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CULTURAL (RE) PRODUCTION OF DIGITAL INEQUALITY IN A U.S.

COMMUNITY TECHNOLOGY INITIATIVE

In the U.S., community technology centers (CTC) are a policy response to facilitate the diffusion of information and communication technologies (ICT) to citizens who might otherwise lack access to these resources. The implicit assumption guiding CTC initiatives is that access to ICT will improve the life chances of the individuals who become involved in these centers. It is, however, prudent to empirically examine this assumption because the case for community technology interventions is somewhat weakened if the benefits of ICT use fail to accrue to those who are disadvantaged. Informed by Bourdieu's theory of reproduction, this study of a CTC initiative in an inner city community explores the role of culture in reproducing digital inequality. Digital inequality reflects not only disparities in the structure of access to and use of ICT; it also reflects the ways in which longstanding social inequities shape beliefs and expectations about ICT and its impacts on life chances. While this initiative is considered successful in the sense that it provided access and basic computer literacy to residents lacking these resources, it represents a technology-centric fix to a problem that is deeply rooted in systemic patterns of spatial, political, and economic disadvantage.

Keywords Bourdieu; community technology center; reproduction; digital divide

Word Length 8805

Forthcoming in *Information, Communication and Society*

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Introduction

To promote broader engagement with information and communication technologies (ICT), the US government has initiated several policy responses to alleviate the digital divide. The Technology Opportunity Program (TOP) is one of the largest government programs which provides grants for model projects demonstrating innovative use of digital network technologies in the public and non-profit sectors. To date, TOP has awarded 610 grants, in all 50 states, Puerto Rico, the District of Columbia, and the U.S. Virgin Islands, totaling \$233.5 million and leveraging \$313.7 million in local matching funds (US Department of Commerce, 2004). Community technology centers (CTC) represent one model for providing public access to the internet and basic computer literacy skills to historically underserved populations such as those with low levels of income and education, ethnic and racial minorities, residents of rural and inner city communities, and older Americans.

Other things being equal, as access to ICT diffuses, inter-group variation in the odds of having access has declined (DiMaggio & Hargittia, 2001). As of September 2001, for instance, 53.9% (143 million) Americans were using the Internet. This represents an increase of 26 million users over the prior 13-month period (US Department of Commerce, 2002). The most recent report from the National Telecommunications and Information Administration emphasizes, “[t]hose who have been the least traditional users – people of lower income levels, lower educational levels, or the elderly - are among the fastest adopters of the information resources provided by the Internet. As a result, we are more and more becoming a nation online: a nation that can take advantage of the information resources provided by the Internet, as well as a nation developing the technical skills to compete in our global economy” (US Department of Commerce, 2002, p. 91).

The rapid diffusion of ICT into underserved communities has been beneficial in many ways (see Gurstein, 2000; Keeble & Loader, 2001). However, some researchers have raised

sobering concerns about equity and the effectiveness of use them (DiMaggio, Hargittai, Neuman, & Robinson, 2001; Kvasny, 2002; Kvasny & Keil, 2002; Patterson & Wilson, 2002; Gurstein 2003). Unlike the *digital divide*, which is generally concerned with access to computing artifacts, *digital inequality* is concerned with equitable access to the benefits derived from internet and computer use. Digital inequality reflects not only disparities in access to ICT; it also reflects ongoing social inequities in the US. The vicious cycles of poverty, illiteracy, sporadic work, racial and ethnic discrimination, and criminal activity faced by many historically underserved groups shape diffusion rates and patterns of ICT use which can mirror and reinforce social inequities rather than mitigate them. Moreover, differential benefits that result from ICT use may unwittingly exploit and intensify pre-existing disparities as well as create new inequities. Norris (2001) contends that social inequities in the quality of education, work, consumption opportunities, and democratic participation are at the heart of the digital inequality.

While power relations and social inequities may reinforce benefits and privileges derived from ICT use, relatively little research has been conducted to empirically examine the mechanisms and processes that contribute to digital inequality (Van Dijk & Hacker, 2000). In this paper, I engage with and give central theoretical significance to the concept of digital inequality. I do so by describing an ethnographic study conducted at a CTC located in a low-income neighborhood in a large US city. The study is informed by the theoretical insights of Bourdieu, and examines the role of culture in reproducing digital inequality. In the following sections, I discuss this theory and the research methodology. Next I present and analyze the findings. The paper concludes with implications for future community technology initiatives.

