during the final two weeks of the introductory and specialized courses. Using an early release of C3, residents entered their formal and informal skills and interests online, by selecting from an inventory of more than 150 items, including plumbing, babysitting, web design, etc., according to those skills they “can perform” and those skills they “want to learn.” Given this information, as well as the data gathered during the general asset-mapping, residents could now use the C3 site-wide search module to perform a single query and identify all of the individual gifts and talents, as well as local businesses and neighborhood institutions and organizations, relevant to a particular search term such as photography, sewing, or computer repair.

We also recognized that while many of the publications furnished by the Asset-Based Community Development Institute were excellent guides for understanding how to conduct an asset-mapping initiative and identify relevant tools, they made little reference to the role of technology in supporting these efforts. Because technology can dramatically improve the efficiency with which asset-oriented data is gathered and disseminated (Turner & Pinkett, 2000), one must take into consideration the means by which this information is obtained. Stated differently, there is a tension that often arises between “process,” or capacity-building activities that build relationships, and “product,” or tangible outcomes such as a completed database of resources (The Aspen Institute, 1997). For example, residents skills and interests were entered directly into C3 as part of the introductory courses at NTC. We found this method to be extremely efficient as it bypassed the need for paper-based records and data entry. The disadvantage to this approach is the lost opportunity and effectiveness of residents interviewing other residents to obtain this information, which can heighten their awareness and appreciation of their neighbor's abilities. In a previous research project conducted at Northwest Tower in Chicago, Illinois (Turner & Pinkett, 2000), in collaboration with Nicol Turner from the Asset-Based Community Development Institute, we found the process of resident-to-resident interviewing with subsequent data entry to be slightly less efficient with respect to time, but much more effective in fostering relationships. As a general rule, one should attempt to find as much balance as possible between process and product given the available human resources, money and time.

Phase IV: Online and Offline Asset-Mobilization

Asset-mobilization involves devising strategies to create community connections between residents, organizations, institutions, and businesses, which previously did not exist, toward achieving specific outcomes. Asset-mobilization is heavily informed by the preliminary assessment and often involves outreach and the formation of new community partnerships.

In April, the results of the preliminary assessment were compiled, and suggested the following strategies: 1) offer more activities for youth, 2) improve community communication and social interaction at the development, 3) augment current safety and security measures, and 4) expand employment opportunities for residents. Although seniors' concerns were not visibly represented in the results of the assessment, another recommended strategy was to offer more activities for seniors in addition to youth. With this information, a series of meetings took place among members of the project committee to discuss these findings and address the issues raised by residents. Because asset-mobilization manifests itself online and offline in the context of an integrated community technology and community building initiative, these discussions focused on ways to effect change in both physical and virtual settings. A number of strategies were undertaken in response to these findings including use of the C3 system to improve communication and information flow at the development, activities during Black Family Technology Week

that paired youth with seniors, thematic workshops for adults on the topics of “Online Educational Services,” “Online Banking Services,” “Online Shopping Services,” “Online Government Services,” and “Online Housing Services,” and the establishment of a Cisco Networking Academy at NTC, a program that teaches students how to design, build, and maintain computer networks toward becoming certified as a Cisco Certified Network Associate (CCNA). Note that an in-depth discussion of these strategies is beyond the scope of this paper.

Phase V: Post-Assessment and Evaluation

During the summer 2000, we developed a post-assessment survey instrument that included many of the same questions from the pre-assessment survey as well as additional questions pertaining to computer use. The post-assessment survey instrument was designed to obtain comparative data relative to the preliminary assessment and summative data to evaluate the overall initiative to-date. For comparative purposes, it included the following areas (that were also included on the preliminary assessment): *demographics, community interests and satisfaction, social networks, neighboring, awareness of community resources, community impressions, and community involvement and attachment*. For summative purposes, the following areas were also included: *Camfield Estates-MIT project, training experience, and computer and internet use*.

In August 2001, the post-assessment was conducted and consisted of face-to-face interviews with the head-of-household from the 26 out of 32 families that completed Round I of the project (only the data for 19 of these 26 families was available at the time of this publication). The early results from the post-assessment and evaluation are presented below.

Early Results

Demographic information for the participants in the post-assessment is presented first. This is followed by a discussion of the early results in relation to community social capital and community cultural capital.

