NETWORK

TECHNOLOGIES

IN

HISPANIC-SERVING

ORGANIZATIONS:

A CASE STUDY EVALUATION

NETWORK TECHNOLOGIES

IN

HISPANIC-SERVING ORGANIZATIONS:

A CASE STUDY EVALUATION

November 2001

The Tomás Rivera Policy Institute

Founded in 1985, the Tomás Rivera Policy Institute advances critical, insightful thinking on key issues affecting Latino communities through objective, policy-relevant research, and its implications, for the betterment of the nation.

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FOREWORD

Today's dynamic environment created by technological advances, with its emphasis on distributed electronic communities and any time, any place access to information and commerce, has fostered lively debates among policy makers, educators and business and community leaders. Those debates concern how policies either deter or enable the adoption of computers and the Internet as necessary tools of everyday life. Responding to community concerns and supported by federal funding, many public and non-profit institutions continue to grapple with the process of successfully integrating technology into community life.

The Tomás Rivera Policy Institute (TRPI) undertook a 12-month case study evaluation to increase the understanding of the use and effects of the information infrastructure in organizations that serve Hispanic and limited English-proficient populations. This study considered three areas of program development at four technology programs. Supported by previous work, including the Institute's Digital Steppingstones (DSS) program, and funded by the National Telecommunications and Information Administration's Technology Opportunities Program (NTIA/TOP), this study advances the current exploration of technology usage by establishing a knowledge base of applications for general dissemination. Furthermore, this report enhances access to information technologies in the public and nonprofit sectors by identifying successful strategies for increasing the diffusion of technological innovation that can be replicated in Hispanic communities.

Since 1994, TOP has funded hundreds of innovative demonstration projects across the country. The National Telecommunications and Information Administration (NTIA) report, Networks for People: TIIAP at Work, concluded that community leaders must realize the opportunities and potential benefits afforded by technology infrastructure (October 1997, p.vi). According to this report, TOP-funded telecommunications projects have allowed people across the nation to use technology to "pursue their own goals for economic growth, educational opportunity, public safety, improved health, responsive government and strong communities" (p.67).

Today, the ability to communicate and access information using computers and the Internet continues to evolve and is integral to our networked economy. According to the NTIA report, Falling Through the Net: Toward Digital Inclusion (October 2000), the overall level of U.S. network technology usage is rapidly increasing. The current report, and the underlying research project, examines how well planned and successfully implemented network based programs can assist underserved minority communities to fully participate in this phenomenon.

The growth of the technology infrastructure, however, comes at a price — both individual and organizational. Public access, usage and priorities, as well as community dynamics and organizational structure are only a few of the challenges community leaders must face in assessing the usage needs of their communities in the rapidly evolving world of digital information.

How can we successfully manage and plan for access to these life-enhancing tools? What lessons have we learned from existing technology programs? Can these lessons help alleviate the perplexities associated with programs seeking to integrate network technologies for the benefit of low income and underserved communities?

It is both possible and desirable to meet the needs of an increasingly digital society. The strategies advanced by this study will prove valuable for decision-makers when assessing and planning for future information technology needs of our diverse communities. Our challenge is to encourage widespread access to emerging technologies that includes the nation's Hispanic community.

Harry P. Pachon, Ph.D.
President
The Tomás Rivera Policy Institute

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

INTRODUCTION

This report presents the findings of an evaluation study of four technology programs undertaken by the Tomás Rivera Policy Institute (TRPI). The National Telecommunications and Information Administration (NTIA), through the Technology Opportunities Program (TOP), funded this twelve-month study. This report examines how public and nonprofit organizations implement, promote and strengthen the widespread availability and use of digital network technologies at the organizational level. The four organizations evaluated here serve minorities in general and Hispanics in particular and offer an opportunity to examine effective program strategies and practices.

HIGHLIGHTS OF FINDINGS

This evaluation provides insights on the types of informed planning and preparation in achieving program outcomes. From this study, we learn five major lessons:

1. Technology programs expand the role of community residents as stakeholder, end user and, most notably, knowledge creator.

2. Managerial decision-making has a significant impact on community residents' level of program participation. Guided by well-devised mission statements and objectives, program collaborators are able to adapt to changes that place short- and long-term demands on staff and resources. Therefore, investing the time and effort to identify the *context* within which community stakeholders, staff and organizational assets operate directly influences the quality and quantity of end-user participation.

3. Effective program administrators 1) seek advice and guidance from qualified telecommunication professionals and 2) make provisions for long term contracted

technical support. Programs that integrate network technologies place new demands on the range of responsibilities and skills needed by staff, especially in nontraditional performance areas. Administrators who assess and provide for their own and their staffs' on-going training and professional development enjoy faster end user and staff involvement than those who did not.

4. Program administrators should recognize the cultural and language needs of the communities they serve. Effective programs act as creative and motivational facilitators of technology adoption and provide proactive supervision to this end. Technology programs must remain sensitive to how Hispanics adopt new technologies and their concerns and attitudes toward new technologies.

5. In order to effectively recruit participants, project managers and directors should examine the media by which target populations acquire information. In underserved, economically disadvantaged populations, traditional advertisement strategies may not work and directors need to be able to focus their attention on nontraditional communication and recruitment methods. Furthermore, centers may be more successful in attracting participation when they partner with other community organizations that bring additional desirable benefits such as educational and employment opportunities.

While the ability to develop and sustain a successful public access technology program depends on many factors, the quality of the relationship between end users, program administrators, program partners and community leaders is crucial. A program's success is strengthened when relationships are created through sharing the wealth of knowledge and expertise available in every community. The programs highlighted here have achieved success in developing such relationships in Hispanic communities and we hope you will find in the pages of this report that these organizations have much more to teach us in this regard.

CHAPTER 1: INTRODUCTION

In 1837 inventor Samuel Morse transmitted a series of dots and dashes over a telegraph wire to his assistant located a third of a mile away and changed the way our nation conducted business. Today users of telecommunications are sending electronic packages of data via computer and the Internet and are creating a new digital society. Although the technology has changed, issues that challenged our nation 150 years ago regarding access to technology remain the same.

I. OVERVIEW OF STUDY

The Tomás Rivera Policy Institute (TRPI) conducted an evaluation of four technology projects providing access to information technologies[1] (IT) in Hispanic-serving organizations[2] in the public and non-profit sectors. Guided by prior research, this one-year national study was designed to evaluate the effectiveness of these projects in meeting the information needs of minority end users in general and Hispanic[3] end users in particular and in accelerating the diffusion of technology in underserved communities. The study identifies the strategies used to accomplish programmatic goals and also provides lessons learned regarding community involvement and program sustainability. Understanding these strategies and lessons will, in turn, inform the public, private and nonprofit sectors as they allocate limited financial resources to replicate successful technology programs in underserved, economically disadvantaged communities.

DIGITAL INCLUSION: PUBLIC & PRIVATE FUNDING

The National Telecommunications and Information Administration (NTIA)[4] reported in the October 2000 study *Falling Through the Net: Toward Digital Inclusion* that disparities in computer ownership and Internet access continue to exist for many Americans along the lines of income and race and stated that:

> Internet access is no longer a luxury item, but a resource used by many. … Computer ownership and Internet access rates are rapidly rising nationwide and for almost all groups. Nonetheless, there are still sectors of Americans that are not adequately digitally connected (p. xviii).

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[1] Information technology is defined as the use of computers and telecommunications for the processing and distribution of information in digital, audio, video, and other forms. See Academic Press Dictionary of Science and Technology at www.harcourt.com/def. IT is used interchangeably with network technology in this report.

[2] Title V of the Higher Education Act of 1965 defines Hispanic Serving Institutions as "accredited and degree-granting public or private nonprofit institutions of higher education with at least 25 percent or more total undergraduate Hispanic full-time equivalent student enrollment." For the purposes of this study, this definition has been adapted to provide a *guideline* for identifying other types of organizations serving Hispanics.

[3] A Hispanic is a person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race. See www.census.gov/population/www/projections/pp147.html#tr-race.

[4] "The National Telecommunications and Information Administration (NTIA), an agency of the U.S. Department of Commerce, is the Executive Branch's principal voice on domestic and international telecommunications and information technology issues. NTIA works to spur innovation, encourage competition, help create jobs and provide consumers with more choices and better quality telecommunications products and services at lower prices." See www.ntia.doc.gov/ntiahome/ntiafacts.htm.

An earlier NTIA report, *Defining the Digital Divide* (1999), found that community-based organizations such as schools, libraries and community centers often serve as focal points in providing public access to the Internet. According to the report, providing those with lower incomes, less education, or members of disadvantaged racial and ethnic groups with public access to the Internet allows these groups to "advance economically, as well as provide them the technical skills to compete professionally in today's digital economy" (p.xvi).

In response to the growing need to increase access to network technologies in underserved communities, public, private and non-profit sector organizations have sought to support innovative technology programs. For example, since 1994 the Technology Opportunities Program (TOP), under the direction of the NTIA, has supported various technology-related programs nationwide in an effort to address disparities in access. The TOP program "gives grants for model projects demonstrating innovative uses of network technologies … [and] evaluates and actively shares the lessons learned from these projects to ensure the benefits are broadly distributed across the country."[5]

TRPI's Digital Steppingstones (DSS) project was also a national effort to identify and disseminate information regarding best practices utilized by successful technology programs.[6] The goal of the multi-year project was to identify exemplary strategies used by IT programs that are helping to close the gap in access to network technologies in minority and underserved communities. Some of the more important strategies identified include developing vision, funding, collaborations, staff development and community buy-in as keys to successful programs and "identification of these strategies allows policy makers, community leaders, educators, librarians, parents and others to replicate effective technology programs in their own communities" (Macias, et. al., forthcoming, p.1).

It was within this atmosphere of public, private and non-profit sector interest in supporting the equitable expansion of our nation's information technology infrastructure that the current study was undertaken.

DISPARITY REDUCTION

Access to and use of network technologies is exacerbated by income disparities.[7] For example, as noted in *Toward Digital Inclusion*, middle-income Americans earning between $35,000 and $49,000 a year access computers in their *homes* "at far higher rates" than those earning less than $35,000 a year and households earning more than $50,000 are connecting at even higher rates. This has great significance for Hispanics because, holding other factors constant, over the past 30 years Hispanics have consistently earned less than the median for all households (Figure 1).

FIGURE 1
Comparison of Median Household Income by Race and Hispanic Origin: 1972 to 1999

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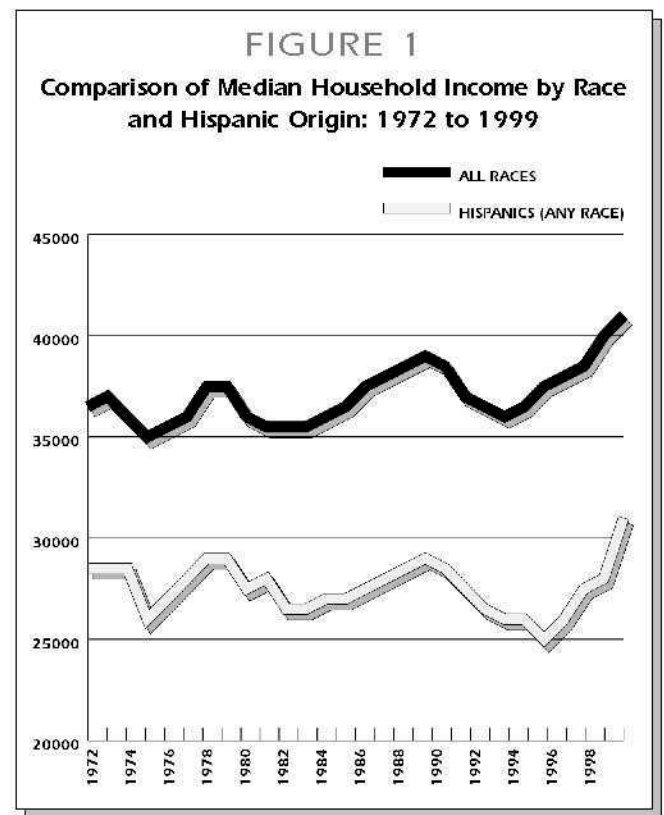
[5] Technology Opportunities Program website www.ntia.doc.gov/otiahome/top/whoweare/briefhistory.htm.

[6] The objective of this study was to determine how public access to information technology is best achieved in low-income urban areas. The research results, *Promoting Access to Network Technologies in Underserved Communities: Lessons Learned*, is available at www.trpi.org/dss/research.html.

[7] Dr. Daniel H. Weinberg, Chief, Housing and Household Economic Statistics Division. Summary of 1999 income and poverty levels in the United States is provided at www.census.gov.

For instance, in 1999 the median household income for Hispanics was $10,081 less than the median household income of $40,816 for Americans overall and, even though Hispanic households are more likely than average to have multiple adult wage earners, they still constitute a large segment of low-income populations throughout the U.S. As a result, "large gaps for ... Hispanics remain when measured against the national average Internet penetration rate."[8] Furthermore, based on Census Bureau projections, the Hispanic population is expected to demonstrate the highest rates of population growth[9] in concentrated selected areas[10] within the United States over the next 25 years, indicating a growing need for improved access to information technologies.

A DIGITAL ECONOMY AND THE CHANGING WORKFORCE

According to the Bureau of Labor Statistics, the five fastest-growing occupations are in the field of computers and information technologies (Fullerton, 1999). This growth in IT employment has shifted labor market dynamics from traditional manufacturing to technology related employment, particularly in the service sector. Technology positions requiring at least an Associate degree pay substantially higher median annual wages compared to positions with on-the-job-training not requiring an advanced degree, yet in 1998 Hispanics accounted for only 12% of community college enrollment.[11] Furthermore, a study conducted by the RAND Corporation, Increasing Hispanic Participation in Higher Education: A Desirable Public Investment (Sorensen et al, 1995) found that:

... [H]igh school completion for Hispanics aged 22-24 was only 64 percent, compared with 91 and 84 percent for whites and blacks, respectively. Although this figure for all Hispanics partly reflects ... young adult immigrants with low levels of education, the high school completion rate of native-born Hispanics (78 percent) still remains significantly lower than for other groups (p. 2).

In 1996, Latinos and Information Technology: Perspectives for the 21st Century (TRPI, 1996) revealed that Hispanics were more than five years behind their non-Hispanic counterparts in developing and using computer skills on the job. There is also a disproportionate presence of Hispanics in traditional manufacturing and agricultural jobs[12] — industries that are shrinking due to technological advances and increased economic globalization. This lack of exposure to and experience with technology severely limits employment opportunities for Hispanics. In addition, given that the Hispanic work force is projected to increase by 36 percent between 1998 and 2008, the lack of participation by Hispanics in growing IT sectors diminishes a significant supply of the nation's potential labor (USDL, 1999).

Hispanic children are also at a disadvantage in preparing to participate in a digital economy. The TRPI report Out of Reach (1997) examined computer availability and use by Hispanic students in southern California K-12 schools. TRPI researchers discovered that, in addition to a high student-to-computer ratio, computers were older and offered few multimedia capabilities. The Benton Foundation report Losing Ground Bit by Bit (Goslee, 1998), confirmed that schools with a minority enrollment greater than 90 percent had a student-to-computer ratio of 17 to 1, compared to the national aver-

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[8] NTIA 2000, p.2

[9] U.S. Census Bureau finds that half of the foreign-born population in the United States is from Latin America. The bureau reports "Mexico alone accounted for 7.0 million of the total number of foreign born in 1997, up from 800,000 in 1970. Other Latin American nations among the top 10 countries of birth of the foreign born were Cuba, the Dominican Republic and El Salvador." See website at www.census.gov/population/www/estimates/nation2.html.

[10] U.S. Census Bureau report "Coming From the Americas: A Profile of the Nation's Latin American Foreign Born" suggests that metropolitan areas more likely to be affected by Latin American immigrant settlement patterns include Los Angeles, California; Miami, Florida; and New York, and Texas.

[11] National Center for Education Statistics, "The Condition of Education 1999." See nces.ed.gov/pubs99/condition99.