Theoretical Framework

Constructs from Bourdieu's theoretical framework provide a set of thinking tools for uncovering mechanisms which contribute to the reproduction of social order. Bourdieu offers a theoretical and methodological approach that can be used to dissect the relationships among

systems of thought, social institutions, and different forms of material and symbolic power that exist in all cultural practices. Bourdieu's wide-ranging work cuts across many domains such as the political uses of language, marriage rituals, museum attendance, and the social origins and trajectories of French university students, academics, and intellectuals. One overarching theme in Bourdieu's oeuvre is the role of culture in the reproduction of social structures (Bourdieu, 1993).

Just as people reproduce physically over generations, they also tend to reproduce their social organization. Cultural reproduction occurs as individuals are socialized to accept the societal judgments and roles for people like themselves. Institutions play an important role in this socialization and, in doing so, ensure their continued existence. Several researchers such as Foley (1995), Bourdieu (1990b), MacLeod (1987) and Willis (1977) describe how families, labor markets, and educational institutions socialize individuals to assume occupations and college majors that are generally perceived as appropriate for their social class.

This research applies the concept of cultural reproduction to the domain of digital inequality. To understand digital inequality, the ICT has to be placed into the system of social relations that define and sustain its cultural meanings and intended uses (Bourdieu, 1980). Hence, I conceptualize ICT as a site for the cultural reproduction of digital inequality. ICT cannot come into existence simply to fill a pre-existing role, such as bridging the digital divide, because the role itself is co-created with the ICT by the designers and the intended benefactors of community technology initiatives. ICT along with its associated meanings, functions, and domains of use is socially located and implicated in the struggles and conflicts that brought about the digital divide (Sterne, 2003).

Reproduction in this context is defined as the process by which the continuity and regularity of the social order is maintained. Theories of reproduction postulate that technological innovation and change are biased towards perpetuating power relations and modes of consciousness that legitimate those relations (Bourdieu and Passeron, 1990; Morrow and Torres, 1995). Adopting a reproduction perspective breaks from the somewhat taken for granted notions

of ICT as a unilaterally positive force in society to focus on the link between technology change and the perpetuation of inequality.

Reproduction processes constitute a fundamental problem which has been tackled in contemporary sociology. For Bourdieu (1984), reproduction is a theory of social order that is also linked with a theory of social change. He postulates that all educational systems are biased toward reproduction of existing power relations because they involve the modes of consciousness that legitimize those relations. A CTC offers an educational environment, for instance, that legitimizes the categorization and the value judgments ascribed to those with and those without computing skills and access. The designers of the CTC seek out those individuals without access, and provide them with an opportunity to acquire computing skills. Thus the CTC, like all other educational institutions, plays an important role in the socialization of individuals into a given social order. More specifically, the CTC socializes “have nots” to embrace a worldview in which ICT is seen as unilaterally positive and necessary for achieving “the good life”.

Reproduction also facilitates the analysis of the temporal nature of digital inequality. The groups on the so-called wrong side of the divide are not simply disadvantaged with respect to access to ICT; they are historically disadvantaged in many social spheres such as transportation, health, employment, and education. ICT is deeply implicated because it provides a highly efficient and cost effective mechanism for perpetuating systems of power and privilege on a global scale. This temporal aspect ties well to critical research which posits that social reality is historically constituted, and produced and reproduced by people.

Research Methodology

The study was conducted over 8 months at a CTC in a low-income neighborhood in a major US city. This was one of the first and largest (\$8 million USD) digital divide programs to be initiated by a municipality. At the time of the study, the initiative was in its first year of

operation. This provided a unique opportunity to study a digital divide initiative early in its implementation.

The program involved setting up 15 CTCs within the first 18 months of operation. In the first year of operation, over 5000 residents had taken advantage of the five centers that were in operation. The CTCs provided two 7-week computer literacy courses and open computer labs to teens, adults, and seniors. The training courses were instructor-led, and covered topics such as file management, word processing, spreadsheets, databases, and email. The courses were provided free of charge.

Since the conclusion of the study, the initiative has continued to grow. By December 2001, over 15,000 residents completed training at the 13 CTCs. These Centers housed 14 computer labs equipped with 300 computers and T1 Internet connections. In 2002, the City introduced a 35 foot bus complete with 12 computers, monitors, and electronic display boards. This mobile computer facility is accessible to disabled residents, and is staffed with an instructor and certified driver. In addition to the instructor led courses, the CTC offers online courses in popular software such as Adobe Illustrator and Photoshop, Macromedia Dreamweaver and Flash, and Microsoft Office. Both online and instructor- led courses continue to be provided free of charge.

Data Collection and Analysis

Bourdieu's theoretical lens was selected *a priori* to structure the data collection and analysis. Three data collection techniques were used – textual analysis, informal interviews and participant observation. Background and historical data on the initiative was obtained through published documents (newspaper articles, requests for proposals, city council meeting minutes, and strategic planning reports) as well as interviews with the staff. Informal conversations in the classroom and open lab were used to gain perspectives from the participants and classroom facilitators. This was a natural approach where I simply hung out and asked questions about what

people do at the centers, why people come to the centers, what people hope to gain from their training, and how the technology training was making a difference in their lives.

