

The Digital Divide: A Case Study of a United States Community

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Abstract

The digital divide has been defined as a gap between those with access to new information and communication technologies and those without. This paper explores the digital divide within the United States through a case study of a community organizing strategy. The community members within their natural setting of a public housing community, with assistance from volunteers, planned for their own technological advancement, confronted obstacles in implementing their training program, and continue to struggle to realize their plans. Empirical results show the training program was effective in achieving learning, but participant's emotional state of happiness declined. The authors conclude that isolation from mainstream society, exploitive dependency by those ostensibly assisting the community, and a culture of failure contribute to the divide. The community organizing strategy initiated community members' use of technology, but sustaining momentum in the struggle to overcome external threats remains challenging.

Keywords: *digital divide, internet access, computer access, computer training*

1. Introduction

The digital divide is defined as a divide between those with access to new information and communication technologies (ICT) and those without, or in other words, the gap between the 'technology haves' and 'have-nots' (Holmes 2002, Novak and Hoffman 2000, OECD 2001, Wilhelm and Thierer 2000). The term is also used to characterize the disparity between those who have the ability to use ICT and those who do not. No matter how we define the term, there is consensus that a divide exists, that excludes many from benefiting from ICT, increasingly crucial to economic success and personal advancement. "The Digital Divide is arguably the single, largest, segregating force in today's world. If it is not made a national priority, a generation of children and families will mature without these tools that are proving to be the key to the future" (PR Newswire 2000b).

This paper explores the digital divide in the United States (US) through a case study of a community organizing strategy to initiate a computer training program intended to narrow the divide. The initiative and its theoretical basis are first discussed. Factors contributing to the divide are identified to provide insight into how the gap might be reduced. Empirical results reveal training to be effective in achieving learning, but participant's emotional state of happiness declined. The authors conclude that isolation from mainstream society, exploitive dependency by those ostensibly assisting the community, and a culture of failure contribute to the divide. The community organizing strategy initiated community members' use of technology, but sustaining momentum in the struggle to overcome external threats to the community initiative remains challenging.

2. An Initiative to Narrow the Divide

A community organizing strategy, based on the theoretical premises of the Assets-Based Community Development Model (Kretzmann and McKnight 1993) presented in Figure 1, was undertaken to gain insight into the digital divide within the US and to contribute to

narrowing the divide. According to this model, an effective local organizing strategy is fundamental to successful community self-sufficiency. The premises of this model are stated in Table 1.

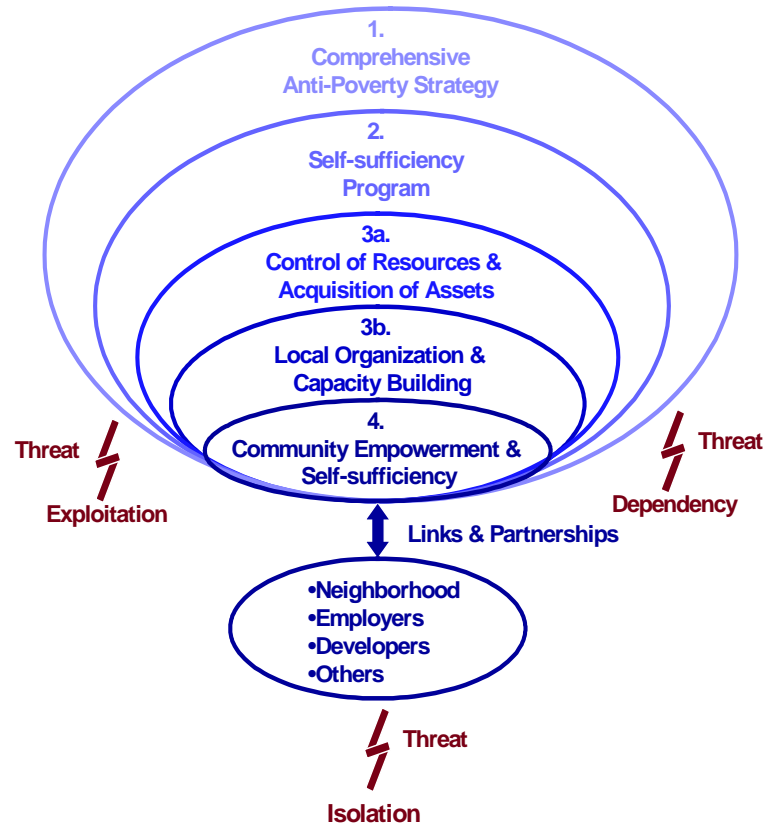


Figure 1. The Assets-Based Community Development Model (Based on Kretzmann and McKnight 1993)