[12] U.S. Census Bureau report, U.S. Hispanic Population: 1999, notes that among Hispanic workers in March 1999, the most common occupations were: service workers, precision production, craft, repair, and transportation.

age of 10 to 1. These trends continued through 1999 with only 39% of instructional rooms in the poorest schools having access to the Internet compared to 74% percent of classrooms in the wealthiest schools (NCES, 2000). Although recent reports indicate that in poorer schools the ratio of students-to-computers has improved to 9 to 1, this still compares unfavorably to the 6 to 1 ratio in wealthier schools (NCES, 2001).

II. OVERVIEW OF RESEARCH STRATEGY

Through the use of a multiple case study methodology this evaluation was designed to: (1) clarify how feasible strategies are developed to provide Hispanics more effective access to networked technologies; and, (2) identify effective program policies and strategies that can be replicated in predominantly Hispanic communities struggling to meet their information and communication needs.

CASE STUDY

A case study approach was used to evaluate and assess four technology programs. A multiple case study methodology was selected to allow for a more thorough analysis and description of a complex set of questions dealing with the use and effects of information technology and technology infrastructure on diverse learning environments, such as community colleges, K-12 schools, community centers and libraries. Case studies have been used successfully to address both descriptive and normative questions when there is no requirement to generalize from the findings. The multiple case study design was selected since it appropriately draws conclusions about a program from a study of cases within the program. According to Herriott and Firestone (1983), evidence gathered from multiple case studies is often more compelling and the overall study more robust than single-case designs simply because it provides variation. In multiple case study designs the results can be compared across program sites to reinforce the strength of the findings.

SITE SELECTION AND DATA COLLECTION

Four Hispanic-serving public access technology projects representing diversity in both geographic location and program type were selected for evaluation. The programs included the Eastside Cybrary Connection of the Riverside Public Library in Riverside, California; the Neighborhood Knowledge Los Angeles project of the University of California, Los Angeles Public Policy Institute in Los Angeles, California; the Sweetwater Community Area Network project of the Texas State Technical College in Sweetwater, Texas; and the Video Telecommunication Education program of the Queens Borough Public Library in Queens, New York. Three of the selected programs were recipients of TOP funding and two received recognition as DSS exemplary programs. Once the site selection was finalized, data was collected and analyzed from a variety of sources, including both extant and survey data. A more thorough discussion of the research methodology is provided in chapter two.
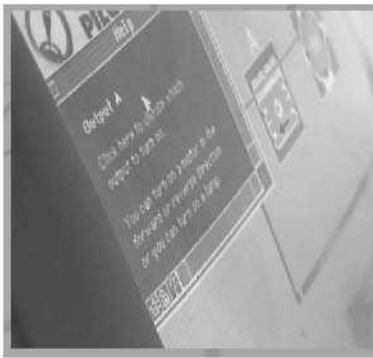
This study was designed to garner information about general practices of program administrators and participants at four sites that provide access to technology to Hispanic and other minority populations. The assessment design was based on the typology CIPP — context, input, process and product evaluation.[13] Context evaluation examines the environment in which a program functions and who the stakeholders are, both in the community and within the organization; input evaluation examines the availability of staff and material resources, planning documents and the planning process which directs the allocation of resources; and process evaluation investigates the means by which organizations adjust project objectives, gain ongoing support from partners and balance the costs and benefits of developing partnerships.

Because of limitations of resources, sample and available data, a comprehensive product evaluation was not incorporated as part of this study. Product evaluation allows us to collect information about outcomes to interpret a program's merit or success. Rather, some components of product evaluation, including a survey questionnaire to ascertain end user opinions, attitudes and experience with the programs were conducted, along with limited direct observations. A comparative product evaluation across the four programs on one or more outcome indicators, however, would have been difficult due to the non-comparability of the four program's participants (e.g. age, gender). Similarly, within each program there was little data available from participants at the point of entry and thus a pre-post approach could not be implemented. Moreover, the number of observations from each program was narrow, thus limiting the statistical power of any analysis. Finally, the most telling limitation to conducting a typical product evaluation was the fact that each of the programs was a "bundle" of program elements or activities that changed over time and across program participants. In effect, because each of the programs was in a state of developmental flux, virtually every participant received a different experience.

The last observation also suggests that context, input and process components were viable and useful in this instance. The implications for this study of conducting an abbreviated product evaluation component therefore, are not as great as one might otherwise expect. It is more useful to understand the evolving nature of these activities rather than to attempt a more definitive, summative evaluation approach. By examining these areas, we can assess how effectively each program is serving the information and technology needs of its end users.

SAMPLE FRAME

The selection of program sites was based on two criteria: (1) Hispanics comprise at least 25% of the program's target population; and (2) the program is located within California, New York or Texas in order to provide geographic diversity. Since these three states also have high concentrations of Hispanics,[14] a purposive sample of survey respondents based on a pre-defined group (i.e., Hispanics) could be carried out. Working with a TOP administrator, TRPI developed a rating system to prioritize programs that were either funded by TOP, selected as one of 25 exemplary technology programs by the Digital Steppingstones (DSS) project, or both. Programs categorized as both TOP *and* DSS received a priority rating of 1; program that were *TOP* only received a rating of 2; and programs that were *DSS* only received a rating of 3.

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[13] Evaluation typology developed by Stufflebeam and Shinkfield (1985).

[14] According to the U.S. Census Bureau, the states of California, New York and Texas have the highest total numbers of Hispanics.

Working from a list of 24 potential organizations, four programs meeting the two criteria presented above and receiving a priority rating were selected. The projects included: Eastside Cybrary Connection (Cybrary) at the Riverside Public Library; Neighborhood Knowledge, Los Angeles (NKLA) at the University of California at Los Angeles Public Policy Institute; Sweetwater Community Area Network (SCAN) at the Texas State Technical College; and, Video-telecommunications Education Program (VTC) at the Queens Borough Public Library. These programs represented both institutional diversity — encompassing community centers, K-12 schools, libraries and non-profit organizations — and diversity of funding years, so that the findings captured insights from older projects as well as those recently funded. None of these programs had previously been the subject of TOP's series of independent case study evaluations.[15]

DATA COLLECTION

Data were collected from four major sources (see Figure 2), including:

- Extant program evaluation reports, TOP records, strategic plans, technology plans, proposal documents and file notes;

- Interviews of program end users[16], staff and administrators and selected partners and community collaborators;

- Questionnaires of end users, staff and administration; and

- Direct observation of program participants.

Interviews, survey questions and site protocols were used to obtain valuable insight into program content, organizational structure and success in increasing public access to technology, as well as program replicability. The following is a brief description of site observation protocols and questionnaires used for data collection (see Appendix B).

The *Telephone Survey Protocol & Follow-up Activities Work Sheet* was developed to obtain general background information from the four selected program sites. These data included community demographics and technology infrastructure. The identification of key program contacts and availability of background data materials were also established using this worksheet. As part of the follow-up activities included in the survey protocol, the first of two on-site visits was scheduled with the project contact person.

The *On-Site Program Administrator & Project Partners Interview Schedule* was developed to gather program data via in-depth interviewing of key program administrators and project partners. The questionnaire investigated three areas of program interest: content, input and process. Questions addressed areas such as needs assessment, strategic planning, program objectives, availability of resources and organizational development.

An *On-site Observation Tool* was used to document the storage, use and display of the network technologies in use including computer controlled devices and related equipment, materials and supplies. Additionally, the observation tool allowed the evaluator to describe, through narrative and diagram, the relationship of the physical environment to the end users.

The *End-User Survey & Questionnaire* was designed to gather demographic information, as well as establish user patterns regarding use of technology and beliefs and attitudes towards technology. This survey also included questions designed to solicit information about the future needs of program end users.

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[15] See www.ntia.doc.gov/TOP/research/research.htm.

[16] The UCLA/NKLA project reaches an electronic community comprised of Internet users in various government, public, and private organizations. No single source or location of end users was available for direct observation.

FIGURE 2
Availability of Data at Collection Sites

	Analysis of Extant Data	Structured Interviews	Questionnaires			Direct Observation of End Users
			Admin	Partners	End Users	
CYBRARY Riverside Public Library	X	X	X	X	X	X
NKLA University of CA, Los Angeles	X	X	X	X	X	N/A[17]
SCAN Texas State Technical College	X	X	X	X	X	X
VTC Queens Borough Public Library	X	X	X	X	X	X

Finally, a project management plan identifying major milestones was developed to provide an overview of the project's overlapping phases. Project activities were divided into three milestones with associated deliverables. During Milestone 1, pre-assessment tasks were performed. These tasks included program selection, development and pilot of survey instruments, interview scheduling and questionnaire development. In Milestone 2, data collection involved on-site evaluations and assessments of the four technology programs in addition to the development of a web page providing pertinent information on the NTIA contract and related research on public access and network technologies. Milestone 3 required the analysis of the collected data leading to this final report, construction of a web page including electronic links to the four associated programs and the dissemination of the report to policy makers.[18]

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[17] As noted previously, UCLA/NKLA project reaches an electronic community comprised of Internet users in various government, public, and private organizations. No one major source or location of end user was available for direct observation.

[18] See www.trpi.org/top.html.

CHAPTER 3: PROGRAM PROFILES

This chapter presents an overview of each of the four projects studied and summarizes how they provide underserved communities with access to network technologies. Project descriptions were condensed from information obtained from TOP extant files, as well as interviews with program administrators and stakeholders. An examination of the impact of each of the programs on its end users as assessed through end-user surveys is presented in chapter four. An analysis of each site's policies and strategies and how they were developed, including how the sites compare with each other, also follows in chapter four.

EASTSIDE CYBRARY CONNECTION (ECC)
Riverside, California

The Eastside Cybrary Connection was established to bring library resources and network technologies to underserved youth in Riverside's Eastside neighborhood. Because there was no library service within a three-mile radius of the Eastside neighborhood and no immediate plans to build a branch library, library planners sought a unique approach to bringing library services to the Eastside. Monies received from a California State Library Services and Technology Act (LSTA) grant, a Community Development Block Grant and an Education First (Pacific Bell) grant allowed for the renovation of a storefront property in a centrally located Eastside shopping center to house the Cybrary, as well as the purchase of hardware and software and the training of employees.

The Cybrary introduces youth to computers and to navigating the Internet. This is accomplished by pairing them with a volunteer mentor who helps the student complete a "driver's training manual" introducing basic computer and Internet concepts and operations. Once the training is complete the student receives a "license" to use Cybrary resources. A community partnership also helps families buy computers for their own homes while establishing their credit at the same time.

BUDGET:

	LSTA	In-Kind	Other	Total $	Total %
Operations	$53,560	$11,656	$77,371	$142,587	75%
Salaries & Benefits	0	38,324	0	38,324	20%
Library Materials	0	10,000	0	10,000	5%
TOTAL	$53,560	$59,980	$77,371	$190,911	100%

TOP AWARD NUMBER:
Not Applicable

PROJECT DURATION:

Ongoing; opened April 1998

PROJECT PARTNERS:

East Hills Division of the Greater Riverside Chamber of Commerce;

Eastside Neighborhood Advisory Committee;

Eastside Settlement House;

People Reaching Out;

Riverside Community College;

Riverside Unified School District;

University of California, Riverside

PROGRAM DEMOGRAPHICS:

(Represents the Eastside neighborhood of Riverside only)

Hispanic 63%   **Black** 22%   **White** 7%   **Other** 8%

The population of the Eastside area of Riverside is approximately 16,000, of which 5,000 are youth under the age of 18.

PROJECT SIGNIFICANCE:

The Cybrary offers an experimental and imaginative approach by the Riverside Public Library to connect an underserved community to cyberspace through a storefront library center.

NEIGHBORHOOD KNOWLEDGE, LOS ANGELES (NKLA)

Los Angeles, California

The goal of the Neighborhood Knowledge, Los Angeles project is to help "low income community residents mobilize, network for support, and respond to both challenges and opportunities within their neighborhood".[19] In effect, the computer and Internet applications are directly tied to community development goals. For example, to respond to the challenge of building decay and neighborhood disinvestment, NKLA is developing an interactive Neighborhood Electronic Monitoring System web site that provides access to integrated databases that supply comprehensive information on community properties. Neighborhood residents are then able to monitor the City's response to housing code complaints and violations through the computerized tracking system. NKLA is also creating neighborhood opportunities by developing community asset-mapping projects in neighborhoods like Boyle Heights. In asset mapping, community members identify local resources such as churches, community groups, innovative social programs and youth activities and advertise these resources through the NKLA database.

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[19] Transcript from site visit: UCLA002SV, p.14.

BUDGET:

	Federal	Non-Federal	Total $	Total %
Personnel	$296,775	$375,445	$672,220	65%
Contractual	60,000	23,200	83,200	8%
Fringe Benefits	32,638	40,028	72,656	7%
Other	8,610	10,062	18,672	2%
Equipment	10,50	0	10,500	1%
Travel	0	5,000	5,000	½%
Supplies	3,000	4,800	7,800	½%
Total Direct	411,523	458,525	870,048	84%
Indirect Charges	88,477	72,017	160,494	16%
TOTAL	$500,000	$530,542	$1,030,542	100%

TOP AWARD NUMBER:
06-60-98047

PROJECT DURATION:
October 1, 1998 - September 30, 2001

PROJECT PARTNERS:
Advanced Policy Institute (API) at the UCLA School of Public Policy and Social Research;
Community Development Information Coalition
Los Angeles Community Redevelopment Agency;
Los Angeles Housing Department;
Los Angeles Information Technology Agency;
Los Angeles Public Library;
Southern California Associations of Government;
Western Center on Law and Poverty

PROJECT MANAGEMENT TEAM:
API Director, NKLA Director, Program Analyst, Community Technologists, Research Associates, Administrative Analysts, Assistant

PROGRAM DEMOGRAPHICS:
(City-wide demographics are used since the database component of the project can be accessed throughout Los Angeles)
White 41%   **Hispanic** 38%   **Black** 11%   **Asian** 10%
The population of Los Angeles is 3,694,820, representing nearly 100 countries and more than 25 different languages.

PROJECT SIGNIFICANCE:
The databases allow community access to vital public information, making property owners and government agencies accountable for the enforcement of housing codes. The project also enables community leaders, city staff and elected officials to identify early warning signs of neighborhood decay in order to target reinvestment strategies.

QUEENS PUBLIC LIBRARY
VIDEO TELECOMMUNICATIONS EDUCATION
PROGRAM (VTC)

Queens, New York

The goal of the VTC program at the Queens Borough Public Library is to use distance learning technologies to create an effective, interactive learning environment to improve the study of math and science. Through the innovative use of videoconferencing between the Botanical Gardens, the Hall of Science and branch libraries, the VTC program increases community access to science and math through after-school and adult education programs. The project provides math and science education to over 15,000 children in 33 library-sponsored latchkey programs, approximately 85 mentally and emotionally challenged institutionalized young adults and 10,000 adults enrolled in library basic education and literacy programs in six different sites throughout Queens.

BUDGET:

	Federal	Non-Federal	Total $	Total %
Personnel	$150,678	$297,042	$447,720	41%
Contractual	138,161	28,000	166,161	15%
Fringe Benefits	38,875	77,898	116,773	11%
Equipment	120,000	6,000	126,000	11%
Other	17,286	7,000	24,286	2%
Travel	0	13,000	13,000	1%
Total Direct	465,000	428,940	893,940	81%
Indirect Charges	85,000	125,293	210,293	19%
TOTAL	$550,000	$554,233	$1,104,233	100%

TOP AWARD NUMBER:

36-60-98044

PROJECT DURATION:

October 1, 1998 - September 30, 2000 *(extended to September 2001)*

PROJECT PARTNERS:

New York Hall of Science; Queens Botanical Gardens; Queens Children's Psychiatric Center

PROJECT MANAGEMENT TEAM:

Library

Program Director, ITS Director, Special Services Administrator, Program Coordinator, Children's Coordinator, Adult Literacy Education Specialist, Technical Services Assistant, Program Planner, Office Aide, Monitors and Trainers

Hall of Science

Executive Director, Director of Education, Instructors, Program Assistants, Explainers, Electrician, Educational Secretary

Botanical Garden

Executive Director, Director of Marketing, Director of Education, Curriculum Coordinator, Program Coordinator, Instructors

Children's Psychiatric Center

Principal, Program Coordinator, Teachers, Staff

PROGRAM DEMOGRAPHICS:

(City-wide demographics are used since the project is available throughout Queens)

White 48%   **Hispanic** 20%   **Black** 20%   **Asian** 11%

The population of Queens is 2,000,642, representing over 170 countries and 100 different languages.