The most focused data collection occurred through participant observation of a class comprised of 15 residents and a classroom facilitator. Over a 14-week period, I observed the same class as they progressed through two 7-week courses – a basic *Introduction to Computers* course, and an intermediate *Computer Applications* course. While acknowledging that studying a single group over an extended time would restrict the range of social types that I was able to sample and prohibit cross-case analysis, I felt that this was necessary for building rapport with a small group of informants that could provide key insights. I had to get close enough to the participants and make them feel comfortable enough in my presence so that I could observe and record information about their lives (Bernard, 1995). Because I had repeated access to the same participants, interviews were not recorded. Instead, I used many short interviews to facilitate accurate recall of our discussions.

The data was reduced and analyzed through an iterative process of coding to decontextualize the data, and grouping related themes into families. To facilitate the coding process, I developed a list of content codes *a priori* and appended this with codes that emerged from the fieldwork. For each content code, I developed a concept card that contained one and only one theme (Glaser & Strauss, 1967). Miles and Huberman (1994) suggest that each concept card should contain memos to explain each coding category, and whether the code emerged from the data or from a priori theoretical construct (see table 2). During coding, I also began to create scenes by adding rich descriptions, dialogue, characterization, sketches, and commentaries. Thus, the writing of the results and the analysis were completed concurrently in a top-down fashion, and are highly integrated.

Theme: Social Capital

The benefits that one can potentially receive from participating in communities and networks. These benefits might come in the form of information, support, guidance, or additional social contacts. Social capital is an important sociological category for understanding digital inequality, because marginalized members of society typically have less social capital to draw on.		
Data Source	Organization Member(s)	Incident, Quotation, Opinion, or Observation
Letter [CommunityPortal.txt]	Participant	It has become the responsibility of those who have the ability to train and provide others with computer skills to do so in a comfortable setting.
Newspaper article [AJC_2_7_01.txt]	Librarian at the Teen Cyber Center	You need to have good interaction between classroom facilitators, and a building of trust, perhaps with mentoring even after the classes are over.
Speech [speech_apr_2001.txt]	Executive Director	Seniors also view their classmates...as extended family members. The...centers help them overcome loneliness, isolation. They feel as if they belong to a new community. They cheer each other and slap "high fives" when they learn a new computer skill.

Table 2: Sample Concept Card

Findings

In this section, I present an account of my experience with a group of people at the CTC. Through these narratives, I examine the role of culture in shaping the digital inequality experienced by participants. Avison and Myers (1995) contend that the taken for granted view of culture within information systems research needs to be abandoned. Culture is a rich construct that can be seen as contestable, temporal and emergent. It is constantly under interpretation and negotiation, and is produced and reproduced in social relations. In his book *Media, Communication, Culture: A Global Approach*, Richard Lull (2000) provides a rich definition of culture.

Years ago Raymond Williams defined culture as “a particular way of life” that is shared by a community and shaped by values, traditions, beliefs, material objects, and territory. From this perspective, culture is a complex and dynamic ecology of people, things, worldviews, rituals, and daily activities. It’s how we talk and dress, the food we eat and how we prepare and consume it, the gods we invent and the ways we worship them, how we divide up time and space, how we dance, the way we work and play, how we make love, the values to which we socialize our children, and all the other many details that make up everyday life. Understood this way, culture is “our way of doing things” and it reveals who we are as well as who we are not. Culture makes available the frames through which we know ourselves, and others, providing coherence for cultural members while marking differences.

Thus culture is useful for understanding how groups conceptualize, use, and react to ICT. The presentation and discussion of the research findings are organized around three key themes - the environmental setting in which the CTC is situated, the intent of the initiative, and the participants' responses to the initiative.

The Environmental Context

The CTC is located in Sugarhill. It is a community with the distinct feel of two separate neighborhoods; one on the south with its shabby corner stores and vacant lots, and the other a gentrified north of newly constructed single-family homes. The dividing lines are drawn at the intersection two blocks north of the CTC headquarters building. At this intersection, one can gaze north to a four-lane road leading out into the city skyline expanding far across the horizon. On the western corner of this intersection sits a major league baseball stadium that rises majestically from the pavement. On game days, the streets surrounding the stadium are buzzing with workers erecting barricades, sweeping the sidewalks, opening ticket booths, and setting up vending carts. However, when the stadium is idle, so are the streets: uncomfortably desolate and uninhabited.