2.1 Research Questions

This study addresses the following two general questions through three propositions:

2.1.1 What demographic characteristics are associated with the technologically disadvantaged in the US?

A digital gap persists in the US (www.ntia.doc.gov 1999). A significant indicator is that at least half of all US households earning less than US\$15,000 are not connected to the internet and are projected to remain unconnected through 2005 (Wilhelm and Thierer 2000). The US Department of Commerce (www.ntia.doc.gov 1999) identified factors associated with the divide, leading to the following proposition:

1. *Comprehensive anti-poverty strategies* are best implemented through a system that connects with people and families in the communities where they live.
2. An effective *self-sufficiency program* cannot focus solely on needs and deficiencies, but must develop existing *assets and opportunities*.
3. *Control of resources and acquisition of assets* are marks of true self-sufficiency. *Local organization and capacity building*, through locally owned and controlled programs, are more likely to involve residents, and develop and retain local assets and capacity.
4. Isolation of poor communities is a major cause and effect of their poverty. *Community empowerment and self-sufficiency* are key to enabling and maintaining individual and family self-sufficiency. Local organizing and capacity building must be strategically directed toward overcoming isolation and creating effective links and partnerships outside the neighborhood. These links and partnerships must be engaged in from a position of strength and self-sufficiency, to avoid exploitation and dependency.

*Table 1. Theoretical Premises of the Assets-Based Community Development Model
(Based on Kretzmann and McKnight 1993)*

Proposition 1: The demographic characteristics associated with the digital divide are:

- income,
- age,
- level of educational attainment,
- race,
- household type, and
- geographic location.

2.1.2 What contributes to narrowing the digital divide in the US?

Home internet access is viewed as the key to eradicating the divide (Keller 2001). Access must be made convenient and readily available by placing computer technology in homes and neighborhood institutions. Finally, computer use must be pervasive, engaging the whole community on a regular basis. The following proposition considers this pervasiveness:

Proposition 2: The pervasiveness of computer technology within the community is associated with:

- access to computer equipment and internet connectivity,
- *convenient and readily available* access to computer equipment and internet connectivity in homes and neighborhood institutions,
- engaging the whole community in using technology.

Also important in bridging the divide is successful learning of computing skills (DiMaio et al. 2002), considered in the following proposition:

Proposition 3: Computer learning makes a difference in narrowing the digital divide.

2.2 Research Method

To address Propositions 1-3, a case study of the William Penn Housing Development (WPHD) in Chester, Pennsylvania (PA), US was undertaken. Based on the Assets-Based Community Development Model (Kretzmann and McKnight 1993), the William Penn Tenants Association (WPTA) initiated a community development plan in December 1999, with assistance from volunteers including the authors, a professional Community Organizer, and Unity Center, Inc., a nonprofit corporation founded in 1987 to “bring people together who would normally not come together” to work side by side on a common project. As a result, a computer training program was initiated within the community. Launched in fall 2000 and continued through the present, this program provides on-site training to community members by university students. This study focuses on the first training session in fall 2000.

2.3 A Community on the Disadvantaged Side of the Divide

The William Penn Housing Development is located in Chester, a city occupying 4.8 square miles in Delaware County (Brief of Amicus Curiae 1998), PA, US. "During the last 100 years, Chester has evolved from a boom town ... to ... one of the most distressed cities in the nation" (Council of the City of Chester 1994). Chester began its decline during the 1950s, when it experienced a “deteriorating home stock, a dramatic decrease in size, a four-fold increase in the African-American population, and a significantly poorer population” (Brief of Amicus Curiae 1998). In the 1980s, state and local governments instituted programs to improve the economy and living conditions, with little success. Currently, this formerly industrial city is home to a low-income population of 39,000, 65% of whom are African-American, and has the highest infant mortality rate in PA (Worsham 2000). By contrast, the remainder of Delaware County is 91% White (Brief of Amicus Curiae 1998). The significant increase in the African-American population, by contrast to the remainder of the county, shows isolation from mainstream society not unlike that of an inner city.