PROJECT SIGNIFICANCE:

Through partnerships with the Hall of Science and the Botanical Gardens the library is able to regularly produce lively, engaging and interactive programs on a range of topics. Besides offering programs with their primary partners, the library can also offer virtual visits to museums, aquariums, zoos, or any site that has videoconferencing capabilities, even the Johnson Space Center. By combining resources, the partners in this project offer community residents the opportunity to engage in math and science activities in a supportive learning environment

TEXAS STATE TECHNICAL COLLEGE, SWEETWATER COMMUNITY AREA NETWORK (SCAN)

Sweetwater, Texas

In 1996, prior to receiving the TOP grant, the small town of Sweetwater faced a total lack of "electronic connectivity locally and to the national system and a substantial distance from those areas with such resources and expertise." The goal of the SCAN project was to create network technology resources in the rural Sweetwater area by bringing the Internet to area schools, the public library, the community hospital and city offices.

BUDGET:

	Federal	Non-Federal	Total $	Total %
Equipment	$42,227	$84,184	$126,411	40%
Personnel	28,191	73,477	101,668	32%
Other	12,413	15,797	28,210	9%
Fringe Benefits	13,698	12,524	26,222	8%
Supplies	2,273	2,845	5118	1%
Total Direct	98,802	188,827	287,629	90%
Indirect Charges	31,241	0	31,241	10%
TOTAL	$130,043	$188,827	$318,870	100%

TOP AWARD NUMBER:
48-60-960115

PROJECT DURATION:
October 1, 1996-March 31, 1998

PROJECT PARTNERS:
City of Sweetwater;
People for Progress, Inc;
Rolling Plains Memorial Hospital;
Sweetwater Independent School District;
Sweetwater City-County Library

PROJECT MANAGEMENT TEAM:
Computer Maintenance Technology Program Chair, Computer Science Technology Program Chair,
Information Management Technology Program Chair, Telecommunications Program Chair,
Network Administrator, Technician, Trainer

PROGRAM DEMOGRAPHICS:
(City-wide demographics are used since the project is available throughout Sweetwater)

White 67%   **Hispanic** 27%   **Black** 5%   **Other** 1%

The population of Sweetwater is 11,967.

PROJECT SIGNIFICANCE:
To a great extent, access to advanced networks and information technologies has increased educational and employment opportunities in this rural area. In addition, two "smart" classrooms were installed at the local high school and the local middle school. These classrooms supported distance learning applications and increased student access to the Internet.

Chapter four presents a case study analysis of each of the four sites along with some comparisons *across* sites for three areas of evaluation — context, input and process — to gain a better understanding of how these programs help meet the needs of Hispanic and other minority end users.

CHAPTER 4: FINDINGS

Network technologies are increasingly important for economic growth and social and political participation. Implementing a program that has meaning for traditionally underserved communities, however, requires much planning and sensitivity to the needs of the community at large. This chapter provides an assessment of the four program sites evaluated along three areas — context, input and process — as well as end-user survey results. The end-user results provide information about how well their needs were met by the program. Context evaluation considers the environment in which an organization operates and the stakeholders involved. Input evaluation refers to the availability of resources, as well as planning, which directs the allocation of resources. Process evaluation describes the means by which organizations adjust project objectives, gain ongoing support from partners, and balance the costs and benefits of developing partnerships.

By examining these three areas, we can assess how effectively each program serves the information and technology needs of its end users while comparisons of the four programs allow us to examine which strategies are most effective. Within each area of evaluation, we identify a series of individual strategies that the programs developed to accomplish each phase. In order to enrich the reader's understanding of these steps, we supplement our descriptions, in many cases, with examples from one or more of the four research sites.

END-USER PROFILES

The following section is based on survey responses provided by end users at each of the four program sites. Approximately twenty-five individuals participated in the survey at each site for a total of one hundred completed surveys. It is important to note that the surveys are not necessarily representative of the entire population served by each program since survey respondents were not randomly selected. For example, the Queens library offers many distance learning programs for children at branches throughout the area and at the Queens Children's Psychiatric Center (QCPC). While the surveys conducted at QCPC indicate how well the distance-learning program is meeting their needs, it is not indicative of the success of the distance learning programs throughout Queens. Nonetheless, the survey results still offer some interesting insights into the operations and impact of each of the four programs.

Overall, the program demographics indicate that all four programs are serving Hispanic end users, as well as other underserved groups, and also more affluent mainstream groups. The following section also provides some preliminary comparisons between the programs.

Overall, more than two-thirds of survey respondents were minorities, 43% Hispanic and 23% Black. Among end users the predominant language is English. The majority of survey respondents at all sites indicated that they were fluent in

FIGURE 3
Population Distribution

- NATIVE AMERICAN 2%
- WHITE 26%
- BLACK 23%
- OTHER 4%
- ASIAN 2%
- LATINO 43%

FIGURE 4
Language Literacy by Percent

- BILINGUAL ENGLISH DOMINANT 8%
- SPANISH ONLY 1%
- ENGLISH & SPANISH BILINGUAL 21%
- ENGLISH ONLY 70%
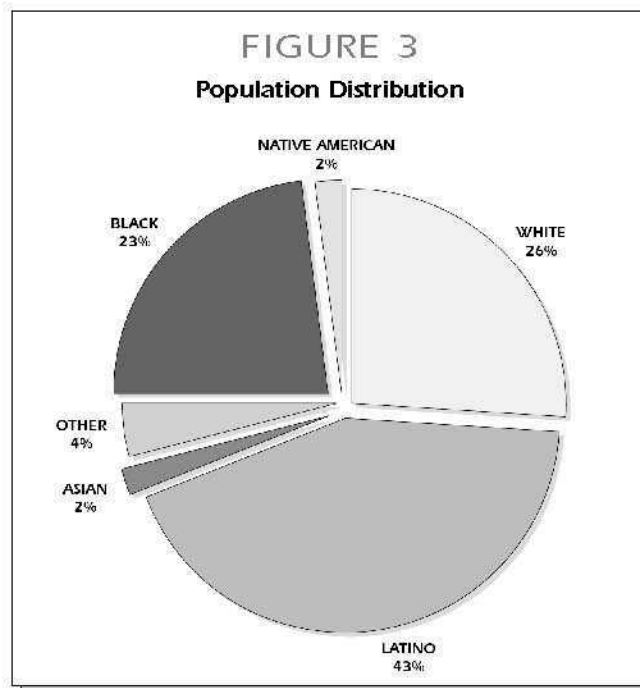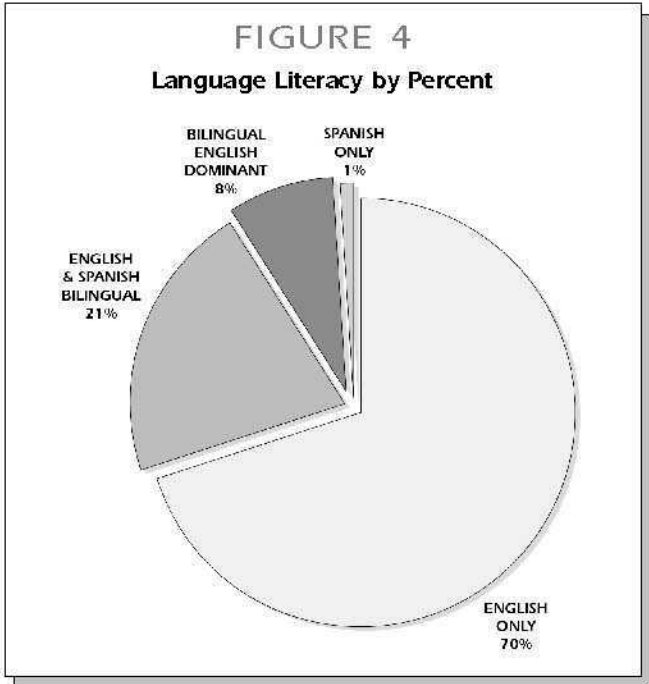
English with only one-quarter fluent in both English and Spanish. One interesting result of the survey analysis is that, based on these individuals surveyed, it is not clear if these programs are effectively serving Hispanics who are limited-English proficient. In other words, the surveys clearly show that programs serve English-speaking Hispanics, but do not indicate whether programs are able to target Hispanics with limited English ability. It is not clear if this finding is be due to limitations at the program site or limitations of this particular study.

FIGURE 5
Distribution by Age

Age	Percent
OVER 55	
50 - 55	
41 - 49	
31 - 40	
25 - 30	
18 - 24	
14 - 17	
11 - 13	
UNDER 11	

(0% 5% 10% 15% 20%)
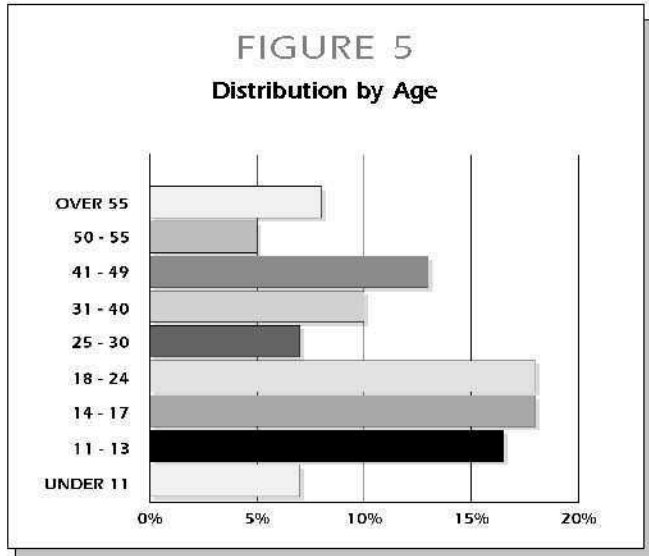
For example, the Cybrary would like to increase the involvement of the parents of youth who participate in the program so that the parents themselves can gain computer skills. Yet, program administrators recognize that in order to meet the needs of many parents the Cybrary must provide tutors fluent in Spanish. Another reason for the seeming lack of participation among Hispanics with limited English proficiency may be that Spanish language surveys were not provided. As a result, programs that serve a population with limited English skills are not reflected in the survey results because respondents were self-selected and individuals may not have been comfortable enough with their English skills to fill out the survey.

FIGURE 6
Applications of Computer Resources

Application	
RESEARCH	
WORD PROCESSING	
E-MAIL/INTERNET	
RECREATION	
HOMEWORK	
DISTANCE LEARNING	
LITERACY	
JOB SEARCH	
JOB TRAINING	
OTHER	
LANGUAGE ACQUISITION	

(0 10 20 30 40 50)
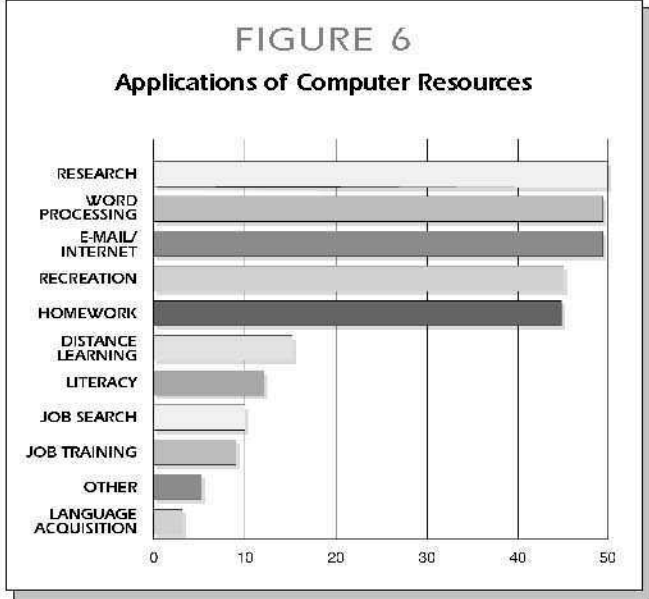
Survey results also indicate that the four programs are serving a variety of age groups, although about 4 out of 10 end users are under the age of 25 and only 1 in 10 are over the age of 50.

The most frequent applications for computer technology were research, word processing, e-mail and Internet browsing. However, depending on the population served at the project site, other popular uses for computer resources were homework help, employment related activities, distance learning, literacy and even recreation.

The remainder of this section of chapter four will compare survey data by program site, rather than aggregated, to illustrate the differences between the programs.

THE EASTSIDE CYBRARY CONNECTION PROJECT

Most of the people interviewed at the Cybrary (92% of 25 respondents) were under the age of 18, reflecting the organization's primary mission of creating technology access for neighborhood youth. A secondary goal of the organization is to include parents of Cybrary participants in technology training and this appears to be a goal still in progress with adults representing only 8% of survey respondents. Over 70% of respondents were Hispanic and the majority were low-income, representing the general demographics of the Eastside neighborhood, and interestingly only 36% of the participants were female.

TECHNOLOGY COMPONENTS

Forty-two percent of the 25 users report having access to a computer at home; however, only 36% have Internet access at home. This pattern is typical of most people at the sites studied where computer ownership is not always associated with access to networked resources. It is interesting to observe that more than one-third of participants have computers and Internet connectivity at home. This suggests that public access centers provide valuable services for those

FIGURE 8
Distance Participants Travel to Cybrary

FIGURE 7
Home Computer Ownership and Internet Access
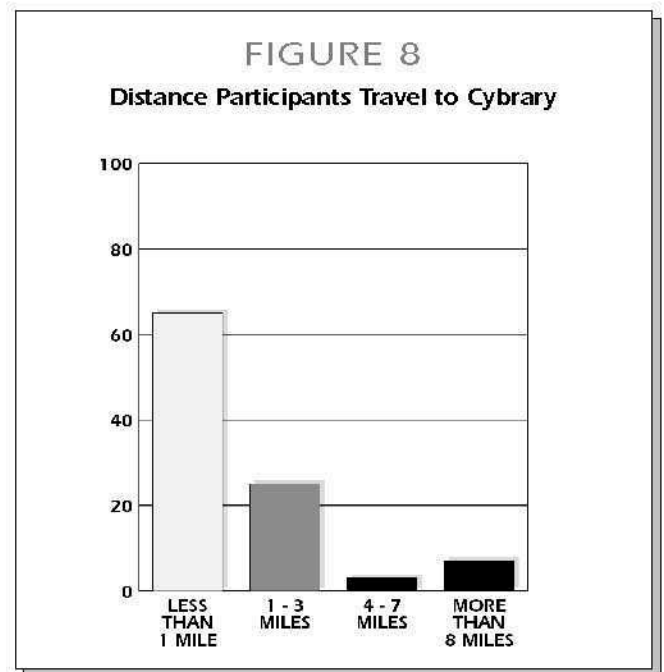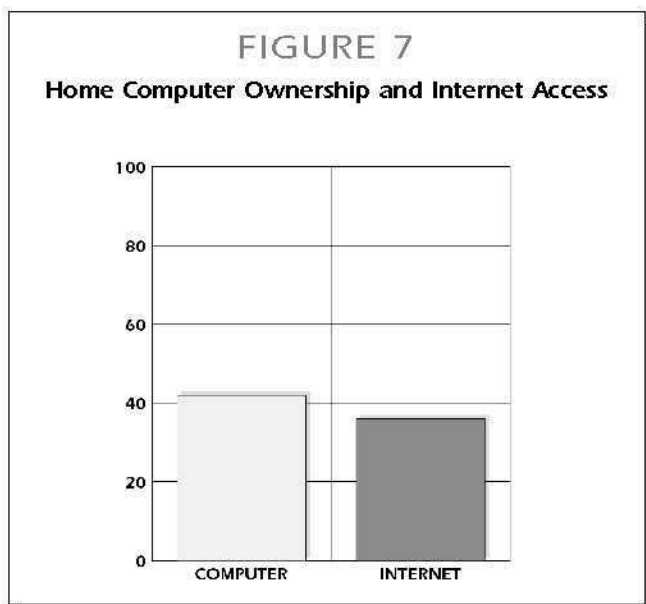
who already have computer and Internet resources at home. These services may include high-speed connectivity, specific applications and resources or training.