Anyone just visiting the stadium would see these newly constructed homes and conclude that the city has done an excellent job of inner-city revitalization. A sea of the beautiful pastel colored homes, sidewalks and streetlights are visible from the nosebleed seats at the stadium. However, those curious enough to venture a few blocks away from the stadium will see the effects of gentrification. The old Sugarhill with its dilapidated houses, boarded windows, neglected yards, and abandoned cars is still present. There are unkempt vacant lots where houses once stood. Billboards for Budweiser beer peer out above a rundown apartment building with a rusted car in the driveway. Just down the block is a small grocery store with barred windows and padlocked doors. Adjacent to the stadium is an interstate highway with ten lanes of cars purposefully racing in and out of the city, while the city sidewalks are occupied primarily by

African-American men of all ages who seem to be traveling aimlessly with nowhere important to go. Sugarhill is clearly a community of opposites, and it is a stellar example of the difficulties faced when cities turn their attention to poor neighborhoods. It seems ironic that a program that bridges the digital divide is headquartered at this geographic buffer zone.

The Intent of the CTC Initiative

The CTC initiative began in 1999 when the mayor announced a program to bring computers, Internet access and basic computer literacy training to teens, adults and seniors in low-income neighborhoods throughout the city. The mayor believed that these residents were being left behind, and the CTC was intended to fill the gap by bring technology to “those who would otherwise not have access”.

By making this [CTC] available, we are ensuring that our citizens will have access to computers and the Internet, especially those who do not have computers in their home. We are delighted to make technology available to our children, adults and seniors in this community.

The “target population” lives in acute poverty. According to the 2000 census, Sugarhill has 4320 residents, 94% of whom are African American. Nearly 70% of the 1780 households have incomes below \$25,000 and 45% (1044 of the 2,299 adults) have less than a high school education. Roughly 35% of male and 47% of the female adults are employed, while 10% of males and 2% of females are unemployed. The remainder (55% males and 51% females) are neither active in the labor force nor actively seeking employment.

Although the CTC was located in areas of extreme poverty, they were not designed to be workforce development centers. They did, however, offer free courses in popular business applications such as Word, Excel, and PowerPoint to teens, adults and seniors. The executive director noted that “the training is good enough that people will be able to apply for jobs that they couldn’t have applied for before”.

According to the strategic plan, the initiative was designed to address perceived needs such as:

- Training to increase familiarity with computer applications and hardware

- Access to fax machines, email, computers and other ICTs
- Access to relevant content to address barriers such as the lack of local community information, low literacy and cultural diversity
- Participation in the creation of content to provide greater connectedness thereby overcoming isolation

While the strategic plan discussed the social problems experienced by inner city residents, the CTC focused exclusively on technology-related aspects. For instance, the strategic planning document suggests that the target population has many needs that are frequently overlooked or not readily understood by those who are more affluent. The working poor are rarely given paid vacation days or job flexibility. Many women are precariously balancing work and single parenthood. Many households qualify for food stamps, but work schedules and the lack of private transportation preclude many of them from taking advantage of the program. There is also a spatial mismatch between jobs that have migrated to the suburban areas outside of the city and the public transportation systems that do not provide access to those jobs.

Participants' Responses to the Initiative

Residents came to the CTC because they generally believed that ICT access and training would help them to overcome their material deprivation. For them, learning about ICT was rarely just for the sake of learning or creating content. Instead learning was purposefully aimed at improving economic status and social inclusion. Contrary to the statistics that report relatively less ICT use by older Americans, seniors were the most active and innovative ICT users at the CTC. Although most seniors initially came to the center with no immediate purpose other than combating loneliness, over time they began to realize that ICT also offered more tangible opportunities. Pearl's narrative suggests tangible benefits such as opportunities for employment and learning, improved self image, and opportunities for taking "a new lease on life".

I want to make sure that you understand how important this [community technology center] is to us. It is giving us a new lease on life. It increases my

thoughts, and my ability to learn. The environment is very encouraging. I now have faith and hope. Now I understand that there are things out there for us, as we get old. The [community technology center] fills a great need. We seniors are now becoming qualified homebodies. We can fill these jobs.

For Pearl, ICT was not only a vehicle for economic empowerment. It was also constructed as a cultural space from which seniors can resist and transform prevailing societal views in which older Americans are seen as idle and unproductive. Martin and Nakayama (1997) note that cultural space is both a physical location that has culturally constructed meanings and a metaphorical place from which we communicate. Employing the latter conceptualization of cultural space, ICT becomes a site for social change. She doesn't want to merely survive, to fit in, or to cope. She wants to change society's perceptions about older Americans.

Ron's also speaks metaphorically from this cultural space as he juxtaposes darkness and light. He talks about being out of the communication loop and feeling "so left behind" due to his lack of IT skills. For him, ICT is about "feeling connected" and "being part of what's going on".