2.3.1 The Struggle to Overcome Housing Unfit for Habitation

In 1987, a class action suit, *Clements v. City of Chester* (1990), consisting of "all residents of Chester Housing Authority (CHA) public housing units," was filed. The residents claimed to be plagued by dangerous and unhealthy conditions including "dark hallways strewn with garbage, human waste, and the thrown-away paraphernalia of drug and alcohol activity; inadequate plumbing and sewage; unsafe electrical systems; leaking roofs; and doors without locks" (*Clements v. City of Chester* 1990). As a result of the lawsuit, an out of state attorney was appointed as Receiver. Within the community, well paid poverty related positions are sometimes perceived by the residents to be that of “poverty pimps,” that is, individuals who benefit monetarily from lower income communities. A “poverty pimp” may exploit members of a community or create a dependent relationship with them. This exploitive dependency may be reduced by increasing empowerment and self-sufficiency through individual and community skill

development (Kretzmann and McKnight 1996). Or, if not reduced, it may keep individuals on the wrong side of the divide.

2.3.2 Disturbing Presence of Social Ills and a Culture of Failure

In the early 1990s, the Chester Housing Authority (CHA) demolished substandard housing units, including the William Penn project, and built new public housing. The WPHD, completed in March 1999, includes reasonably attractive garden apartments and a multi-room community center. The disturbing presence of social ills (e.g., low educational performance, teenage pregnancy, vandalism, graffiti, noise, trash, drug use on the streets, violence, crime, drive-by shootings, murders, etc.) is evident in the deteriorating and boarded-up houses and vacant lots directly across the street. In brief, the environment fosters a culture of failure.

As the case unfolds, the authors discover that external threats obstruct progress. Isolation from mainstream society not unlike that of an inner city, exploitive dependency fostered by those ostensibly assisting the community, and a culture of failure contribute to the lingering divide.

2.4 Identifying Community Needs and Formulating the Development Plan

To understand the complexity of circumstances the community confronts, a survey of 200 households was undertaken in fall 1999. The results, based on a response rate of 37.5%, reveal 60% of households have one or more members in need of employment. However, job skills and/or specialized training is present, with 30% skilled or trained in construction and 24% in nursing and healthcare. While 20% expressed a strong interest in further education and/or training in construction and 28% in nursing, 46% indicated a strong interest in computer training. Indeed, only 12% reported job skills and/or specialized training with computer technology. A conspicuous 0% had a computer in their home.

The resident survey formed the basis for the WPTA Preliminary Development Plan (WPTA 1999). Five priorities were identified, including "Access to technology." For each priority, goals and objectives were formulated. Responding to the priority for "Access to technology" is the goal "Enhance community-based Computer Lab and develop community-based computer technology." The stated objectives of this goal are presented in Table 2. Overseeing this goal is the WPTA Technology Committee, comprised of leaders from the community.

2.5 The William Penn Tenants Association Computer Training Program

To support the objectives in Table 2, preparations for the WPTA Computer Training Program began in March 2000 with a proposal to the University's Institute for Teaching and Learning. This program also supports the organizing goal of building and maintaining a strong and self-sufficient local neighborhood organization. Numerous weekly meetings were held at the William Penn Community Center with Unity Center and other volunteers

including the authors, the WPTA, its Technology Committee, and residents and neighbors. After overcoming dissension from the Receiver, a training site at the Community Center was secured. Local law firms donated 15 computers. Through a partnership with high school students, 14 donated computers were refurbished. The on-site Computer Lab was made functional through a partnership with University students. As word of this initiative spread, a second location, equipped with 15 computers, was developed at In the Name of Jesus Outreach Church, within a two miles of the Housing Development. The program “kicked off” in September 2000 and concluded in December 2000. Participants who successfully fulfilled program requirements received certificates and free refurbished PCs to take home.