Although fifty-two percent of respondents indicated that they first learned to use a computer at school, the Cybrary clearly plays an important supplementary role with twenty-eight percent of respondents reporting that they first learned to use a computer at the Cybrary. This is important because it is often assumed that schools offer the most important point of contact between underserved populations and technology. However, the respondents surveyed at the Cybrary demonstrate that there is a need for community technology services in addition to those provided by schools.

The Cybrary certainly acts as a *neighborhood* resource with nearly 70% of users traveling less than one mile to access the program. This is reasonable, since most of the participants are children. Once there, participants engaged in a variety of computer activities. Internet and e-mail were the most popular activities at the Cybrary, with 84% of individuals participating. Another two-thirds of participants reported engaging in word processing, research, homework help and recreational applications. The average user indicated that they could accomplish their technology goals to a great extent or at least most of them. In general, while the average user was

satisfied with the technology, some voiced concern about the availability of training and hours during which s/he had access to the center. In addition, some felt that technology support was lacking, twenty percent reported the need for more computers and twenty-five percent stated that more space was needed. It is important to note that nearly seventy percent of Cybrary participants found out about the program through the recommendation of a friend. Clearly, for the Cybrary, word of mouth is extremely important.

NEIGHBORHOOD KNOWLEDGE, LOS ANGELES

A core feature of the NKLA program is the idea that technology can be used as a tool in community redevelopment. In contrast to the Cybrary, the goal of the NKLA program is not to set up new points of access to technology, but rather to work through existing access points to bring *new technology* to the community. The NKLA program has developed two major technology applications to aid in community redevelopment. First, is the creation of a database that integrates data from numerous public sources to provide information on housing and property conditions within the city of Los Angeles. The purpose of the database is to allow neighborhood residents to monitor the City's response to housing code complaints and violations through a computerized tracking system. Second, the NKLA program allows neighborhood residents to be not only consumers of information but also *creators* of information through a project of asset mapping of local neighborhoods. As one NKLA leader said, "we're trying to [provide] information that is useful for people, for the community."[20] NKLA does not target any single population for participation in the program and, as a result, participants include not only neighborhood residents but also representatives from community non-profit organizations, local government agencies, researchers, students and anyone interested in community redevelopment. Because of the diversity of the participants, surveys conducted among individuals using the NKLA technology at one Los Angeles community center reflect this diversity of participation and cannot be generalized to representative a

single population using NKLA resources. Instead, from this survey two distinct groups are identified and will be discussed separately.

The first group is comprised primarily of older, white male, middle-income professionals. Nearly ninety percent of this group is over the age of 30, three-fourths are male and almost two-thirds are white. Eighty-seven percent classified themselves as professionals and all had a minimum of a bachelor's degree with seventy-five percent having a postgraduate degree. All of the members of this group earned over $30,000 a year and seventy-five percent have an income between $50,000 and $75,000 a year.

The second group is comprised primarily of young, minority female, lower-income students. Over sixty percent of respondents in this group were under the age of 30, three-fourths are female, fifty-four percent are Hispanic and thirty-eight percent are Black. Sixty-six percent classified themselves as students compared to twenty-five percent who are professionals. Nearly eighty percent reported having some college education, an associate degree or a bachelor's degree and only eight percent had a post graduate degree. Overall this group earned less with fifty-four percent reporting earnings of less than $30,000 a year.

TECHNOLOGY COMPONENTS

This first group exhibited the largest percent of computer ownership at any of the four program sites studied. Over 87% reported that they had a computer at home and in this case, all who owned computers had the Internet at home. Most of these individuals acquired their computer skills at work (57%) or at schools (28.5%) while the remainder learned to use a computer at home. This is not surprising considering that for this age range computers were not widespread when they attended school. More than two-thirds of end users traveled more than four miles to access the technology at this community center. Once there they were engaged in a variety of computer-centered activities. The most important activity was research (62.5%), followed by word process-

ing (50%) and e-mail/Internet (37.5%). Survey respondents also used computers for homework help, job training, distance learning and recreation.

The average user in the first group felt satisfied with their ability to achieve their technology goals at the program site. All were satisfied with access and training, though less satisfied with the level of technical support they received and the hours during which the facilities were available. Nevertheless, all respondents stated that they would recommend the site and the program to others. The majority of individuals in this group found out about the facilities and the program from work or Internet searches (62.5%). While the main benefits of the program were cited as access to network-based data and equipment the areas cited as needing improvement were access to more *powerful* databases and more *powerful* equipment, perhaps reflecting the needs of a more technologically sophisticated group of end users.

Among the second group of survey respondents, sixty-six percent had a computer at home, but only 42% had connections to the Internet. Like some of the other young end users at other program sites, a majority of this group learned to use computers at school (66.67%) compared to a relatively small percent learning to use computers at work (16.67%) and at home (8.3%). About two-thirds of respondents traveled less than four miles to access the program site and once there the primary focus of this group was homework and research (58%), followed by word processing and Internet access (42%). The average end user reported that they could mostly accomplish their goals using the available technology. End users were generally satisfied with the technology resources, training and hours of availability, however like most of the other programs, technical support was considered somewhat lacking. Among this group only two-thirds stated that they would recommend the program to others.

This second group of end users found out about the program primarily through school (58%) as well as friends and community outreach programs. Access to the Internet and the availability of certain hardware and software generally were cited as the benefits of this program while complaints tended to focus on the need for *more* hardware and software.

THE QUEENS BOROUGH VTC PROJECT

The goal of the VTC project is to provide math and science education to children in after school programs and to adults via basic education and literacy programs. Since the VTC project serves two distinct populations, surveys were collected from two sets of end users: children at the Queens Children's Psychiatric Center and adults participating in a distance learning program at a branch library.

Adult Distance Learning

The adult distance learning program is designed to teach basic skills and improve literacy and the survey respondents reflected the population the library is trying to serve through this program. As a whole this particular group was comprised of older, less educated, low-income females. Almost all participants were over the age of 40 and over eighty-five percent had only a Junior High school education or less. All respondents were female, three-quarters were black and most were earning less than $20,000 per year. Nearly all considered themselves students.

Children's Distance Learning

The key difference between the second set of VTC end users surveyed and the adult program described previously was age. While this group was school age it was also predominantly minority and low-income. All of the participants were children under the age of 17 and nearly evenly distributed between females (53%) and males (47%). Over three-quarters of respondents were minorities, fifty-three percent Black and twenty-four percent Hispanic and all indicated that the family income level was less than $20,000 a year.

TECHNOLOGY COMPONENTS

Among surveyed adults none reported having a computer or Internet access at home. Thirty-seven percent of respondents indicated that they had no prior training or knowledge of computers and fifty percent stated that they first learned to use a computer at the library. This is quite different from

FIGURE 9

Location Where Participants First Learned to Use a Computer
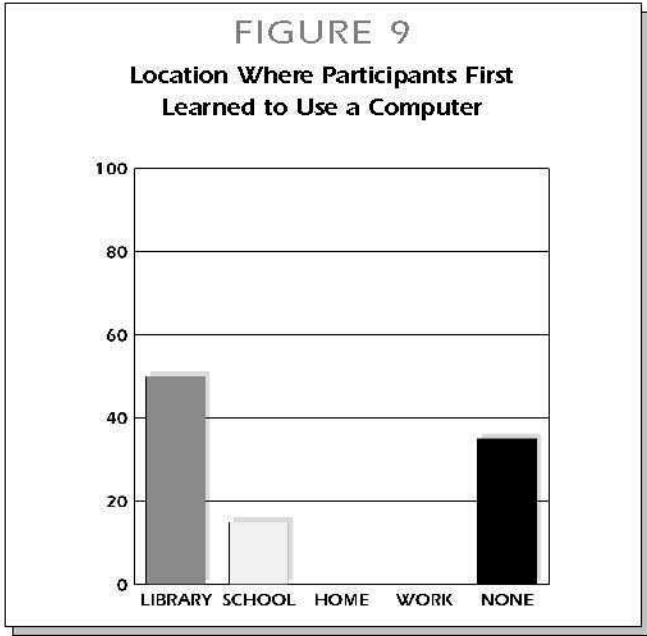
the Cybrary and SCAN programs and the Queens Borough library seems to be serving an important role in teaching computer literacy to an underserved adult population. As with the SCAN project, adults in this program are willing to travel farther to access technology. Eighty-eight percent of the participants surveyed traveled more than four miles to get to the site. Distance learning programs were the primary activity for which these individuals used the library technology resources and none reported using the available computers for research, Internet communications, homework help, job training, etc. On average end users felt that they were able to accomplish their desired activities using the available technology and over three-fourths felt that the library provided adequate training in using the technology. However, many end users were dissatisfied or unclear about hours of availability, technical support and general access to technology. This dissatisfaction or uncertainty may in part explain why survey respondents are not using available technologies beyond the distance learning program.

The adults surveyed seemed enthusiastic about the distance-learning program and many indicated that they would like to see the program expanded to include information from health services to taxes. They valued the opportunity to communicate with the instructor and wanted more instructors, more time in the classroom and even more opportunities to interact with the distance education class leaders.

Overall participants seemed satisfied with the program and almost all said they would recommend this program to others.

While the survey responses from children at the QCPC are not fully representative of children served by the Queen's distance learning program, they do offer insight into the effectiveness of this particular aspect of the VTC program. Among the children surveyed, almost forty-four percent stated that they had a computer at home but none of them were connected to the Internet. An overwhelming 95% of the respondents said they had learned to use computers at school, similar to other programs working primarily with youth, such as the Cybrary. Although the stated goal of the partnership between the Queens library and QCPC is to use technology to provide distance learning programs for institutionalized children to virtually "visit" other places such as zoos or museums, the responses given by those surveyed did not reflect this goal. Most respondents stated that they primarily used the available technologies for word processing and recreation or entertainment and most did not mention the use of distance learning, information gathering, communication or research. However, it is not clear from the survey data whether this discrepancy is due to difficulties in implementing distance learning at the QCPC or whether the

FIGURE 10

Applications for Computer Resources
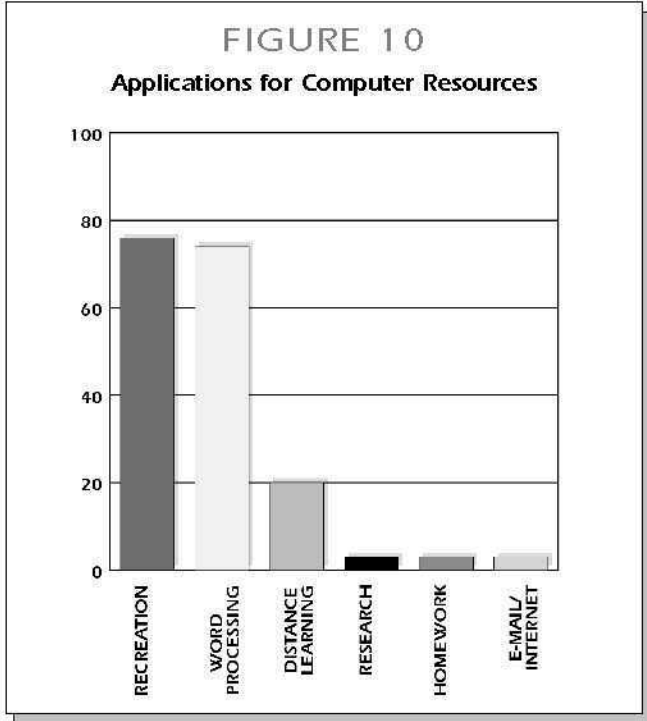
children were not instructed to think about their technology use specifically in terms of the distance learning program when the survey was administered. Overall, most children stated that they were satisfied with their technology training, access to different technologies and hours of availability and overall respondents felt that they were mostly able to accomplish their goals, such as word processing, by using the available technology.

It is likely that expectations about the use of technology are shaped by the unique circumstances of these children. For example, they rarely expressed the need for faster computers or more space in a computer lab. They never mentioned the need for Internet and electronic mail either. Instead, their desires focus on having access to more computers and simple applications such as word processors. There is a general desire for new programs, without being specific about the type, and for new games and CD-ROMs.

THE TEXAS STATE TECHNICAL COLLEGE SCAN PROJECT

The SCAN project was designed to bring network technologies to numerous locations in the Sweetwater area, including the local hospital, library, middle and high schools and city offices. The goal of the SCAN project was much broader than the other projects reviewed. For example, while SCAN sought to bring Internet connectivity to the community at large, the Cybrary and Queens/VTC created programs specifically for youth and NKLA focused on the issue of housing conditions in low-income areas. However, because the impact of and population served by computer technology and Internet connectivity varied between SCAN sites, surveys were collected from two sites, the Sweetwater Library and the Rolling Plains Hospital, thereby describing how two different groups were affected by the SCAN project.

Sweetwater Library

While the public library is a community institution, the demographics of the technology end users surveyed at the Sweetwater Library did not reflect the demographics of the community as whole. This was due to the nature of the data collection in which survey respondents were self-selected. Those who participated in the survey were mostly young, with sixty-one percent reporting that they were between the ages of 18 and 24 and eighty-three percent stating that they were students. Furthermore, fifty-six percent of respondents were Hispanic, compared to a citywide Hispanic population of 27%. Educational level reflected the fact that most respondents were students, with fifty percent attaining a high school diploma or less and fifty percent attaining some college or an associate's degree. Finally, both males and females were nearly equally represented among respondents and income level was fairly modest, with fifty percent earning $30,000 or less per year.

Rolling Plains Hospital

Because the survey was administered only to health care professionals at this site the demographics of survey respondents at the hospital are quite different from that of library respondents. Respondents were generally older and better educated with a higher annual income, compared to respondents at the library. Eighty-eight percent of respondents had *at least* some college or an Associate's degree, no one was below the age of 25 and nearly ninety percent reported an income of over $30,000 per year. On the other hand, respondents were less diverse than those at the library. Three-quarters of respondents were female and over eighty-five percent were white.

TECHNOLOGY COMPONENTS

Nearly seventy percent of SCAN survey respondents reported that they had a computer at home, but only forty-five percent had Internet access at home. This differentiation may indicate that public access points not only provide technology access for those who do not have computers at home, but even for those who have computers at home but prefer the high speed Internet access available at libraries, work or schools. Schools, especially, are important points of access to network technologies as indicated by almost sixty percent of respondents who first learned to use a computer at school. Through the SCAN project, Internet connectivity is

FIGURE 11
Home Computer Ownership and Internet Access

(Bar chart showing percentages, y-axis from 0 to 100. COMPUTER bar approximately 62, INTERNET bar approximately 50.)
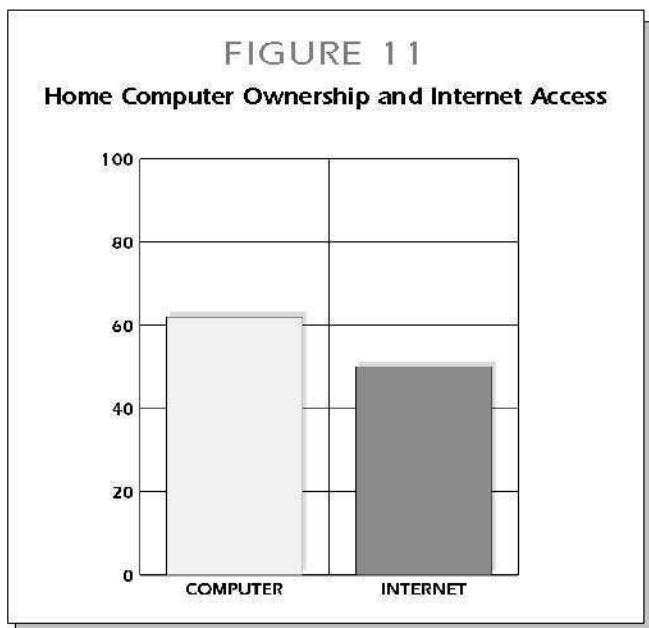
provided to area middle and high schools and thus meets a great need. Among library end users, over half learned about the available technology resources through their school, while end users at the hospital were made aware of the technology through employer presentations and from co-workers.