Technology is the thing of the future. My nieces and nephews tell me that I need to step it up some, so this is my first move to get out of the dark and into the light...I want to be more a part of what's going on. I want to feel connected...I was in the dark. Before I learned about the computers, it was hard to communicate with people...I felt so left behind, out of it. I was not in the loop for communication. I had no email, so I couldn't keep in touch with my family on a regular basis. I had to use the phone. Now with email, I can communicate on a regular basis because it is less expensive.

A classroom facilitator describes folks like Ron and Pearl as "hungry". These self-determined individuals privileged ICT as a "new tool for hope for the future". However, as the second course concluded, the initial euphoria tended to give way to despair as participants began to realize the limited nature of their training. One classroom facilitator discussed the limits of the training that participants actually receive:

Yes, they want jobs but they aren't learning enough.... The people in the Applications class only come in two days a week. So say someone comes to class on Thursday. If they don't have a computer at home or they don't use a PC over the weekend, then it is 5 more days before they come back to class the following Tuesday. By then, they have forgotten much of what they learned.... The classes

are too advanced for them. Excel and Access are too advanced for them. Some days we don't get too far and I have to slow down. It doesn't make sense to keep going on to new stuff if they can't follow.

The limits of the training were acknowledged by both the participants and the classroom facilitator. However, the program was never intended to provide advanced workforce training. The classroom facilitator's and the participants' expectations for advanced computer skills reached beyond the programs intended scope. Even so, participants enthusiastically embraced the program. The sessions when residents could come in to obtain information and register for classes were exceptionally well attended.

This initial enthusiasm and positive attitude towards ICT continued over the 14 weeks. Doris, for instance, espoused a powerful virtual self in which competence, self worth and legitimacy were believed to result from the possession of an email address.

I thought I would be the last one to have an email address. I was once at a meeting and everyone in my group had an email address. I was embarrassed not to have one because everyone else was a senior citizen with some sort of computer knowledge.

Doris believed that computer skills would increase her ability to participate with her peer group in a computing culture in which "sending email makes me feel like a businessman". ICT use was seen as a mechanism for gaining access to opportunity structures that were available to groups that she viewed as more privileged. This view reinforces beliefs about the use of ICT that upholds the image of businessmen as worthy of emulating. This type of middle-class striving is a form of identity work practiced by those seeking membership in dominant groups (Schwalbe et al., 2000).

ICT is both a measure and a product of American capitalistic society, and, as such, is not culturally neutral (Sawyer & Eschenfelder, 2002). This is seen in both the ideals and beliefs that people held about ICT, and in their use of computing artifacts. Software programs, such as Microsoft Office, are highly customizable but they incorporate

certain basic assumptions about the problem solving strategies and needs of intended users. To this extent, they inevitably privilege certain ways of knowing (Burbules and Callister, 1997). This becomes clear as one spends observing low literacy users engage with computers. For instance, spell checking features were problematic in this setting. Participants were sensitive about their writing, since they had to submit their work to the classroom facilitator. Many times participants would ask me how to spell words like *professional* and *knowledgeable*. When they asked for my assistance, I would initially offer to help them use the spell checker. I quickly learned that sometimes their initial attempt at spelling was too far off to effectively use the tool. I also found that some participants typed the entire document in capital letters. This also rendered spell checking ineffective.

Participants were understandably upset when software and hardware glitches interrupted their opportunity to learn. Several participants talked about the importance of gaining knowledge, especially when it is being provided free of charge. They often quoted the bible when they made this point.

HOSEA 4:6 of the Bible says, My people are destroyed for the lack of knowledge”, but I thank God for the...class. It doesn't have to be that way. This free knowledge is open for all who so ever will let them come. The doors are open.

Bill described knowledge as a treasure that he could now share with his grandson.

Prior to my enrolling into this class I had no earthly idea about the functions of the computer. My seven-year-old grandson shamed me, when he asked me questions concerning computers. Even though there is a fifty-seven years education gap in our knowledge but there is no excuse in the lack of knowledge, especially now that the technology is here. The community technology center afforded me the opportunity to apply myself and I am truly grateful for the chance to narrow the knowledge gap that exist between myself son and grandson.

Shame is a powerful emotion because it can bring silence, as those who have been shamed avoid further exposure to the scrutinizing gaze of those who exercise the authority to

judge them (Lawler, 1999). Bill's quote demonstrates an ability to overcome shame because he now has tools to "narrow the knowledge gap".