Demographics

The 26 participants who completed the program represent a subset of the 32 participants who initially agreed to participate in Round I. Consequently, the demographics for these 26 participants are almost identical to the demographics of the larger superset that was represented in the preliminary assessment sample (note that complete data was only available for 19 of these 26 participants at the time of this publication). Again, the average participant could be described as a single, Black/African-American female, head-of-household. Figure 5 shows the race of participants, Figure 6 shows the gender of participants, Figure 7 shows the age of participants, Figure 8 shows the marital status of participants, Figure 9 shows the education of participants, Figure 10 shows the family size of participants, and Figure 11 shows the annual income of participants. Here, 14 participants (74%) were parents with an average of 1.5 children, while 5 participants (24%) were either single, married or divorced without children.

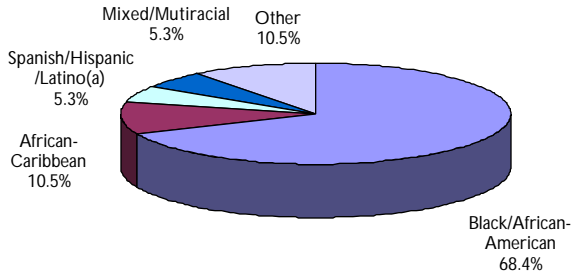


Figure 5: Race of Participants

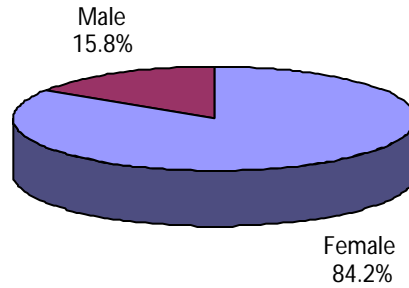


Figure 6: Gender of Participants

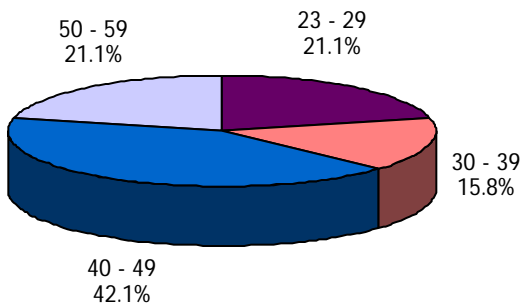


Figure 7: Age of Participants

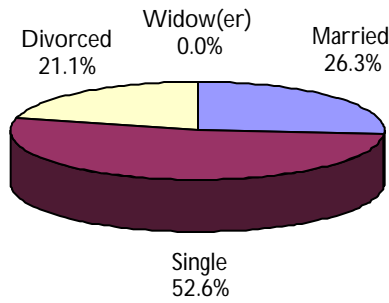


Figure 8: Marital Status of Participants

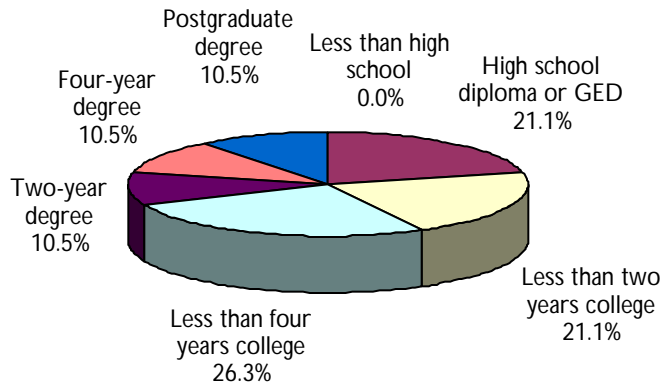


Figure 9: Education of Participants

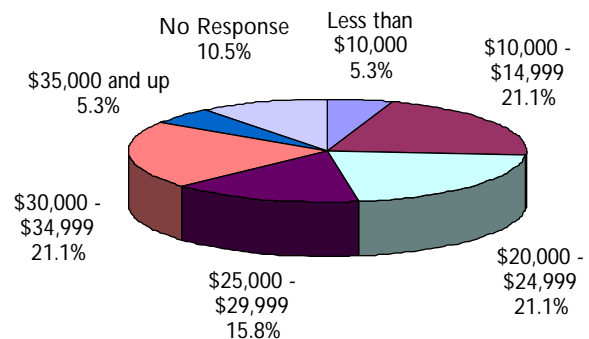
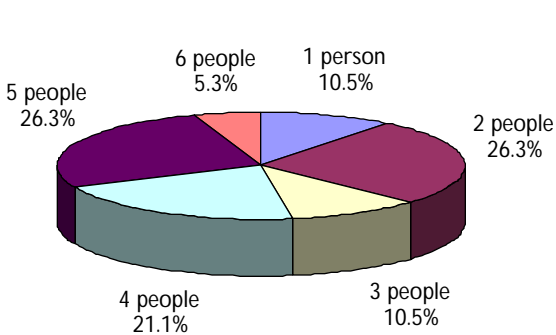