Prior to the SCAN grant, Internet connectivity in the Sweetwater area was available only through a dial-up

FIGURE 12
Applications for Computer Resources

(Bar chart showing percentages, y-axis from 0 to 100. E-MAIL/INTERNET approximately 60, RESEARCH approximately 57, HOMEWORK approximately 38, WORD PROCESSING approximately 24.)
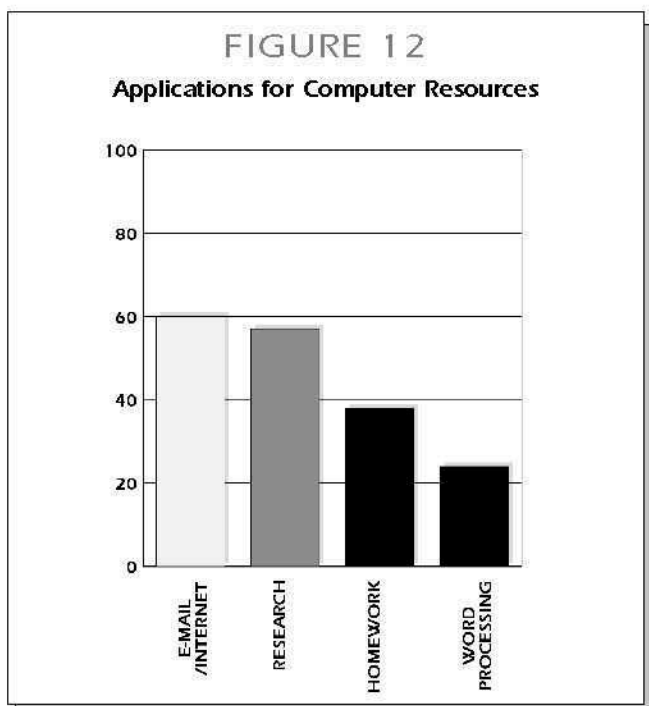
modem and, because Sweetwater is a rural town, until recently that required a long-distance phone call. Despite the difficulties in accessing the Internet in rural Sweetwater, the percent of survey respondents who had access to the Internet at home was higher than Cybrary participants living in a metropolitan area. However, this is not surprising if one looks not at how Internet connectivity is achieved but rather at the ability to pay for Internet connection at home: the rate of poverty in Sweetwater is much lower than in the Cybrary's Eastside neighborhood.

Participants engaged in a number of activities using computer technologies. Internet and e-mail were popular with 66% of users, followed by research (62%), homework help (48%) and word processing (34%). The availability of training and technical support was considered satisfactory by fifty-five percent of respondents and an overwhelming 80% felt that the facility was open enough hours to use the computers. Overall, 86% said that they would recommend using the available computer resources to others.

Building upon the preliminary comparisons discussed in this section, the remainder of this chapter develops a more extensive cross-site analysis of all four programs by focusing specifically on the findings and lessons learned from three phases of each program's development - context, input and process. Context considers the environment in which an organization operates. Input refers to the availability of resources, as well as planning, which direct the allocation of resources. Process describes the means by which organizations adjust project objectives, gain ongoing support from partners and balance the costs and benefits of developing partnerships.

PROJECT ANALYSIS

A cross-site analysis of the four technology programs was conducted focusing on context, input and process evaluation. Context evaluation defines the institutional context, target populations and needs to be met by the project in order to judge whether the proposed objectives are sufficiently responsive to the assessed needs. For the purposes of this study, context relates to the extent to which needs assessments shed light on the unique information and com-

munication needs of Hispanics, including linguistic, cultural and socioeconomic contexts that may be significantly different from those in which non-Hispanics are situated. Input evaluation concerns issues such as procedural designs for implementing the program strategies, budgets and schedules, as well as identifying and assessing system capabilities by thoroughly evaluating extant planning documents. Particularly relevant are questions regarding whether the human and material resources committed to the project are sufficient to implement it effectively; whether the project is feasible relative to the desired outcomes; and, whether the support for project strategies and schedules was broad and robust. Finally, process evaluation involves the identification of defects and strengths in procedural design or implementation, as well as recording and judging key procedural events in the life of the project. This may include resilience of the staff to changes affected by the program; the extent of organization change and staff buy-in to the project; the efficiency and effectiveness of programming decisions; the alignment of program implementation to strategic goals; and, the extent and relative success of mid-stream adjustments brought about by unforeseen exigencies.

Through the evaluation of these three areas, TRPI was able to identify key strategies developed by the four programs to effectively meet the information and communication needs of their end users. Each strategy is listed below in italics and followed by specific examples.

CONTEXT: STAKEHOLDERS, NEEDS ASSESSMENTS AND INSTITUTIONAL BACKGROUND

Program leaders provided initial vision of Internet connectivity. Lead agency administrators recognized a communication void in their community that could be filled through network technologies. Access to information was perceived by the organizations as valuable to their community members. For example, Queens Borough Public Library

sought to use video telecommunication technology to reach physically and socially isolated youths:

> The goal of the project is to demonstrate how new video-teleconferencing technology will enhance the value of interactive presentations and affect economies of scale (TOP/BVCT application file/ March 1998, p. 1).[21]

> Since many immigrants to Queens come from cultures where libraries and museums are seen as for the elite only, this project should break down this stereotype (BVCT/Application/March 1998, p. 2).

Queens Borough Public Library is committed to the use of information technology for outreach and has government and foundation funding to support that commitment. By contrast, the Cybrary has had to prove its vision and viability before being funded by local government.

The Riverside community had been undecided for some time as to how to serve a large, low-income Hispanic population on the east side of town. Librarians at the Riverside Public Library took a creative approach.

> [O]ur goal was to take the library to them … in a modern way, rather than the book mobile. To use technology and computers and to link them up with library resources (RCPL/001SV/p. 2-3).

The technologies deployed by the two libraries were vastly different. The TOP grant supported the broad scope of the Cybrary's mission to create an electronic learning environment for youth who do not have computers at home and to teach them how to use information technology to access a host of reference materials. The Queens program sought to utilize new video telecommunications interactive technology to deliver science and math programming to specific audiences. The Cybrary program was *one-on-one*, tutor and student constructed, whereas the Queens program was designed to reach groups of students and young adults. In addition to the differences in media and audi-

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[21] The following initials were used when referring to interview transcripts or extant data. Numbers following the citation identify tape/transcription page number: *UCLA*: University of California, Los Angeles; *NKLA*: Neighborhood Knowledge Los Angeles; *BVCT*: Queens Borough Public Library, Program Services Department, Video-telecommunications Education Program (VTC); *TSTC*: Texas State Technical College, Sweetwater Community Area Network (SCAN); *RCPL*: Eastside Cybrary Connection (Cybrary), Riverside Public Library, Riverside, CA; *TOP*: Technology Opportunities Program (extant data only).

ences, the two technologies were very different in the learning skills used and outcomes sought. The Cybrary program fostered self-directed learners who use analytical skills. The Queens project was partly intended to make isolated populations aware of the worlds of math and natural science and partly to test the new interactive technology. In both of these cases, the context, the current situation of the institution, had great bearing upon the use of funds. Queens is a mature, well-funded institution that has already deployed an extensive computer based network and has training programs and labs with tutors in place while the Cybrary is still developing. However, each program in its own way operates from the same library spirit of reaching out to populations who are isolated from services largely because of their unfamiliarity with libraries and the English language. Another point of similarity in vision between the two library programs is that they are both directed toward underserved youth and young adults who are most threatened by a widening gulf in society's adoption of new information technologies.

Community leaders in Sweetwater, Texas identified and sought to close a communication void by using the burgeoning Internet to establish links between public agencies, community residents and the Internet.

> We had a common vision of not just making the community connected by making it … a center and a model for what could be done in rural areas using modern telecommunications technology. The technology was just a vehicle (TSTC/SW002PSV/p.2).

In designing the Neighborhood Knowledge Los Angeles program, directors at UCLA recognized the role of public technology centers in providing points of access in low-income communities and the necessity of working through established public access points to make their database available to the community.

> The LA Library … serves as a critical information source point for local residents with each branch, often providing the only link to the World Wide Web in low income communities (TOP/UCLA application file 980475/p. 5).

In all cases, networked technologies were regarded as viable instruments to meet the information and communication needs of a community.

Programs relied on formal and informal methods of needs assessment. Needs assessments usually followed the organization's vision to fill the perceived void. All of the program sites performed a needs assessment using both formal and informal inquiry, as the response from leaders of the UCLA project indicate:

> We certainly did [a] needs assessment … [including] focus groups [and] … a lot of different meetings in setting up the proposal with different groups … we did it – but not in a formal sense (UCLA/001PSV/p. 14).

The Riverside Public Library director went to the community for input about their information and communication needs:

> I went to some ministers in the Black and Hispanic churches, among others. I talked to principals of elementary schools and the Eastside Neighborhood Advisory Committee, which are the official operators of the Community Development Block Grant Program and the Chamber of Commerce Eastside Division. … [W]e listened to what the people said they wanted and we gave them the best that we could afford (RCPL/Cybrary001SV/p. 9-12).

Community leaders in Sweetwater, Texas also characterized the nature of their needs assessment as an informal process:

> We talked to partners about the possibilities. … what their needs were and the possibility … that we could establish a community Internet. And at the time there was nothing like that in this area. So we really felt that Sweetwater needed that for a lot of reasons … (TSTC/003SV/p. 3).

Dr. Robert Musgrove, who created the vision for the SCAN project, offered some lessons on the importance of needs assessment in implementing a program. Dr. Musgrove acknowledged the value of sharing his vision for the pro-

gram, especially when the community recognizes the need for an IT program, without grasping the full potential of technology. Conducting a needs assessment is also important because it gives community members the opportunity to provide input on how they envision their use of technology and allows the program to be built around those specific needs. Finally, Dr. Musgrove cautioned, "It's critical to make good choices with the technology. It's also critical to look beyond it. Begin ... with the end in mind: [w]hat fundamental changes or improvements do you intend to make with this [technology]? You can't just be connected, there has to be something more" (TSTC/SW002PSV/p.p. 12-13).

Although all programs differed in focus and outreach service, a summary of needs assessments reveals that program leaders share common concerns of using communication technology to supply a community service to a diverse population. For instance, program leaders at UCLA sought to provide complex public data via the Internet that was genuinely meaningful to their target audiences, as well as the means for using that data:

> The project directly addresses what are the two most critical elements in realizing the full potential of these technologies: (1) the need to reinterpret and present complex public data in something that is genuinely meaningful to community residents; and (2) the need to provide grassroots training and education on technology and urban research in a way that actually empowers community residents (TOP/UCLA Applicant file memo dated 8/13/98).

Likewise, the Borough of Queens is composed of 178 different ethnic groups. Surveys and anecdotal information were collected from residents and community representatives to inform program development.

> We serve the ... [most diverse population] in the United States. So no matter what we do, we're going to involve minorities in our programs. ... [W]e get anecdotal information from the people that are working on ... over 10,000 free programs a year. ... Everything from performing arts, cultural programs, to self-help ... so there is a lot of feed-

back. ... [Also] every four years ... we commission an outside polling organization to ask structured questions ... in English, Chinese, Korean and Spanish, so we get a broad swath of people involved. [W]e want to see ... how well they perceive us, but also ... [in] which ... programs [they participated] (BVCT/007SV/p. 27-28).

Important lessons from prior unrelated project efforts were used to inform current public service endeavors in the needs assessment phase. Program administrators commonly perceived the use of information technology as a strong, pliable and probable solution to an old problem:

> We don't see the Internet as a substitute for the library, but we see it as a means of linking resources to individuals. And acquainting them not only with the fast world of electronic information sources, but also with the print resources in the public library (RCPL/001SV/p. 2-3).

During the interviews, many of the program leaders also stated that they considered that the perceived need to continuously advance their communities was achievable through association and connection with "modern services" via the Internet:

> We went around to the major groups, the Chamber Board, the City Council, School Board, School Administration, People for Progress Board and shared with them the vision that was possible. It didn't require much of a sales job. When they saw what was available, they were pretty aggressive. They realized that if we didn't do it we would always stay in the backwater so to speak (TSTC/SW002PSV/pg. 5).

Needs assessments were used to refine project concept and objectives. Program leaders developed concrete steps to implement the program based on needs identified within the community. The following became part of Riverside Public Library's Strategic Plan:

> Goal #4 Library customers will be effective consumers of electronic information; Objective A: The

Library will provide one workstation per 2000 residents; Objective B: Staff will provide 5,000 positive assists with electronic searching annually; Object C: The concept of the Cybrary, an electronic link to libraries, will be incorporated into all new facilities (RCPL/Riverside Public Library Strategic Plan 2000-2003/ June, 1999/ p. 6).

Queens Borough Public Library developed collaborative partnerships with the New York Hall of Science, the Psychiatric Center and the Botanical Gardens that would advance program objectives and add unique contributions.

> [T]he three organizations [are] … very different organizations [from] the Queens Library. We, by far, have the largest outreach. But they have special programs that we don't have, like the Botanical Garden … with plants and lectures and things. They may have 10 or 15 people attend a lecture, but … we can beam … a virtual lecture to a lot of people watching at the same time; they can ask questions. Through our branches, we leverage the value of that program many, many, many fold using this advanced technology (BVCT/007SV/p. 15).

Planning at all four programs was extensive. Several iterations of a plan allowed for the refinement of the project scope to take advantage of collaborations with other organizations in the community that resulted in better meeting the needs of that community.

Community stakeholders were involved as collaborators. Program partners worked jointly in a community endeavor. They held a common purpose in service-oriented outreach and were committed for the long term. Most partners were committed to the project as part of a global community outreach supporting lifelong learning opportunities. The Riverside effort was typical:

> [F]rom this collaborative, in addition to representatives from the Eastside Settlement House, People Reaching Out and the Eastside Neighborhood Advisory Committee … the Eastside Cybrary

Connection Advisory committee was formed during the needs assessment process and project concept development (RCPL/Application [LSTA 6] dated July 11, 1997/p.4).

Within the stakeholders group, a lead organization acted as the main outreach and technical facility, identified and performed specific tasks and provided continued support and leadership:

> The lead organization in the project is the UCLA Advanced Policy Institute (API), the outreach and technical assistance arm of the UCLA School of Public Policy and Social Research. API organizes and hosts strategic conferences and provides technical assistance (e.g. Geographic Information System mapping, data analysis) through its Information Technology Center (ITC), home of the NKLA project (TOP/UCLA application file 980475/p. 5).

Collaborative partnerships and the degree of participation varied but, as in UCLA's case, all partnerships added significant value to the program through the lead agency:

> The Community Development Technologies (CDTech) Center is an applied research training and technical assistance center based at Los Angeles Trade Technical College and provides a wealth of information services for community development corporations, public agencies and community residents. … The Southern California Association of Governments (SCAG) is the regional council of governments and has sponsored a series of NKLA technology training workshops aimed at expanding affordable housing supply in the region; The Western Center on Law and Poverty (WCLP) is a policy organization that sponsored UCLA research on the relationship between affordable housing, jobs and welfare reform, which will be presented on the NKLA site (TOP/UCLA application file 980475/p. 5).

Community members had many roles as program stake-holders. The opportunities for involvement varied from participating on committees to formal organizational collaborations.