Some participants succumbed to the scrutinizing gaze and dropped out of the program. Draining was a term used by one facilitator to describe participants that generally have a tough time learning in class, and drain the facilitator's patience and energy. Most of the frustration and intimidation felt by participants comes from a fear of public failure in the classroom, not a fear of the technology.

This young brother was cool for the whole class. During one of the last classes, I gave them an in class assignment that would use all of the concepts we went over in the class. This brother got highly frustrated and blew up at me. I went over and touched him on the shoulder and asked him what he didn't understand. I figured that the guy was stressed about something outside of class and was just venting. This seemed to calm him down, but our relationship was never the same. He didn't come back to my class.

I also noticed very early in the study that Black males were woefully underrepresented even though the majority of the staff and instructors were Black males. One staff member remarked, "We don't keep statistics on gender, but it is probably 75% to 80% female. This is a shame. We just are not sure how to reach the young Black men."

The nonparticipation of African American males may be a logical practice for those with limited access to legitimate jobs that provide a livable wage. A consultant at the CTC surmised that the Black males in the community have "three strikes against them – they can't pass the drug test, they have felonies, and they have poor educations". The life chances for males fitting this profile are limited. As Tupac Shakur notes in his popular rap song *Changes*, "it's hard to be legit and still pay your rent". These young males cannot afford to sit in a classroom because they need to be out hustling to make money to live in the here and now.

This concern with the immediate demands of making a living is one example of the more general orientation towards practical uses of ICT. Participants generally applied their computing skills in a purposeful and mimetic fashion. This practical orientation method was generally

viewed favorably because it allowed people to apply a limited amount of basic technical skills in an independent manner.

I am confident and comfortable when I work outside of the class environment. I try to recreate the steps in my mind. I say OK. Mr. Jones said to do this, then click here, go here. I just do the steps like we do in class.

Knowledge acquired through “scholastic labor” such as note taking and rote memorization limits access because it does not prepare novice users for the inevitable situation when they encounter the unexpected. Participants stayed within the boundaries of the steps that they learn in class, and as a result, their engagement with the computer is limited to those familiar techniques. This type of learning lacks depth and durability in its effects. It also limits the extent to which people feel like legitimate users and stymies self-confidence. To Sherry, for instance, computers are revealed as something that “smart people” do naturally. She does not see herself as bright enough to master a computer.

I like computers but I would like them more if I knew how to use them. People who know something about computers probably think I am dumb.

An easy, familiarity with ICT cannot be transmitted solely through a classroom experience. It requires repeated contact with technology and knowledgeable people over a long period of time. Some participants talked about continuing their learning through self-paced training. From their perspective, it is extremely costly to be uninformed about ICT when there is a concerted effort by governments, educational systems and corporations to bring everyone online.

However, self-learning was constrained by life circumstances, which structured the time and cost investment. Life circumstances are important concerns because they systematically disadvantage low-income inner city residents already living on the edge of poverty. There is an implicit assumption that, with free training and a little investment in startup time, historically underserved groups will come to realize efficient and timely access to information. We often

hypothesize that new online services made available through e-government portals and e-commerce websites will free up peoples time and reduce the cost of information.

However, finding the startup time and costs posed a tremendous barrier for most participants. For instance, the policy at the CTC was to drop people from class once they missed more than three times so that space could be created for others. This policy negatively impacted many women working outside of the home, raising children single-handedly. These women had significantly less time to devote to computers and the Internet, even when this resource was available free of charge in their local community. Some managed to squeeze in a class on their lunch hour, or directly before or after work. The cost of transportation the CTC was also problematic.

Once I recognized the barriers presented by these life circumstances, I looked for opportunities to introduce participants to online services that might help them to save time. I quickly learned that using ICT for something as mundane as shopping for books is more than simply a matter of convenience; it fundamentally challenged cultural practices such as reading and sharing books. Ron and Bill both describe how they spent a lot of time with older men in their communities hanging out in barbershops and pool halls. These old guys always had small paperback books in their pockets. They would encourage young boys to read by lending them books and paying them money if they came back to report on what they had read. They used this practice on me during my fieldwork. Once a week, they would often give me books to read, and they would quiz me when I returned the books.

Since these gentlemen liked to read, I decided to show them how to search for books online at Amazon. They are amazed at how easy it was to find the books. I noticed however that many of the books that they looked up were ones that they already owned. I began to show them how they could search for books similar to the ones that they owned, read recommendations, and compare prices among bookstores to get the best deals. Neither man was interested in making a purchase online. They told me that there is nothing like going to the local store, chatting with the

regulars, and browsing in person. They also felt that information on the Internet was somehow censored - "They won't have everything there, only what they want you to buy".