Figure 10: Family Size of Participants

Figure 11: Annual Income of Participants

Community Social Capital

I define community social capital as the extent to which members of a community can work and learn together effectively. Increased community social capital includes: 1) reconfigured (Contractor & Bishop, 1999) social networks (e.g., broader extent, proximity and valued inherited in strong and weak social ties) as opposed to reinforcing existing ties), 2) increased obligations and expectations of trustworthiness (e.g., increased reliance on neighbors for advice or help and other social support measures), 3) expanded access to information channels (e.g., heightened awareness of community resources), and 4) strengthened norms and effective sanctions (e.g., increased interaction among residents that inhibits negative behaviors). The following is a summary of the early results from the post-assessment in the context of community social capital:

- *Social Networks: Participants have expanded their local ties.* The number of residents that were recognizable by name increased from 30 to 40 out of a possible 137 adults; the number of residents contacted via telephone and e-mail doubled ($t = -1.978$; $p = 0.063$); 53% of participants reported that they were more connected to family and friends in the local area as shown in Table 2.

Question	Mean		Paired-Samples T Test	
	August 2000	August 2001	<i>t</i>	<i>p</i>
Please identify those residents whom you <u>recognize by name</u> ?	29.7	39.5	-1.108	0.283
Please identify those residents whom you <u>talk to</u> on what you would consider to be a regular basis?	10.2	9.2	0.604	0.553
Please identify those residents whom you have invited into <u>your home</u> in the last six months?	4.4	4.5	-0.043	0.966
Please identify those residents whom have invited you into <u>their home</u> in the last six months?	3.4	4.2	-0.790	0.440
Please identify those residents whom you have called on the <u>phone</u> in the last six months?	2.4	4.6	-1.542	0.141
Please identify those residents whom you have contacted using <u>e-mail</u> in the last six months?	1.3	3.0	-1.978*	0.063

*Denotes statistical significance ($|t| > 1.96$; $p < 0.05$)

Table 2: Residents’ Social Networks at Camfield Estates

- *Access to Information Channels: Participants have a heightened awareness of community resources.* The number of City of Boston services, programs, and/or departments that participants had heard of or used increased from 34 to 43; a paired-samples T test of residents awareness and utilization of community resources in nine categories resulted in a statistically significant increase in four of those categories (a fifth was nearly significant) including: residents skills and abilities ($t = 3.284$; $p = 0.004$), volunteer opportunities in the neighborhood ($t = 3.684$; $p = 0.002$), social services and programs provided for the community ($t = 3.240$; $p = 0.005$), community projects, activities, and events ($t = 4.371$; $p = 0.000$), and employment opportunities in the

community ($t = 1.924$; $p = 0.070$) as shown in Table 3; the Camfield Estates website and the C3 system received high marks from participants when asked to rate its usefulness in this regard.

Resource	Very Well / Well Informed		Paired-Samples T Test	
	August 2000	August 2001	<i>t</i>	<i>p</i>
Skills and abilities of other residents at Camfield Estates	11%	32%	3.284*	0.004*
Associations and organizations that serve the community	26%	58%	1.278	0.217
Volunteer opportunities in the community	0%	42%	3.684*	0.002*
Institutions located in the community (e.g., schools)	74%	84%	0.809	0.429
Social services and programs provided for the community	26%	63%	3.240*	0.005*
Community projects, activities, and events	11%	58%	4.371*	0.000*
Businesses located in the community	53%	63%	0.224	0.826
Products and services sold by local businesses	32%	32%	0.357	0.725
Employment opportunities in the community	5%	37%	1.924	0.070

*Denotes statistical significance ($|t| > 1.96$; $p < 0.05$)