1. Expand acquisition of computers for computer lab from 5 to 15 computers.
2. Connect lab to internet.
3. Develop Community Webpage.
4. Enhance computer training capacity with combination of paid, intern, and volunteer trainers.
5. Provide computer training, installation, and repair experience to Community residents.
6. Develop employer-linked computer training programs for Community residents.
7. Implement home-based technology initiative by installing computers and software in at least 200 homes in Community.
8. Develop Community-based Network through internet connection among participating households.

*Table 2. Objectives to Enhance the Computer Lab and Develop Computer Technology
(From William Penn Tenants Association Preliminary Development Plan 1999)*

3. Results

At the completion of the fall 2000 Training Program, a survey was completed by all 31, of the initial 60 participants, who completed the program. We recognize the challenge in measuring the factors and thus the measures are meant to serve as indicators of the factors to provide insight into the divide. A summary of the findings are presented in Table 3 and discussed below.

3.1 Participants

The 31 graduating participants ranged in age from 13 to 65, with an average age of 43. Ten participants are male (32.3%) and 21 (67.7%) are female. The mode of educational attainment is high school diploma. One individual has no high school, 2 have some high school, 5 have a high school equivalency, and 23 participants (74.2%) have a high school diploma. More than half of the participants (58.1%) are employed. More males (70.0%) than females (52.4%) reported being employed. The median household income is within the range of US\$15 – 25,000. Eleven participants (35.5%) have a household income below US\$15,000, and only one person (3.2%) reported a household income over US\$45,000.

Among household type are 5 single participants (16.1%), 9 single with children (29.0%), 5 married (16.1%), and 12 (38.7%) married with children.

Proposition	Analysis
1: Factors associated with the digital divide	<ul style="list-style-type: none"> Demographic Characteristics
2: Pervasiveness of computer technology within the community: <ul style="list-style-type: none"> access to computer equipment and internet connectivity 	<ul style="list-style-type: none"> Objective 1 met Objective 2 met
<ul style="list-style-type: none"> access to computer equipment and internet in homes and neighborhood institutions 	<ul style="list-style-type: none"> Objective 7 not met, but limited progress made
<ul style="list-style-type: none"> engaging the whole community in using technology 	<ul style="list-style-type: none"> Objective 3 not met Objective 8 not met (dependent on Objective 7)
3: Computer learning makes a difference in narrowing the divide: <ul style="list-style-type: none"> impact of Training Program on computer learning 	<ul style="list-style-type: none"> Increase in Positive Sense of Control Increase in Positive Self-Concept Decrease in Negative Self-Concept Decrease in Worry Decrease in Happiness Decrease in Physiological Symptoms Decrease in Distractibility
<ul style="list-style-type: none"> Did computer learning make a difference in narrowing the divide? 	<ul style="list-style-type: none"> Decrease in majority at beginner level (77.4% to 19.4%)

Table 3. Summary of Findings

3.2 Proposition 1

While a seemingly simple set of demographic characteristics are associated with the divide, it is recognized that a complex combination of factors determines on which side of the divide an individual resides. Each of the demographic characteristics previously identified is examined for the graduating participants by comparison with comparable statistics, as summarized in Table 4. This analysis is intended to provide a relative assessment of the community in contrast to previous findings generalizing the characterization of the digital divide.

3.3 Proposition 2

It is expected that increased pervasiveness of computer technology within the community will contribute to a narrowing of the digital divide, albeit small. To assess Proposition 2, access to computer equipment and to the internet by participants is first considered. Second, achieving convenience and ready availability through the presence of PCs and internet connectivity within participants' homes and within the neighborhood is then discussed. Third, engaging the whole community in using technology is assessed.