Analysis and Discussion

In this paper, we employed Bourdieu's notion of reproduction to inform a study of the mechanisms by which a CTC initiative aimed at redressing the digital divide may unwittingly reproduce inequality. The diffusion of computers and Internet access into historically underserved communities does not imply that there has automatically been a leveling of opportunity structures. The benefits that one derives from ICT are doubly determined by two factors: the conditions in which the individuals acquired their ICT skills and the markets where these skills can be invested to derive profits.

According to Bourdieu (1990b), there is a ranked mode of skill acquisition – early/late adoption, direct experience/scholastic experience, basic/advanced training, short term/long term exposure, credentialed/ non-credentialed knowledge. The participants tended to see themselves as late adopters acquiring basic computer literacy skills in a non-credentialed program. The quality of the skills acquired through what they perceived as “crash courses” was viewed as suspect, but they saw themselves as “catching up” and feeling more connected to a society that values and rewards computing skills.

Chow and colleagues (1998) found a positive correlation between the length of technical training and the proximity to achieving individual goals such as overcoming fear of computer, obtaining job skills and confidence, and finding employment. Those individuals who spent more than six months in training generally met the goals that they had established for themselves. The participants in this CTC receive fourteen weeks of training, and this may help to explain why, upon conclusion of the coursework, some questioned the level of knowledge that they gained through the program.

You know how a baby has to be breastfed milk. He can't eat food? Well that's how I feel. They are giving us milk, and this is not enough to feed us. We need to be able to eat food if we want to get jobs.

These were hungry people seeking to escape poverty. They were shamed by their lack of knowledge about computers, but realized that these basic skills at least provided them with hope and a tangible strategy for “gaining a new lease on life”. They didn’t want to blow this opportunity so they consumed ICT in very practical terms, closely following steps for completing tasks and mirroring the practices of their classroom facilitator. They eagerly adopted the practical and productive orientation towards ICT that was included in the curriculum and in the speeches of the government officials who created and managed the CTC. They also framed ICT politically as a cultural space from which to initiate social change and transformation. They began to identify with business men and other middle class identities. Seniors saw themselves as “qualified homebodies”.

To some extent, ICT became a fetish. Participants enthusiastically embraced the rhetoric of ICT as an empowering tool that would help them escape poverty and become “part of what was going on”. They became aware of their deprivation. As participant remarked, “I didn’t even know that there was a digital divide until I came to the community technology center.” In this sense, the CTC experience helped participants to realize their position as ‘have nots’ in the digital divide discourse. The basic skills that they did acquire were treasured because they symbolized that they were no longer on the wrong side of the divide.

This learning opportunity also raised their subjective expectations about employment and other life chances, but these expectations were not objectively probable. They failed to acknowledge that the labor market does not equally reward the knowledge and skills acquired outside of the control of legitimized institutions of learning such as the universities, corporate learning centers and schools (Bourdieu, 1984). They complied with a discourse that socialized them to believe that ICT skills were necessary for social mobility and social inclusion. However,

at a structural level, little was done to assist participants in realizing these benefits. A structural mismatch emerged between their aspirations and the real probabilities for economic advancement and employment. Participants could either concede and accept their social destiny, or struggle to gain additional skills through self-learning or advanced training programs. Some chose to forgo the training. However, those choosing to gain additional skills faced significant barriers such as free time, transportation, tuition fees for advanced training programs, and the implicit design assumptions about the intended users of ICT.

Participants felt that they were being offered skill training somewhat late in the game. They became frustrated largely unattainable expectations that result from the lag time between the imposition of the legitimate need for computer access and training, and the institutional means to satisfy them. The structural gaps and the frustrations that they produce are the very source of reproduction, because they constrain the upward mobility of disadvantaged people while transforming the nature of inequality. Reproduction is not in opposition to struggle and change. Rather, integrative struggle perpetuates the social order.

Social groups whose social mobility most directly depends on knowledge acquired through the educational institutions, rather than through the economic, cultural and social capital of parents and friends are especially susceptible to the punishments and rewards wielded by labor markets, educational and government institutions. As ICT skills become increasingly recognized and valued by these institutions, society has multiplied the opportunities for subjecting historically underserved groups to the evaluative criteria engendered by the digital divide discourse. The digital divide provides a platform for creating the binary categories of haves and have nots, assigning social groups to each category, ascribing positive and negative values to these categories, and widely disseminating these categories and values throughout society. Discursive force is generated by increasing public recognition for ICT, its technical vocabulary, and its value proposition. Political might adds to this discursive force by creating interventions that encourage the complicity of the have nots.

However, this discursive and political work does not go uncontested. One participant explains his take on the motivation for public access programs. He sees the CTC as a political and economic necessity, not a charitable and disinterested investment in low-income communities.