Table 3: Residents' Awareness and Utilization of Community Resources

Community Cultural Capital

I define community cultural capital as various forms of knowledge, skills, abilities, and interests, which have particular relevance or value within a community. Activated community cultural capital constitutes: 1) exchanging knowledge and resources (e.g., formal or informal sharing of information, products, services, etc.), 2) improving technological fluency (Papert & Resnick, 1995; Resnick, Rusk & Cooke, 1998) and the ability of community members to express themselves via technology (e.g., the ability to create a personal website that portrays a particular interest such as books), 3) coalescing around shared interests (e.g., a group of mothers discussing effective child rearing practices), and 4) shifting individuals' attitudes and perceptions of themselves and the world (e.g., renewed confidence in their abilities, their capacity to learn, and their appreciation of assets in their community). The following is a summary of the early results from the post-assessment in the context of community cultural capital:

- *Knowledge and Resources: Participants are better informed about local issues and there is an improved communication and information flow at the development.* Almost half of participants (47%) reported that they are more aware of what is going on at Camfield when compared to before the project was started; this was partly due to the fact that a core group of residents and staff have taken the lead in actively contributing to the Camfield Estates website and the C3 system; the most popular C3 modules were the resident profiles (31% of traffic), calendar of events (18% of traffic), and discussion forums (13% of traffic) on the Camfield Estates website, and while these modules experienced moderate use, their traffic has steadily increased since the site went live.
- *Technological Fluency: Participants desired to use technology in a variety of creative ways but were often too busy to do so or their schedule was not amenable to attending follow-up courses.* From among the top-ranked uses of their computer and Internet access, participants' ranked several creative activities low such as contributing content to the Camfield Estates website (#18), designing a flyer, poster, or newsletter (#19) and contributing content to another website (#19), designing a web page (#26), and creating an online photo album

(#27). One possible explanation why some residents have not chosen to make time for such activities is that creative uses of technology were sometimes relegated to the category of leisure activities and often subordinated to more immediate, pressing concerns in their midst. In other words, for adults at Camfield, with multiple, competing demands on their time such as their jobs and their children, time is a scarce resource. Similarly, a “lack of time” was one of the most commonly cited reasons for residents’ non-participation during assessment and awareness (Phase I).

- *Technological Fluency: Participants’ making the greatest strides toward technological fluency, were those receiving some form of ongoing support for continuous learning.* This was not surprising, however, the interviews clearly demonstrated the difference between users who had structures to support their learning and those who did not. Those who did not have readily accessible or convenient means of support made only moderate progress toward becoming more technologically fluent since completing the introductory course, despite their desire to do so. For those that had support it came in various forms. In some cases, a family member, typically a son or a daughter, or a close friend provided technical assistance after they completed the introductory course. In other cases, participants relied on the staff at NTC, to the extent that they were home during the center’s hours of operation.
- *Attitude and Perception: Participants have cultivated the meta-competence of a renewed confidence in themselves and their ability to learn.* Qualitative responses from the one-on-one interviews revealed a shift in participants’ attitudes and perceptions of themselves as learners. Several participants described their personal transition of moving from a reticence toward technology to envisioning themselves as (or taking actual steps to becoming) web designers, network administrators, and programmers. In particular, their participation in the training has given them a greater appreciation of their strengths, and it has given the community a greater appreciation of its most basic assets, the skills and abilities of its residents.

Conclusion

The post-assessment provides greater insight to milieu specifically at Camfield, as well as the challenges and opportunities of integrating community technology and community building more generally. These challenges and opportunities can be grouped into three interrelated categories: technological, social, and cultural.

Technological

The technological challenges and opportunities have been primarily centered on skill development, continuous learning, and cultivating technological fluency. The question is not whether participants have the requisite ability to become technologically fluent, as they most certainly do. The question is how to establish a convenient means to develop their skills on an ongoing basis. As evidenced during the post-assessment, participants expressed a strong desire to use technology in creative and productive ways such as building a website and designing a flyer or newsletter, but were often too busy to engage in these activities or their schedule was not amenable to attending follow-up courses. Furthermore, as mentioned earlier, for those who did not have a readily accessible or convenient means of support, they made only moderate progress toward becoming more technologically fluent since completing the introductory course, despite their desire to do so (ironically, residents have not turned to other residents en masse for such support, which is an issue I will revisit in the context of the cultural challenges).