Demographic Characteristic	The Community	Comparable Statistic
Median Household Income (US\$)	\$15–25,000; 6.5% use internet	PA: US\$43,742; US: US\$42,148 (US Census, 2001); 31% of households with income <US\$30,000 have internet access (Pastore 2000)
Age	Average is 43; among those 35–44, 0% use internet	Among those 35-44, 39.8% use internet (Schreiber and Husak 2000)
Educational Attainment	Average is high school diploma/ equivalency; 6.5% use internet	College degree 9X as likely to use internet than elementary school education (www.ntia.doc.gov 1999)
Race	100% African-American; 6.45% use internet	19% of Blacks use internet (www.ntia.doc.gov 1999)
Household Type	Married couple (grandparents) with children <18; 6.5% use internet	Married couples with children <18, highest internet use at 37.6% (Murphy 2000)
Geographic Location	Chester, PA, US population is 39,000; has neither DSL nor cable modem	<5% of towns with population of <100,000 and 1% of towns with population of <250,000 have DSL or cable modem (PR Newswire 2000a)

Table 4. Relative Assessment of Internet Use Among Community Participants Contrasted with Previous Findings Characterizing the Digital Divide

First, access to computer equipment and to the internet is assessed through Objectives 1 and 2 (see Table 2). At the time the Development Plan was formulated in December 1999, the WPTA office in the Community Center was equipped with five stand-alone computers. For the launch of the Training Program in September 2000, the use of a conference room was secured, after struggling through multiple petitions to the CHA and Receiver for resident use of their own Community Center’s conference room. An additional 15 computers were installed, thereby meeting Objective 1. Only one phone line is present in the Community Center office. Only two computers were equipped with dial-up modems. Then free internet access was obtained through Kmart’s BlueLight.com. While Objective 2 was met, we acknowledge that internet connectivity is limited, slow, and sometimes unavailable due to overwhelming demand for free internet access.

Second, achieving convenience and ready availability to computers and the internet is assessed through Objective 7 (see Table 2) and by examining the status of computers and internet connectivity in neighborhood institutions. Of the 60 participants, 31 met the requirements to receive a free refurbished PC to take home, far short of the objective of installing computers in at least 200 homes. These PCs may have lacked modems, and internet connectivity in homes remains unsupported. Although Objective 7 was not met, approximately 15% of households now have PCs, compared to the previous 0%. Regarding computers and internet connectivity in neighborhood institutions, the status of the Community Center was discussed in the previous paragraph. Other community institutions and commercial establishments must also be considered. In the Name of

Jesus Outreach Church, within a two-mile distance from the Housing Development, was equipped with 15 computers as part of the Training Program. There are no public libraries in Chester, however, the Crozer Library, a private, nonprofit corporation "...will soon offer computers with Internet access" (www.chestercity.com 2002). Within the Chester/Upland school district, installation of computer labs, with internet connections, began within the past year, but use has not yet been fully integrated within the curriculum. There are currently no cybercafes within Chester. While Objective 7 was not met and there is limited access within neighborhood institutions, some progress was made.

Third, engaging the whole community in using technology is assessed by examining Objectives 3 and 8 (see Table 2). A community webpage was begun, but a number of obstacles remain. The incentive of a webpage contest made elicitation of content for the community website challenging as individuals focused on their own interests. Webpages developed were placed with providers of free webspace, but maintenance is difficult due to the erratic internet connectivity and unclear responsibility. Objective 3 remains unmet. The development of a community-based network through internet connections in households is dependent upon successfully meeting Objective 7 first. As was stated, Objective 7 has not yet been met, precluding the achievement of Objective 8.

3.4 Proposition 3

Proposition 3 is assessed by analyzing the impact of the Training Program on computer learning, followed by a consideration of whether computer learning makes a difference in narrowing the divide.

3.4.1 The Impact of the Computer Training Program on Computer Learning

The Computer Anxiety and Learning Measure (McInerney et al. 1999) serves as the measure to assess the impact of the Training Program on computer learning. This measure captures multiple dimensions of computer anxiety and learning, in a training situation for adult learners, including Anxiety about Gaining Initial Computing Skills, Sense of Control When Using a Computer, Self Concept in Computing Ability, and State of Anxiety in Computing Situations. The results, before and after training, for the individual factors of which each of the four dimension is comprised are summarized in Table 5 and are discussed below.

Anxiety about Gaining Initial Computing Skills: Four anxiety factors including Competence with Computers, Handling Computer Equipment, Receiving Feedback on Computing Skills, and Learning about Basic Computer Functions were captured by asking participants to "Please indicate the extent to which each of the situations described in each question would make you anxious in gaining computing skills" both before and after training. The results of a paired samples t-test, comparing participants' before and after responses for the four factors, reveal none is significant at the .05 level.