Program became an agent of change. Program partners believed that connecting their communities to a digital network would make a difference in the quality of life for their end users. However, project directors at UCLA found that they needed to train users more than they originally anticipated because "just providing the information is not enough and … it's a long, long process to get people to use things and to understand it" (NKLA/UCLA002SV/p.5). The enthusiasm for those involved with this project was based on the potential that emerged for empowering people:

> Powerful people in the city have databases that portray one image of the community. … [but] people at the community level are not "information-less." It may not be digitized, but they have information that's very relevant, as these youth do, about what kind of services they need, what kind of organizations, what kind of institutions. The question then is creating shared communication where the community is articulating its information and developing better decision making, planning and actions based on that (NKLA/UCLA002SV/p.10).

Partners often acted as both producer and receiver of shared products from which the other partners could draw:

> [F]our premier institutions in the Borough of Queens (Queens Borough Public Library, New York Hall of Science, Queens Botanical Garden and Queens Children's Psychiatric Center) [serve] as partners to deliver science and math learning experiences through innovative use of video teleconferencing (TOP/QBPL application file/Executive Summary dated March 11, 1998).

Input from minority community groups was integrated into the development process. Program leaders sought input from community residents to help shape program concept and development. Input from the community was received through community representatives or civic groups aware of residents' needs. Community representatives became the "voice" for residents.

> … [P]redominantly Latino and African Americans have been involved in shaping how this website has turned out. … Our strategy has been to work through existing access points, computer technology centers, libraries and different places like that and to support those. We were able to raise funding from Microsoft and actually put in twenty computers — they went to two organizations in Vernon Central (UCLA/NKLA001PSV/p.8-9).

INPUT: STRATEGIES, PLANS AND FEASIBILITY

In the area of input, program objectives were identified by evaluating planning documents to assess whether system resources were sufficient to meet the demands of effectively implementing the program. Although the four organizations differed substantially in what these missions were, several trends were noted across the four programs at the organizational level:

1. In order to achieve program outcomes, a specific interest group was targeted, e.g. community development or after school youth programs.

2. Purposeful activities were designed linking users to appropriate resources in order to improve their current socioeconomic status.

3. End-user access was provided at no cost in order to encourage maximum participation.

4. Project activities were designed to attain long-term impact on end users.

5. Goals were developed to achieve both utilitarian and idealistic outcomes.

6. A marketing strategy to increase community participation included using a variety of media.

In all cases the resources committed to the project were integrated as part of careful planning to guide program development. While projects were feasible relative to the desired outcomes and support for the strategies and schedules was broad, unanticipated expenses were a common confounding factor in meeting program goals.

A strategic plan and mission statement drove program development and led directly to comprehensive program objectives. Long range and lateral plans up to 10 years were developed. Audience and specific outcomes, often multiple, were identified. Emotive and cognitive program value results were included as part of the necessary program outcomes. The strategic plan took into consideration the current end-user status, the barriers to full participation in community activities and life, and the means or provisions by which they would overcome barriers. For example, the Cybrary's mission statement defined quality of life enhancing goals that network technologies could be used to achieve:

> Riverside in the year 2010 will emphasize opportunities for all its diverse residents to receive effective education from early childhood through college; to pursue life-long learning; to find satisfactory employment; and to enjoy a variety of cultural and recreational experiences (RCPL/The Riverside Public Library Strategic Plan 2000-2003/ June, 1999/ p. 3).

The strategic plan and mission statement were flexible to accommodate a variety of community needs. Program objectives clarified the needs and coordinated the efforts of the lead agency and collaborative partners. Integration of technical and administrative systems established continuing support for network technologies by the lead agency.

> Residents will be able to view comprehensive property level data such as code violation complaints, tax delinquency and utility liens, etc. at the NKLA website ... in order to: (1) pinpoint disinvestments, (2) call for coordinated action, and (3) monitor responses. NKLA will also assist residents in building upon community strengths by enabling

the public electronically to map neighborhood assets e.g. schools, libraries, religious organizations, nonprofit organizations and archives of community art and history (TOP/memo 980475 dated August 1998).

Partners shared program objectives. Objectives encompassed all facets of program from administration to end user interface. An advisory committee provided oversight of future program development. Partners provided active program support within their interests and abilities and acted as content experts in selected fields of study.

Partners acted in one accord and saw their actions as part of a strategic community alliance. Supportive actions included valuable asset sharing; however, shared assets were sometimes tenuous. Support included intangible resources such as positive attitudinal buy-in by administration and staff at both the lead agency and partner sites.

> The physicians and staff of Rolling Plains Memorial Hospital will eagerly participate in a program that makes it possible for us to have on-site availability and access to a wide range of medical, clinical and business information. ... Internet access will be of considerable benefit to rural healthcare and the Community we serve. The hospital is fully prepared to pledge the sum of $8,095.00 (TSTC/Application/ Letter of Support dated April 3, 1996, from T. Kennedy, Administrator, Rolling Plains Memorial Hospital; and in interview with project partner, TSTC/SW007SV/p. 2).

Much consideration and planning was given to the location(s), publicity, volunteer recruitment and training. Facilities were inspected for their ability to support network technologies. Transportation, supervision and access issues were considered to facilitate full participation by end users.

A marketing plan was created and implemented. A proactive marketing plan was developed to publicize the program to potential end users. The plan identified target audiences who were then recruited by outreach program and staff. The marketing plan was multilingual and used a variety of both

traditional and electronic methods. Internal as well as external audiences were identified and targeted. The Cybrary developed a promotional bilingual campaign that included advertising, press releases and public service announcements. The other programs engaged in similar promotional activities.

Grantees learned from previous projects and adopted new strategic approaches or enlarged existing ones. Program partnerships developed through previous non-technology projects provided valuable insights. The technology programs under study were often based on an existing project with the technology component added later. All program partners were interested in the use of technology as part of community outreach and development. Therefore, the current programs were developed over an extended period.

> … [W]hen we were formulating the grant, we contacted Virginia Tech. … [T]hey were one of the first Internet communities and so we looked at some of their information and corresponded with them and tried to find out some of the problems that they had. … [T]hey [had] foundation money — and I don't know if something came in from the City, but, anyway, they had a variety of sources … (TSTC/SW001PSV/p. 16).

Availability of staff and material resources had a major impact on the timeliness and effectiveness of program development. Resources were actively sought in order to fulfill the mission statement. Resources included developing a committed and designated professional staff that was often cross-trained in their duties.

> During my visit, I had extensive discussions on the history, current status and future of the project with … team members. … The project continues not only to meet the program's expectations, but to exceed them in significant ways. There have been no delays, nor has the grantee encountered any problems that could not easily be addressed by the highly professional and committed staff (TOP/Site visit memo dated February 2000, p. 1).

However, some site administrators discovered that technology requirements could exceed staff capabilities.

> We … started out with the assumption that our little knowledge of technology would be adequate to run a computer lab. And, we discovered that we really needed additional technical expertise. [W]e had to … find a computer vendor who would serve as a troubleshooter, as well as a fix-it person for our technology (RCPL/001SV/p. 9).

Programs experienced expected and unexpected outcomes in terms of strategy and economy. Strategies linking community needs and public services were considered an ongoing process rather than a one-time solution. Programs were considered feasible when a due date was attached to a specific action. Even with careful planning, additional and unexpected financial demands occurred after the program budget had been approved. Special consideration and scheduling was necessary for installation of a networked system, hardware and related software.

PROCESS: PROGRAM IMPLEMENTATION

Amending program objectives served to enhance program quality by adjusting to better meet the needs of end users. Such adjustments included increasing technology training for end users, teaching users to access and evaluate information available on the Internet, providing bilingual instruction, adapting program marketing to reach out to many groups, and establishing productive relationships with partners.

The Cybrary recognized early on that to provide effective instruction meant moving beyond teaching children how to use a computer to teaching children how to gather and evaluate information.

> Originally we wanted to present children with an opportunity to learn computer skills. But what we have since learned is that just learning to use the machines isn't enough. [We] have developed programs where they can begin to investigate areas

that they are interested in. It's more focused on helping them search out, pursue and evaluate information through the Internet (RCPL/Cybrary002SV/p.6).

The Queens VTC project acknowledged that the effective implementation of video teleconferencing was accomplished through piloting the project at several branches and working out any problems that arose.

> The technology generates excitement and enthusiasm among participants. ... [I]t is more convenient for the program partners and staff than making visits to libraries or other locations ... [and] has increased local collaboration. [However], the use of VTC is not without drawbacks. Program staff often has difficulties related to the use of the technology, including sound transmission and location (e.g., size of the room, lighting) (BVTC/Queens Borough Public Library Interactive Science and Math Learning Through Video Telecommunications (VTC) Program Evaluation Report April 2000/p.16-17).

Partner participation was influenced by how well the long-term needs of a project matched partner expectations. A change in the partner's expectations was occasionally accompanied by a decline in program support. Changes in expectations were caused by a variety of factors including scheduling conflicts, delays in equipment installation, budgetary concerns, interest in the program and the perceived "closeness" of the partner relationship.

For example, both the NKLA and Cybrary projects found that over the course of program development collaborative partnerships originally designed to enhance program support did not meet expectations.

> One area that hasn't really happened that was in the original proposal is working with libraries. ... There was originally some support from the library department as far as training branch librarians so they would be able to help people use the resource, but there hasn't been much support on their end (UCLA/NKLA001PSV/p. 6).

Although listed as one of the collaborative members, the ... school district did not participate to the initial level as originally anticipated. Limited interest, however, is maintained at individual school sites (RCPL/Phone interview with branch manager 11/00).

Involving grassroots organizations, volunteers, parent groups and the private sector created stronger community ties and, in some cases, additional funding. Volunteers within the community helped provide ongoing program support while the formation of committees insured current and future programming quality and direction. Public and private supporters provided financial contributions along with volunteer work, clean up efforts, donations of materials and supplies, advertising, equipment and access to databases.

> [W]e've taken NKLA ... and said, "Let's let the young people design and site their own schools." Why not have the school district begin with young people and their plans for their community; rather than having them dictate from downtown? ... [E]veryone's been saying, "You need to talk to the school district. They're building schools all around because of all the overcrowding." So I ... told them [what] we're doing. And they said, "Wow!" (UCLA/NKLA002SV/p. 7-9).

The Chamber of Commerce got so excited about the program that they came in and did the tenant improvement for us. One workday they took down all the old shelves from the video store that had previously been at that location and painted all the walls. The Public Works Department got excited about some surplus furniture they thought they could locate and they helped us install that. Then the local community groups that work with the families made a point of advertising the upcoming services. And it was this community effort that generated enough additional funding that we doubled within one year the number of computer workstations (RCPL/Cybrary001SV/p. 4-6).

Program collaboration had both positive and negative consequences. The benefits of creating partnerships included extending a program's resources and assets, customizing training and sharing expertise. However, drawbacks included the time necessary to develop successful partnerships and also creating a balance between meeting contract requirements and building partnerships had to be balanced.

> Maintaining the support and the collaboration of our partners, the University and the community college took a lot of time and effort. And we were trying to work out a good relationship so we had to devote a lot of time and effort to that part (RCPL/Cybrary001SV/p. 20).

Staff functions changed as a result of program implementation. New training requirements tapped into time previously allocated to existing responsibilities. Cross training of job duties and delegation of administrative tasks were common among program leaders and staff members. Notably, the role of the program facilitator emerged as an important position for both in-house staff as well as program partners by playing a crucial leadership role.

> I'm technically just a branch manager [but] I have other duties … on top of that. So that for me personally was a serious challenge. And also the support of my staff in the branch who recognized what I was doing. They supported it but that also meant a greater workload on my staff at the branch (RCPL/Cybrary001SV/p. 20).

Partners considered project decision making to be participatory. Partners participated in decision-making at various program levels and considered their participation an important and beneficial part of program development. Decision-making by partners at individual site locations was necessary to meet site project requirements, maintain individual identity and adjust for unique educational opportunities.

> [W]e get the whole school involved in the programming. … We have a calendar and a little description [of the teleconference program] and then we … sit down and figure out who should be going to what programs, who's appropriate, age appropriate and level appropriate (BVCT/QCH002SV/p. 3).

Technology infrastructure directly facilitated collaboration among staff. Several staff members expressed their initial apprehension regarding new technology, but noted that the technology often led to a teamwork attitude among co-workers and ultimately a coordination of efforts.

> … [The program facilitator] tries to have us prepare the children for whatever — if it's a science project, he'll speak … to the science teacher … so she'll do a lesson that will relate to whatever program is being shown. We try to coordinate that … beforehand so that the teacher isn't just thrown into a situation and has no idea (BVCT/QCH002SV/p. 18-19).

Technology services were extended to other learning organizations. Most lead agencies extended services to other organizations such as schools, independent school districts, colleges and community-based organizations. The extension of services could involve before school and after-school lab availability, as well as asynchronous and synchronous programming. Services also included distance learning with associated certificates and degrees.

> [W]e have used [the Cybrary] as a model in our planning for the new library that we'll be building across town. … The computer lab will be modeled after the Cybrary. And we are working with [the college's] continuing education program, to make this computer lab a node on their "open campus" network. And to provide not only for the children and the youth to have access to computers; but for the community as well to be able to take classes leading to their AA Degree or just to enhance their own personal skills and competencies (RCPL/Cybrary001SV/p. 7-8).

The ability to meet long-term project objectives required adequate staff training. Staff development often required moving beyond basic hardware skills to more thorough training in the applications of information technology.

Organizations also faced the challenge of the cost and time involved in providing ongoing staff education and training. To meet this challenge, some organizations funded a full-time trainer to develop training materials and teach classes while others relied on current staff members taking on technology training in addition to their other duties.

Training enabled NKLA staff to become comfortable and proficient with the technology in order to implement it most effectively. In Queens, staff development was considered an on-going need and often required moving beyond basic computer skills to more advanced training as the project evolved.

> Training will be on going either by the AV technical staff or the program department staff. The equipment we are purchasing now is much easier to operate. I've found that branch staff are not as reluctant to work with it. They seem to enjoy it (BVTC/e-mail dated January 8, 2001).

The Cybrary depends heavily on the support of volunteer tutors who work one-on-one with students in the computer lab. Prior to working with students, each tutor must spend several hours of their own time becoming familiar with the training program.

> [W]e have very detailed scripted training manuals for tutors and those tutors had to spend two to three hours with the training manual before we let them work with the children (RCPL/Cybrary001SV/p.22).

In Sweetwater, the SCAN project brought together six very diverse partners. Because the program partners each had different technology goals the development of customized training was required.

> During some training sessions, employees of the six partners joined Sweetwater citizens in the classrooms to learn the techniques of navigating the Internet. However, during other training sessions, the SCAN trainer focused on the interests and concerns of individual partners, a procedure that was particularly helpful to staff members of such a

diverse group (TOP/TSTC application file/Final Project Report/dated June 16, 1998/p.2).

The ability to meet long-term project objectives also required adequate end-user training. The level of direct end-user training varied based on the project objectives. For example, the NKLA and SCAN projects were more focused on creating an infrastructure than in working one-on-one with individual participants. However, the Cybrary and Queens VTC projects are end-user oriented and therefore have been much more successful in providing an appropriate level of end-user training.

Additionally, end-users' desires to pursue personal interests were sometimes in conflict with project goals.

> I really didn't know how to obtain content for the VTC. Of course, we had the partners providing content, the Botanical Garden and the Hall of Science, but they couldn't possibly provide all the programming that we needed and so … we had to expand our reach. [T]o get going quickly, we did some original programming on our own. [S]ome staff developed some quick programming and we rolled those out right away.