Nonetheless, through the lens of sociocultural constructionism and an asset-based approach to community technology and community development, participants’ motivation to become more active as creators and producers

of content is a positive sign for the future, and strategies are being developed to tap into this interest. While the Camfield Estates website and the C3 system have played a role in promoting this type of engagement there is still room for improvement toward providing a broader range of ways for residents to express themselves. Many of the existing mechanisms available via C3 are text-based or form-based, which does not exploit the expressive power of images, audio, and video. Fortunately, and in response to the preliminary and post-assessment results, a website design course will be offered during the fall 2001 for participants from Round I and Round II. This course will further advance sociocultural constructionist and asset-based principles by providing an excellent opportunity for residents to create content and share ideas with one another, while also providing an avenue for expression that leverages the multimedia affordances of web technology.

Social

The social challenges and opportunities offline are informed by the fact that although the number of residents recognizable by name and contacted via telephone and e-mail increased, the baseline numbers for these measures and related measures were relatively low to begin with. In August 2000, participants could recognize 30 out of a possible 137 adults (22%), but only talked to 10 on a regular basis, visited 4 in the past six months, were visited by 3 in the past six months, and telephoned 2 in the past six months. Furthermore, these numbers were drawn from a Round I cohort of participants that included every member of the CTA board of directors who are very well “connected” when compared to other residents at the development. While almost every participant expressed the fact that they knew several residents “by face,” such accounts are still indicative of a cursory rather than deeply personal relationship.

Now that residents have settled back into their homes, the number (and nature) of social activities and events at Camfield continues to rise. Ongoing efforts such as these hold the greatest promise to foster deeper and more meaningful relationships among residents that transcend the superficial and can potentially be translated into action. Furthermore, one of the areas we unfortunately have yet to capitalized on is the large number of residents who expressed an interest in contributing to this project (81%) with whom we have not followed up with in any formal manner. Thus far, the project’s implementation has been guided by Camfield leadership and the project team. Clearly, this is extremely fertile ground for soliciting more widespread involvement from the community.

Any discussion of the social challenges and opportunities online must be tempered by the reality that only one-third of the families at Camfield (26 out of 80) have completed the introductory courses and received a computer and high-speed Internet connection. In order to use technology for communication and other social purposes, users must have an audience or critical mass of community members to connect with. For example, in order to send an e-mail, you have to know someone who has access to e-mail. Similarly, to build community online there has to be a community online to build. While the levels of participation in Round I were an excellent starting point, the community building efforts at Camfield will undoubtedly be enhanced by the families completing Round II and the families scheduled to begin Round III.

Cultural

What is essentially taking place at Camfield is a cultural shift, or re-orientation toward community and technology as a result of the associated infrastructure that has been set in place. In order to achieve greater use of technology for the purpose of building community, Camfield leadership is going to have to continue to take an active role in promoting its use in this capacity. CTA board members, NTC representatives, and Camfield staff members will have to continue to set in place policies and procedures that facilitate and accelerate this shift.

It is also clear that in the absence of a rallying cause or “issue” in the hearts and minds of residents, community technology and community building may be relegated to the status of a “vitamin” not an “aspirin.” Vitamins enhance. They are used to improve upon the status quo, but without them the status quo remains. Aspirin alleviates discomfort. They are used to restore the status quo, and without them a problem still persists. Similarly, community building for the sake of community building will never be enough (much like access for the sake of access is never enough). In the same spirit that Camfield residents have organized themselves in the past (i.e. against HUD when they attempted to foreclose on their property), it remains to be seen what the analogous, convening ethos will be at the development in the present and future. It is very possible that one of the issues such as youth, seniors, community, safety/security or employment may emerge as “the issue,” or perhaps the impending threat of gentrification. Regardless, at the point in time that residents once again decide to take concerted action, their heightened awareness of community resources and the information and communications infrastructure at their disposal will be brought to bear in a way that reflects their further engagement as active agents of change.

Finally, at the core of the cultural opportunities is not only residents' reorientation toward integrating technology into their daily lives, but rather, residents' reorientation toward integrating technology *and* community building into their daily lives. Such a paradigm shift is fundamental to the arguments put forward by sociocultural constructionism and an asset-based approach to community technology and community building. It is anticipated that as the technological and social challenges are hopefully addressed via continuous learning and greater levels of engagement amongst the families at Camfield, this cultural shift will similarly be advanced as residents gradually adjust their habits and expand their vision of the possibilities looking forward. As a result of our ongoing research efforts throughout this process, we hope to continue to shed light on the possibilities (and obstacles) inherent at the nexus between community technology and community building.

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