		Paired Differences			T	df	Sig. (2-tailed)
		Mean	Std. Dev.	Std. Error Mean			
ANXIETY ABOUT GAINING INITIAL COMPUTING SKILLS							
Factor 1	Competence with computers-Before Competence with computers-After	-.0595	1.67865	.30648	-.194	29	.847
Factor 2	Handling computer equipment-Before Handling computer equipment-After	.3011	2.18048	.39163	.769	30	.448
Factor 3	Feedback on computing skills-Before Feedback on computing skills-After	.2611	2.02081	.36895	.708	29	.485
Factor 4	Learning basic computer functions-Before Learning basic computer functions-After	.2081	1.17375	.21081	.982	30	.332
SENSE OF CONTROL WHEN USING A COMPUTER							
Factor 5	Positive sense of control-Before Positive sense of control-After	.7269	1.29304	.23224	3.130	30	.004*
Factor 6	Negative sense of control-Before Negative sense of control-After	.4484	1.26806	.22775	1.969	30	.058
Self-Concept in Computing Ability							
Factor 7	Positive self-concept-Before Positive self-concept-After	.8237	1.79965	.32323	2.548	30	.016*
Factor 8	Negative self-concept-Before Negative self-concept-After	-1.5661	1.30801	.23493	-6.666	30	.000*
State of anxiety in Computing Situations							
Factor 9	Worry-Before Worry-After	1.0968	1.13775	.20435	5.367	30	.000*
Factor 10	Happy-Before Happy-After	-.4925	1.32823	.23856	-2.064	30	.048*
Factor 11	Physiological symptoms-Before Physiological symptoms-After	.5613	1.07507	.19309	2.907	30	.007*
Factor 12	Distractability-Before Distractability-After	.7952	1.04772	.18818	4.226	30	.000*

*Significant at the .05 level of confidence

Table 5. Summary of findings for Computer Anxiety and Learning factors: before and after

Sense of Control When Using a Computer: Two factors, Positive Sense of Control and Negative Sense of Control (or fear) when using a computer, were captured by responses to “Please indicate how often you have the following thoughts when you use a computer or think about using a computer” before and after training. The paired samples t-test reveals participants gained a more Positive Sense of Control in using a computer after having completed training, significant at the .05 level.

Self-Concept in Computing Ability: Both a Positive and a Negative Self-Concept in Computing Ability were captured by asking “Please indicate how much you agree or disagree with the following propositions” before and after training. The participants’ Positive Self-Concept increased after training. Similarly, participants’ Negative Self-

Concept decreased. The results of the paired samples t-test performed on the mean responses before and after training are statistically significant at the .05 level.

State of Anxiety in Computing Situations: Four anxiety states, including Worry, Happiness, Physiological Symptoms, and Distractibility, were captured by responses to “Please indicate how often you experience the following feelings or symptoms when you use a computer or think about using a computer” before and after training. Participants were less Worried in computing situations. However, Happiness in computing situations decreased. Physiological Symptoms of anxiety in computing situations decreased. Finally, Distractibility in computing situations decreased, indicating participants generally felt less distracted. The results of the paired samples t-test performed on the mean responses before and after training for Worry, Happiness, Physiological Symptoms, and Distractibility are statistically significant at the .05 level.

3.4.2 Did Computer Learning Make a Difference in Narrowing the Digital Divide?

Based on the definition of the digital divide presented in the introduction, this question focuses on whether computer learning made a difference in the ability to use ICT. To address this ability, a self-assessment of computer experience and the importance of using the computer are examined. Participants were asked “How would you rate your computer experience?” Contrasting ratings before versus after training, 24 respondents (77.4%) rated themselves as beginners (described as no experience or games only) before versus 6 (19.4%) after, 2 (6.5%) responded intermediate (familiar with one application only such as a word processor or spreadsheet) before versus 14 (45.2%) after, and 5 (16.1%) categorized themselves as advanced (familiar with a number of applications) before versus 11 (34.4%) after training. The majority no longer perceived their computer experience to be at a beginner level. Participants were also asked to “Please indicate the level of your agreement with the following statement: learning to use the computer is important.” The mean of responses decreased, but is not statistically significant at the .05 level.