FIGURE 13
End-User Training Considered Adequate
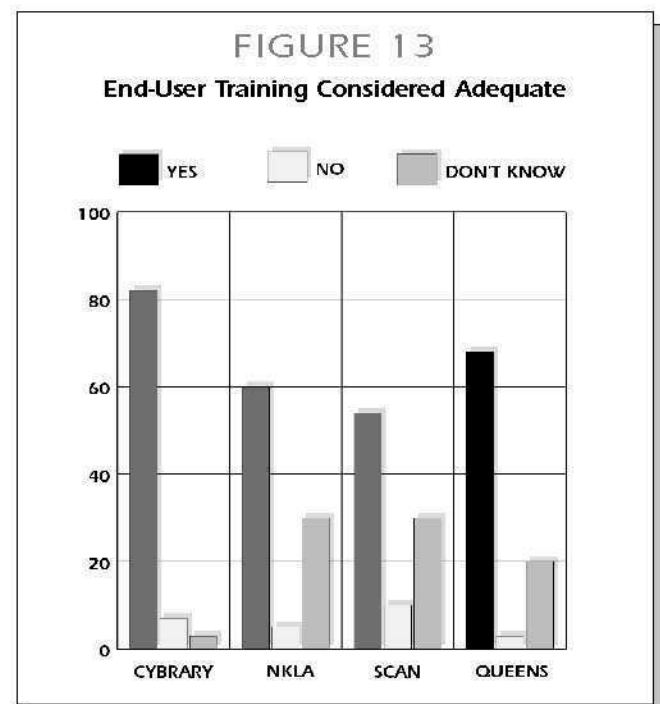
I called … presenters, people that we would hire for other programs in science and math and tried to ask them to adapt their presentation to this format. Some people … adapted the program they would do live for this format. … And so we did all kinds of things to find content. Now … there's an endless sort of programming. I don't struggle with that anymore, but at the beginning, I did (BVTC/QB002SV/p. 24-27).

Changes in leadership roles affected program development. The inability to fill leadership roles due to promotion, resignation, or late hiring resulted in a delay of the program's start date. Staffs with a positive program outlook were perceived as essential to program success. One site reported that their inability to fill key positions for the program resulted in delaying the start of programming:

1. The Program Administrator position at Queens Borough Public Library was not filled for three months following receipt of the award.

2. The Distance Learning Coordinator position at partner site, Queens Children's Psychiatric Center, was not filled until 8 months into the grant period, delaying the start of programming at the site (QBPL/letter dated July 1, 2000).

A quarterly report recorded the internal changes of key personnel due to promotion and resignation that influenced program development:

Change/loss of key personnel: Director of Programs and Services … was promoted to Deputy Director for Planning and Development. [The] Acting Director of Queens Library, Info and Technical Services (resigned) in mid-February. Her replacement … started in April 2000 (TOP/Application file 36-60-98044/Quarterly Report 5/04/00/p. 19).

Although no change in leadership was noted at the Eastside Cybrary, the following comments from the branch manager were salient:

Well I was fortunate because … a grant librarian work[ed] with me on the original Info People project and … another grant, Access to Success. So we had some experience working with the technology in a low-income area and developing a program. She came with me to work on this new project — that was key. … I think our enthusiasm and our dedication above and beyond the call was absolutely essential to making the program a success (RCPL/Cybrary001SV/p. 21).

Resource (re)allocations to grant project affected support for other organizational priorities in various ways. Resource reallocation allowed better connection with extension services to community members. However, reallocation of resources also created logistical problems that had a negative short and long-term impact on program progress.

We have three other centers. … They're extension centers, one in Abilene, one in Breckenridge and one in Brownwood. … [O]ne of the things that we have looked toward with our grants is our ability to connect better with our extension. At the same time we applied for this grant and got it, we also got one [another] from the U.S. Department of Commerce and that allowed us to link our extension centers using IV — interactive television video conferencing. So we did that at the same time. We [had] these two grants run at the same time and we felt that both of them ended up being able to serve our local population, because with ITV, we were able to bring in lots of different kinds of programming (TSTC/SW001PSV/p. 10).

Budget allocations differed due to varying program objectives. Salaries and benefits ranged from a low of 20% at the Cybrary to a high of 72% at NKLA. The Cybrary was able to keep personnel costs low because they rely heavily on college-age volunteers who spend several hours a week tutoring Cybrary students. On the other hand, the NKLA project was very labor-intensive requiring the use of skilled professionals to design and implement a computer data-

FIGURE 14

Comparison of Total Budget Categories for Network Technology Programs

	Cybrary	NKLA	VTC	SCAN
Salaries & Benefits	$38,324	$744,876	$564,493	$127,890
	(20%)	(72%)	(52%)	(40%)
Equipment, Materials & Supplies	10,000	18,300	126,000	131,529
	(5%)	(1.5%)	(11%)	(41%)
Operations & Contractual Services	142,587	83,200	166,161	0
	(75%)	(8%)	(15%)	
Travel	0	5,000	13,000	0
		(1/2%)	(1%)	
Other	0	18,672	24,286	28,210
		(2%)	(2%)	(9%)
Indirect Cost	0	160,494	210,293	31,241
		(16%)	(19%)	(10%)
TOTAL	$190,911	$1,030,542	$1,104,233	$318,870

base. The SCAN project allocated 41% of its budget to the purchase of equipment and materials, which was necessary to meet the primary objective of creating a basic information infrastructure in rural Sweetwater. By comparison, Queens spent only 11% of its budget in purchasing equipment, reflecting a more narrow and specific project scope using video teleconferencing equipment in a few library branches.

Projects were sustained beyond the life of the original grant period in a variety of ways. Anticipated funding sources included additional monies from original funding institution, support from other foundations, financial campaigns, in-house funding, local government, private businesses, and support from partnerships established during program development.

The Queens Library will provide its own funds to sustain and expand its portion of this program after the conclusion of the grant period. QBPL sees many possibilities in sharing programs from one site with another. We anticipate that our initial partners will continue the program with us at their expense after September 2000. QBPL will, in addi-

tion, seek new partnerships among other cultural and educational institutions (QVTC/TOP application file 980442 dated March 11, 1998/p. 5).

SUMMARY OF PROGRAMS

Federal studies conclude that minorities are significantly affected by limitations in public access to information, whether in standard or digital formats (NTIA 1999, 2000). The four organizations described in this study have successfully used network technologies to provide minority access to public information for a variety of purposes. These institutions have overcome many challenges and unexpected demands through creative leadership, informed decision-making, extensive program planning and careful allocation of resources.

The findings above suggest that these organizations established a solid program framework that was expanded and refined during a series of iterations. In the area of context, program visionaries and leaders conducted a community needs assessment as part of program concept development.

Funded by multiple sources, the Eastside Cybrary Connection in Riverside, California serves as a prototype for bringing together traditional library services and network technologies in an innovative format designed to serve a growing minority community. By assisting patrons in becoming effective consumers of electronic information the Cybrary is helping to overcome barriers of language, culture and socioeconomic status.

The Neighborhood Knowledge Los Angeles program sought to make public information regarding housing and property conditions readily available to community residents in an easy to use electronic format. Unexpectedly, program administrators found that end users were not only interested in being consumers of information but also in increasing knowledge of their communities by becoming information producers. For NKLA, this process of asset mapping is in the forefront of their plan to employ community members in the revitalization of their neighborhoods.

Texas State Technical College was able to establish a wide area network and provide the rural community of Sweetwater with public access to the Internet and its global resources. By partnering with the local hospital, school district, library and city offices, the Sweetwater network is making the Internet available to doctors, nurses, teachers, students, city officials and community members free of charge.

For the Queens Borough Public Library, network technologies expanded educational opportunities for latchkey children and youths housed in state facilities as well as for adults seeking to improve basic literacy skills. Through interactive television programming and partnerships, the library was able to provide enhanced educational services to both children and adults.

Despite major differences in institutional missions and program focus, the study of these four sites has provided important information regarding the diffusion and application of network technology in the public and nonprofit sectors. These programs demonstrate the strategies and processes that can be successfully implemented by other organizations serving minority communities. Chapter five synthesizes the lessons gleaned from this study.

CHAPTER 5: SUMMARY OF FINDINGS

In this study, TRPI has assessed the implementation of four technology diffusion projects that are making network technologies accessible to Hispanics and other minorities. These programs were profiled and analyzed in an effort to identify obstacles to implementation and the strategies used to surmount them.

Earlier studies examined the importance of network connectivity (Tapscott, 1997), the cost and effort required to develop infrastructures to support technological innovations (NTIA, 1996, 1997), for Hispanics and other minorities (RAND, 1995; TRPI, 1998), and finally, issues common to all Americans and the challenges of sustaining network-based technology projects (NTIA, 1999, 2000). Studies have also assessed specific barriers to access: geographic, technologic, economic, cultural, physical, linguistic and strategies devised to overcome them (NTIA, 2000).

TRPI's own research builds on a variety of previous studies with similar concerns. The DSS project identified exemplary program characteristics such as integration of technology, creative funding, entrepreneurial leadership, community buy-in, collaboration and information sharing (Pachon, et. al., 2000). In *Latino Internet Content Study: Findings from the Focus Group Sessions* (TRPI, 2000), researchers found that the practical issues of economic limitations inhibited Hispanics from getting online, more so than a lack of relevant content.

Building on this knowledge base, the present study considered four organizations that provide access to network technologies in their communities. Through interviews, surveys and analysis of extant data at the *organizational level* this study offers insights into their infrastructures and processes. As our nation continues to develop a digital economy, public access centers are adapting to community needs and adjusting their strategies and internal capabilities to meet new demands. Understanding the successful strategies employed by four different technology programs provides models for replication in both public and nonprofit settings.

LESSONS LEARNED ABOUT ORGANIZATIONAL STRUCTURE

TRPI's review of data collected at four organizations demonstrates that the focus and scope of technology programs are changing in two significant ways: *knowledge* and *capability*. In *Redefining Librarianship: The Case of the Eastside Cybrary Connection*, Denny explains the dynamic relationship between technology-related program goals and professional performance:

> Arguably, all of the issues and stresses that result from the rapid changes in communications technology have hit this profession hardest. ... Meeting community needs within the constraints imposed by limited resources and a constantly changing technological environment poses a significant challenge. The range of responsibilities and skills needed by public service librarians seems to have expanded while budgets have shrunk. ... [O]ne professional librarian, working with a team, had to be able to perform all of the following functions necessary to meet the goals of this project: Outreach Coordinator, ... Fund-Raiser, ... Instructor, ... Volunteer Recruiter, ... Professional Supervisor, ... Youth Services Coordinator, ... [and] Access Services Coordinator ... (p. 208, 209).

TRPI identified a need for administrative leadership to develop a flexible and responsive strategic plan in order to meet program goals and maintain alignment with the orga-

nization's mission statement and community needs. A steady expansion of knowledge and resources required to conduct day-to-day activities produced corresponding changes in capabilities. Therefore, consideration should be given to:

- The area of context: in-house evaluation of end user and management systems that support program goals, including internal program support assessment. Also needed is an accurate and comprehensive examination of the education and training needs of stake-holders, as well as community recipients. This process has an immediate bearing on the interaction of organizational missions, project goals and community needs.

- The area of input: development of a long-term strategic plan that also provides for professional development of administrators, especially in areas of nontraditional performance; and

- The area of process: effective partnership management by lead agencies based on a thorough understanding of their program partner's needs and goals. Staff training.

LESSONS LEARNED ABOUT END-USER ROLES

The role of end users is changing and therefore so are their training and technology needs. The organizational infrastructure must adapt to meet this change. Significantly, administrators and visionaries saw their programs as *end user-centered*: program objectives stated "for the kids," "for the community," and "for the residents." Program

administrators and staff saw the end users as being in a dynamic, emerging state, with the need to grow beyond their current fund of knowledge through the Internet.[22] This proved a significant factor influencing concept design and fueled development in the areas of context, input and process.

Our findings indicate that end users are transitioning from being passive consumers of content, to researchers, and finally to active creators of content and knowledge. This was clearly the case at NKLA, where project directors also found their end users became adept *knowledge producers*. This empowering concept, illustrated in Figure 15, underscores the profound nature of the intermediary step of interaction (e.g. research). Access is the interface that facilitates their interaction.

FIGURE 15
End-User Relationship to Online Content

PASSIVE CONSUMER (e.g. Entertainment)

CREATOR

ACTIVE CONSUMER (e.g. Research)

All site administrators believed the computer and the Internet to be tools with extraordinary potential. Knowledge acquisition through apppropriate public access was deemed critical to foster an improved quality of life for the end users. Training was thus planned and delivered with this tenet in mind.

Individual attitudes and characteristics of the end user must also be acknowledged and further study may prove useful. Research suggests that some teachers, staff and end users remain resistant to technology and the attendant change it brings. End users' learning habits, as influenced by cultural values are also relevant. A RAND publication, *Increasing Hispanic Participation in Higher Education: A Desirable Public Investment* (Sorensen, et al, 1995), observes that Hispanic youth "complete college at much lower rates than other ethnic groups do and are much more likely to drop out

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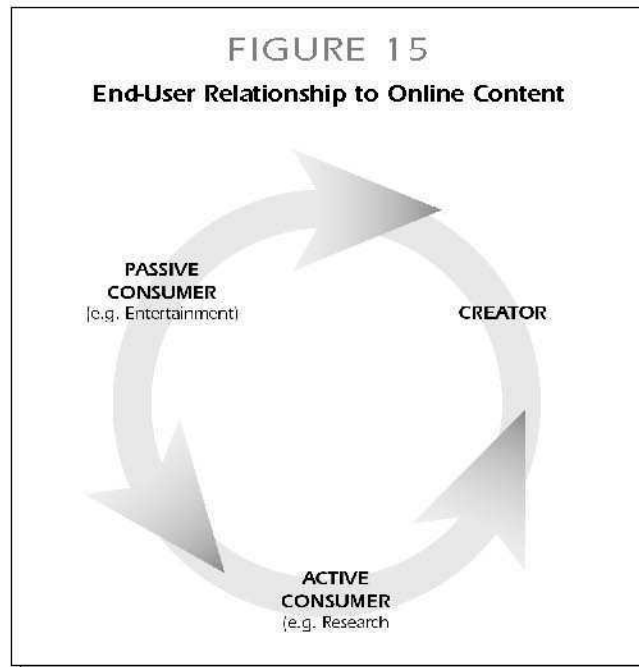
[22] AuPthors of a national learning program (Formula Three Program: Reading, Spelling, Learning in San Diego, CA) offer a three-pronged insight generating technique, used during the initial development phase of knowledge management: what the learner knows, what the learner needs to know and how the learner may close that gap by processing the most promising repositories of that knowledge.

of high school." Other research in the area of learning styles of Hispanic students concludes that extensive diversity of profile traits exist, and that programs that are sensitive to these multiple learning-style preferences increased academic achievement and fostered more positive attitudes toward learning. Many factors impact learning styles such as environmental, emotional, sociological, physiological and psychological conditions. Although individual learning styles may differ, they seem to share preferences for a "cool environment, conformity, peer-oriented learning, kinesthetic instructional resources; a high degree of structure, late morning and afternoon peak energy levels, variety as opposed to routines and a field-dependent cognitive style" (Griggs & Dunn, 1996).

The varying interests of end users slowed program progress in their ability to meet intended goals. This suggests that careful reflection should be given:

- In the area of context: to the *external evaluation* of intended program participants and learning styles during the needs assessment phase;

- In the area of input: to the development of a long-term strategic plan that recognizes community members not only as lifelong learners, but also as potential producers of content and knowledge; and

- In the area of process: to effective partnership management that acknowledges the difficulties involved in a grassroots effort, and to augment participation by community residents as stakeholders and partners.

LESSONS LEARNED ABOUT COMMUNITY-BASED PARTNERSHIPS

To collaborate means to cooperate with an entity with which one is not immediately connected. Computers and the Internet facilitate the collaborative effort from a communication perspective. However, public access centers are also connected to their partners through public service and special interests. At an organizational level, collaborative projects are challenged by distance, time, different missions and program objectives and tenuous shared resources (TRPI, 2000; Pachon, et.al., 2000). A solid connection

between various agencies' collaborative partnerships was rooted in a willingness to address the logistic complexities involved and the ability to envision a plan for the future despite uncertainty.

In writing about the current and future state of public organizations concerned with learning, Eisner (1994), in *The Educational Imagination*, suggests:

> It is true that American schools were initially organized to reflect the needs of an agrarian society. … What schools must now become may, in fact, differ not only from the common structural features they now possess into new structures suited not only for the demands of tomorrow, but also to the local contexts in which they are to function … significantly influenced by what the community wants, what the students need, and what visions of education animate the planning enterprise (p. 23).