The government sets up these programs. When the programs are over, the people who run the programs walk away with the money because nobody is watching them. The plan was to perfect the technology with the rich white people. Then when it is perfected it can be rolled out to everybody else. The way to do this is to create programs. The goal is to make us continue to buy things. They have to train us so that we can continue to buy their stuff. They have to keep us in the workforce to avoid chaos. If too many people don't have jobs, they'll end up on welfare or in the prisons. The rich people will have to foot the bill. The need us to work, but they're not gonna train us for the good jobs. It's all about economics, not humanity.

As the city officials, the media, and the labor market convey the importance of ICT, social groups lacking digital skills are more likely to have the limits of their cultural attainment brought home to them. These limits are learned both by the material penalties (i.e. lack of employment opportunities) and by the symbolic penalties (i.e. exclusion for not having an email address in a society where all erudite persons are expected to have one). What is more, the verdicts of peers (i.e. “Everyone needs basic computer literacy to function in society nowadays.”) are also charged with economic and symbolic implications. As these institutions and peers impose norms that tacitly define the legitimate values and uses of ICT, everyone is held to and measured by these norms, even if they have no means of conforming to them. CTCs provide the means for facilitating this conformity among disadvantaged groups. They provide participants with an internal code that equips them with an ethos towards, and an appreciation for ICT. They also instill competence in deciphering cultural relations, defining useful properties of ICT, and manifesting real uses for ICT. We should not assume that a computer has the objective, decisive attributes that we often see listed in the brochures. ICT does not impose self evident and universal meanings. The meanings of ICT are dependent of the interests and tastes of its users.

Implications

What can we learn from this study? Designers of future initiatives should define the digital divide more broadly as an unequal ability to achieve life chances which include, but are not limited to, access to ICT. The divide is not with technology per se; the divide is one of longstanding inequities in access to basic life chances such as education, safety, housing, and healthcare. Therefore, programs should assume a holistic approach by providing technical skills as well as strong linkages to existing social services such as workforce development programs, adult education programs, child and elder care programs, and transportation services.

Future initiatives should also strike a balance between the interests of the community, and the interests of municipal governments, and potential employers. It is perhaps unfair to structure a program based upon the skills needed by employers or the city's desire to make their workforce more attractive to companies seeking to locate in their area without also going the next step to place participants in those jobs. In this instance, designers of CTC initiatives should either establish strong partnerships with community colleges and computer certification programs so that participants can more easily gain entrée to advanced training and employment. Or programs can promote the communicative and entertaining functions of ICT. This goes against the market orientation that dominates much of the digital divide discourse in the US. However, non-market values such as community organizing, information sharing and participation in the democratic process could do much to improve the quality of life in underserved communities. By better positioning people to compete in the established markets or creating an alternative discursive context, underserved groups can derive meaningful material and symbolic benefits from ICT.

Conclusion

I have used Bourdieu's concepts of capital to analyze the role of culture in reproducing digital inequality. In presenting this evidence, I strike a cautionary note in response to the surge of

rhetorical optimism surrounding responses to the digital divide. That is, policy makers, community activists, government, and IT industry leaders have responded to their understandings of the digital divide by creating policy and programs that provide historically underserved groups with training and access to ICT. However, training and access leaves open the question – technology and access for what purpose?

The success of bridging the digital divide is often gauged by diffusion indicators such as the number of participants processed through technology training programs, and the availability of computers with Internet access at schools and other public institutions. The findings presented in this paper support the importance of diffusion indicators, but also suggest that our efforts to eradicate the digital divide must go beyond these quantitative indicators of access. We must also consider the extent to which we are successful in reducing digital inequalities that emerge when groups derive disparate benefits from their engagement with ICT. The findings intimate that there are broader social, economic, technical, cultural, and historical factors that both enable and constrain people's ability to engage with ICT. Differential benefits are attributable to characteristics such as social life circumstances, attitudes towards learning, fear of public failure, basic literacy skills, as well the desire to maintain cultural practices that cannot be replicated in an online context. These factors have consequences that are not easily discernable in the patterns of Web use and access statistics.

However, the case materials presented in this paper must be taken with caution. The diversity of CTC characteristics — such as organizational goals and governance structures; program content; target populations; funding, technical, and human resources; and reasons for wanting access to computers and the Internet — renders generalizing across sites or other variables inappropriate. The study is also limited in that it provides a glimpse into the operations of CTC in its first year of operation when many of the curriculum and program content were still under development. Similarly, all of the participants were taking their initial steps into the world of computers and the Internet. It is likely that higher levels of competence and confidence, which

would help to overcome the self-perpetuating circles of inclusion and exclusion, would be achieved over time. Despite these limitations, these findings do in fact provide useful answers to the question of how ICT can unintentionally reproduce social inequality.

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