4. Discussion

This community organizing strategy was intended to not only provide insight about the digital divide within the US, but was intended to narrow it. Therefore, the initiative began with an identification of the needs of a community with demographic characteristics consistent with those less technologically advantaged, as stated in Proposition 1. The needs identified from a survey form the basis for the community Development Plan. The implementation of this plan entails enhancing the pervasiveness of technology in the community. As discussed in the assessment of Proposition 2, access to computer equipment, Objective 1 in Table 2, was achieved with the addition of 15 computers in the Community Center. Internet connectivity, Objective 2, is available on a very limited basis. Progress was made on Objective 7 by providing computers to participants, resulting in a presence in 15% of the homes, up from 0%, but none have internet connectivity, precluding the capability to achieve Objective 8. Engaging the whole community, Objectives 3 and 8, remains challenging. Although limited progress

toward Proposition 2 was made, it was recognized that pervasiveness of computer technology is short-sighted. Also important is successful learning of computer skills, as stated in Proposition 3.

The Training Program was initiated to provide community residents and neighbors with computer skills and knowledge. Based on the comparison of results for the Computer Anxiety and Learning Measure before and after the training, we can draw several conclusions about the impact of computer learning on the digital divide. Computer learning provided the participants with an increased perceived positive sense of control when using a computer. Further, the participants' perceived self-concept in computing ability was enhanced, both in terms of increasing their positive self-concept and decreasing their negative self-concept. Finally, the perceived states of anxiety in computing situations were also improved. Participants reported decreased worry, physiological symptoms of anxiety, and distractibility in computing situations. However, happiness in computing situations diminished.

Insight into the happiness factor is gained by examining state of anxiety in computing situations. Anxiety is comprised of three components including cognitive, emotional, and somatic anxieties (McInerney et al. 1999). The cognitive component consists of two factors, worry and distractibility; while the somatic component consists of the physiological symptoms factor. The emotional component consists of the happiness factor. Interestingly, it is the emotional factor on which participants waned. While the Training Program was effective in achieving computer learning, participants' emotional state of happiness declined.

Can we nonetheless conclude that the digital divide was narrowed? From the results, we can conclude that computer learning had a positive impact on the participants' level of computer experience, indicative of some progress. However, the significant decline in the emotional factor of happiness certainly warrants investigation. Although unsupported by quantitative data, it may be that computer learning by the participants enlightened them as to what they do not know or do not have, contributing to a diminished sense of happiness. Perhaps the participants recognize to an even greater extent the gap between themselves and the more technologically fortunate University student trainers.

5. Conclusion

The WPTA computer technology initiative benefited both the community members and the University student trainers. The benefits were not just educational and academic, but sociological and spiritual. It was very evident from comments made at the graduation ceremony that community members gained not only technology skills, but an increased sense of accomplishment and self-esteem. Many of the participant trainees commented that two worlds, differing racially, socio-economically, and technologically, were bridged. University student trainer comments focused on the meaningfulness of interacting and training the community members in a world very different and less fortunate than theirs. As a result of these achievements, this program was nominated by the US Department of Housing & Urban Development (HUD) to receive a "Best

Practice" Award. Additional details of the program can be found in two newspaper articles (Hardy 2000a and Hardy 2000b).

Some progress has been made in one community to close the divide, but more can be done. The challenge is to further knock down barriers that exclude individuals from ICT use. While developing an information infrastructure is the basic building block, additional initiatives should be undertaken to connect those in poor and rural areas. The key factors in reducing the divide include access to ICT, education and training, and sustained use. Providing access through community access centers is a necessary first step. Extending this first step, convenience and ready availability in homes and pervasiveness in the community enhances access. Providing education and training as a community organizing strategy gives community members ownership in their own future. Sustaining strides made requires an effective local organizing strategy with the goal of community self-sufficiency and perseverance to overcome the external threats of isolation from mainstream society, exploitive dependency, and a culture of failure. Reaching out to more and more individuals and communities on the unfortunate side of the digital divide is essential.

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