Similarly, as organizations form partnerships and reorganize to meet the needs of our increasingly technological society, these partnerships adopt, to different degrees, structural features that impact program development, such as reallocating resources to meet changing needs. During the first wave of federal funding designed to encourage fledgling collaborative efforts and to engender community buy-in, partners have acted as independent agents of change and as such may have held very different visions. Close examination should be given:

- In the area of context: to the internal and external evaluation of potential collaborative partners by the lead agency during the needs assessment process and conceptual development of the project. Such dialogue allows the assessment of a potential partner's true interests and ability to commit to a long-term project and their willingness to support a collective vision. Before taking the lead on fund application and program deployment, the lead agency should clarify in detail what each stakeholder/partner will contribute and what each will receive. Adequately assessing needs of partners as well as community members and adjusting the project goals and objectives accordingly will avoid time delays and unanticipated costs of implementation.

- In the area of input: to the development of strategic plans that provide for ongoing feedback and revision; for attention to the comprehensive needs of end users at the various site locations; for a division of labor by interests and ability; for an alternate plan for unsecured resource support; and for a marketing and training plan which addresses community language requirements.

- In the area of process: to effective partnership management that seeks to respond to cost effectiveness, quality and progress with a willingness to amend strategic plans; to support continuous collaborative communications among all members; to work with partners to develop program support prior to the end of a project; and to initiate future funding endeavors.

STUDY LIMITATIONS

As mentioned above, there were several limitations to this study that may have affected the findings and hampered our ability to draw conclusions about program effectiveness. While this study was intended to identify and clarify effective strategies IT programs use to provide access to network technologies to Hispanics, the insights garnered tended not to be specific to Hispanics. While it is clear that the Cybrary has been effective in serving a predominantly Hispanic community for example, it is less clear for some of the other programs.

A major limitation was in curtailing the product evaluation component of the CIPP assessment typology to accommodate both funding and data restrictions. Another was the limited number of survey respondents, as well as the limited number of respondents who were Hispanic. Despite choosing program sites that would allow for a purposive sample, the necessity of relying on convenience sampling, based on the end users who were available for surveying at program sites or who self-selected, resulted in far fewer survey respondents who were Hispanic. This resulted in survey respondent demographics that were not always representative of program end user demographics.

These shortcomings however, provide some direction for further research that will elucidate some unanswered, and unasked, questions. For instance, the role of Hispanic cultural and linguistic factors should be more deeply examined.

CONCLUSION

New technology has changed the way we think, interact and understand the world around us. In the past, only the economically privileged were afforded the conveniences and resources of technological advancements. Today, with funding from public and private sources, traditionally underserved Hispanic communities have joined the ranks of consumers making their own decisions using touch-screen monitors, interacting face-to-face with experts around the globe, and controlling their own search for economic freedoms and opportunities accessible through a networked economy.

Since the mid-nineties, TOP has provided seed and matching funds for network technology programs in local communities. This funding has helped to support innovative endeavors to extend the reach of community services, to identify key program planning issues and to narrow the information technology gap between rural and inner-city communities. Consequently, successful programs are now available as models to create more and better programs granting access to advanced technologies in underserved communities. The lessons learned include factors at the organizational level as identified in this study (i.e. context, input and process) that support public access and increase program success in Hispanic as well as other communities.

In serving diverse communities, the organizations we evaluated experienced change at the organizational level involving program structure, end-user role capacity and partnerships. Providing for the needs of Hispanic and other minority communities, for example, placed new demands on site administration. In the case of the Cybrary, site administrators required the support and permission of the parents before a child was able to participate in the after school program. Bilingual project staff and volunteers addressed the initial fears of the parents in their preferred language and as the program matured, activities were developed that were more meaningful and relevant to Hispanic youth.

Other organizational changes involved a modification in end-user profile perception. For NKLA, the Hispanic community in Los Angeles became a rich resource of previously untapped community knowledge that prompted site admin-

istrators to revise their original perception of the end user to include the role of knowledge creator as well as that of information consumer.

Each of the organizations strove to connect their local communities through the use of digital technology networks. Information technology programs thus remain in a state of perpetual transformation as each organization accommodates itself to broad-based geographic, cultural and socioeconomic end user needs. Lessons learned point to future directions in better needs assessment, proactive user training, and attention to end goal visions on the road to promoting access to network technologies in low-income and minority communities.

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APPENDIX A

Project Name	Geographic Location of Program	Program Sites End User Sites	Program Participants	% Hispanic	TOP	DSS
Eastside Cybrary Connection	Riverside, CA	Eastside Cybrary	Community members: ages 10 through young adult	63%	No	Yes
Queens Borough Public Library	Jamaica, NY	New York Hall of Science Queens Botanical Gardens Queens Children's Psychiatric Hospital Queens Library branches	Community members: multi-cultural, multi-lingual	20%	1998	Yes
Texas State Technical College	Sweetwater, TX	City-County Library City of Sweetwater People for Progress, Inc Rolling Plains Memorial Hospital Sweetwater School District	Community members	27%	1996	No
UCLA School of Public Policy	Westwood, CA	Not Applicable	Community members	38%	1998	No

APPENDIX B

DATA COLLECTION INSTRUMENTS:

1. Telephone Survey Protocol and Follow-up Activities List
2. On-Site Program Administrator & Project Partners Interview Questions
3. End-User Questionnaire
4. Protocol of Site Observation

1. Telephone Survey Protocol & Follow-up Activities Work Sheet (pre-site visit)

Interview Date:

Program Title:

Location:

Respondent/Program Administrator Name:

Position Title:

Interviewer: note any follow-up activities in the following space.

Interviewer: describe any unusual circumstances of this interview or notes regarding telephone data collection in the following space.

Telephone Script

Int: Hello. My name is: ————. Thank you for participating in the evaluation and assessment of Technology Opportunities Program (TOP). This project identifies successful strategies for increasing access to information technologies in nation-wide facilities serving Hispanic and other minority populations.

The purpose for today's telephone interview includes setting a date for a site visit and gathering general information about your TOP-funded program. Your responses help us learn how to replicate or improve information technology programs in other communities serving minorities.

The questions require short answers, but please feel free to elaborate on any point to clearly explain your answer. *The information you provide may be used in a summative report to the Department of Commerce/NTIA.* The questionnaire contains 20 questions and should take approximately 20 to 30 minutes.

Community demographics & minority buy-in

1. Based on the original proposal, has your program extended or cancelled services to any of the geographic areas?

2. Who is this program's target population? Which minorities does your program serve?

3. Roughly, how many minorities access your program? Yearly? Monthly? Weekly?

4. What was the involvement in program development from Latino or African American or other minorities?

5. To what extent were the specific needs of Latino, African American or other minority end-users considered in program development?

6. What is the age and household income level of the population your program serves?

   Age   Income Level

In regard to the technology infrastructure:

7.   How many functional computers are currently available for users?

8.   What is the ratio of computers to users in this program?

9.   Does the facility offer Internet access?

10.   Are computers networked to provide file sharing?

11.   Are computers available throughout the facility?

12.   What is the average age of the computer equipment?

13.   What is the standard configuration of the computer equipment?

14.   Will you be installing, upgrading or expanding any other technologies in the next 6 months such as broadband capability, that is, the ability to send, simultaneously, pictures, sound, and data including streaming video at high speeds?

15.   How important or necessary do you perceive broadband capability in relationship to the success of your program outcomes?

Concerning Key Program Contacts, what are the names of:

16.   Program administrator?

17.   Program developer or project manager?

18.   Program Visionary?

19.   Financial officer?

20.   Collaborative names, locations, telephone nos.?

21.   Users?

Availability of Background data

___ 1. Needs Assessment

___ 2. Project Objectives

___ 3. Technology Plan

___ 4. Technology Inventory

___ 5. Technology Budget

___ 6. Evaluation Plan

___ 7. End User Appraisal Tool

___ 8. Stakeholder Appraisal Tool

___ 9. Strategic Plan

___ 10. Marketing Plan

___ 11. Staff Development Plan

___ 12. Collaborative Initiatives

___ 13. Demographic Breakdown

___ 14. Website URL

___ 15. E-rate Discount

___ 16. Divisional Organization Chart

___ 17. Program Organization Chart

INTERVIEW

Our on-site visit involves an in-depth interview with the Program Administrator, Partners, and Key Personnel, approximately 1 - 2 hours each to discuss the background and development of the program. These interview times will be used to gather important information regarding program content, input, process and product — that is, what worked and what didn't — what did we learn.

Name of Contact	Date	Time	Location	Phone number

2. On-Site Program Administrator & Project Partners Interview Schedules

Context Evaluation

1. In regard to the technology program, was a needs assessment conducted prior to establishing the program?

2. What needs were identified through this process?

3. To what extent was the needs assessment used to develop project objectives?

4. What stakeholder groups or program partners were involved in the conceptualization and development of the program?

5. If no needs assessment was conducted how were program objectives operationalized?

6. What was the extent of involvement in program development from Latino, African American, or other minority groups?

7. To what extent were the specific needs of Latino and other minority end-users considered in program development?

Input Evaluation

1. What were the strategic plan and mission statement that drove development of the program? What are the program objectives that came of this process?

2. To what extent do the stakeholder groups share program objectives?

3. Was a marketing plan developed to publicize program to potential end-users? How was this plan decided upon?

4. Did recent grantees learn from previously funded projects in developing their ideas?

5. Are sufficient human and material resources devoted to this project to ensure effective implementation?

6. Is this project feasible, in terms of strategy and economy, to achieve desired outcomes?

Process Evaluation

1. Are program operations aligned with project objectives and strategic plan?

2. Were strategic plan and program objectives amended mid-steam? If so, did these changes enhance the quality of the program?

3. Was the participation of project partners consonant with ongoing needs of project as well as their own initial expectations?

4. Is there ongoing support from grassroots organizations, volunteers and parent groups in the project? Do partners have a vested interest in the project?

5. How effective has this project been in involving the private sector?

6. What are costs and benefits, intended and otherwise, of developing partnerships and collaborations on key partners?

7. Have new partners or volunteers been added since the project's inception? For what reasons?

8. How have staff functions within organization changed as a result of the program?

9. What are the attitudes of primary stakeholders toward changes brought about by program?

10. How "participatory" do project partners consider project decision-making to be?

11. To what extent does technology infrastructure/architecture facilitate collaboration among staff?

12. Has technology been extended beyond traditional institutional parameters, such as home access or extended day?

13. Has there been adequate professional development/staff training to meet project objectives?

14. Is there adequate user support and technical training?

15. Is equipment being maintained to the satisfaction of staff and end-users?

16. What have been the principal obstacles in implementing project objectives?

17. To what extent do end-users feel comfortable with the program in general and technology interface in particular?

18. Has there been change in leadership during the course of the project grant period? Is so, how has this affected the program?

19. Have resource (re) allocations to grant project affected support for other organizational programs or priorities?

20. What are the current and anticipated funding streams for the project?

21. How will project be sustained beyond the life of the grant period?

3. Technology Opportunity Program/Digital Steppingstones
End-User Questionnaire

Thank you for participating in the evaluation and assessment of the Technology Opportunities Program (TOP). This project seeks to identify successful strategies for increasing access to information technologies in communities with Hispanic and other minority populations. By filling out this short survey, you can help us learn how to replicate or improve future information technology programs in other communities. For more information about this project, please visit our web site at www.trpi.org.

Either a pen or pencil may be used to complete this survey. Most of the questions may be answered by simply circling the letter next to the appropriate response; other questions ask for written answers. Please print clearly and answer the questions to the best of your ability. If you would like to make any additional comments, use the last page of this survey. **The information you provide will be kept confidential and your name will not be used.**

1. What is your ethnic identity?: *(Check all that apply)*

_____ Hispanic/Latino/Chicano   ____ Native American

_____ Asian/Asian American/Pacific Islander   ____ White/non-Hispanic

_____ African American/Black   ____ Other (specify):

2. In which languages are you fluent?: *(Check all that apply)*

Read:	__ English	__ Spanish	Other (*specify*): _____
Speak:	__ English	__ Spanish	Other (*specify*): _____
Write:	__ English	__ Spanish	Other (*specify*): _____

3. What is your gender?   a) Male   b) Female

4. What is your age group?: *(Circle one)*

a) Under 11	d) 18-24	g) 41-49
b) 11-13f) 31-40	e) 25-30	h) 50- 55
c) 14-17	f) 31-40	i) Over 56

5. What is your highest level of education? *(Circle one)*

a) Elementary School	e) Bachelor's degree
b) Junior High School	f) Advanced degree in progress
c) High School Diploma or Less	g) Post graduate degree
d) Some college or Associate degree	h) Other — Please Specify: _____

6. What is your Occupation? *(Circle one)*

a) Student	d) Teacher
b) Professional/ Technical	e) Unemployed
c) Entrepreneur	f) Other — Please Specify: _____

7. Approximately when did you first start using these facilities? _____/_____

8. For what purpose(s) do you use the computers and Internet technology services at this facility?:

a) Word processing

b) Research

c) Homework assistance

d) E-mail/Internet

e) Recreation/entertainment

f) Job training

g) Job search

h) Improved literacy

I) Language acquisition

j) Naturalization process

k) Distance learning

l) Other (specify): _____

9. To what extent are you able to accomplish your activities (as circled in #8) at this facility? *(Circle one)*

a) To a great extent

b) Mostly

c) Somewhat

d) Not at all

e) Don't know

10. Do you have access to the computer and Internet technologies you need at this facility? *(Circle one)*

a) Yes

b) No

c) Not sure or don't know

11. Is training available (classes, tutoring … etc …)? *(Circle one)*

a) Yes

b) No

c) Not sure or don't know

12. Do you feel that there is enough technical support available? *(Circle one)*

a) Yes

b) No

c) Not sure or don't know

13. Are the hours during which you have access to the computer or Internet technologies adequate? *(Circle one)*

a) Yes

b) No

c) Not sure or don't know

14. How important to you is the ability to access computers and Internet technologies? *(Circle one)*

a) Very important

b) Somewhat important

c) Not very important

d) Not at all important

e) Don't know

15. How valuable is it to you that this facility offers computers and Internet technology resources? (Circle one):

a) Very valuable

b) Somewhat valuable

c) Not very valuable

d) Not at all valuable

e) Don't know

16. Approximately how far do you travel to use this facility? *(Circle one)*

    a) less than one mile

    b) 1-3 miles

    c) 4-7 miles

    d) More than 8 miles

17. Indicate which mode(s) of transportation you normally use to get to this facility: *(Check ✔ all that apply)*

    __ Car   __Bus   __ Walk   __ Train   __ Bicycle   __ Other *(specify)*:

18. Do you have access to computer or Internet technology at home? *(Circle one)*

    a) Yes,

    _____ computer with Internet connection

    _____ computer but NO Internet connection

    b) No

19. Where did you first learn to use a computer? *(Circle one)*

    a) Home   e) Church

    b) Library   f) Friend's house

    c) School   g) Community center

    d) Work   h) Other *(specify)*: _____

20. What is your household's gross yearly income? *(Circle one)*

    a) Less than $20,000   d) $40,001 to $50,000

    b) $20,001 to $30,000   e) $50,001 to $75,000

    c) $30,001 to $40,000   f) Don't know or not sure

21. How did you become aware of the information technology services at this site? *(Circle one)*

    a) Flyer   d) Newspaper/radio/television

    b) School   e) Community outreach (i.e., presentation by staff)

    c) Friend   f) Other *(specify)*: _____

22. Would you recommend this facility's computer or Internet information technology resources to others?

    a) Yes

    b) No

    c) Not sure or don't know

The following questions will assist in determining what services will be considered valuable for future program funding. Please inform us:

1. What additional computer technology or Internet training services or programs do you feel should be implemented?

2. What aspects of the computer services do you find most useful?

3. What would you change about this program or the services currently being offered in order to better meet your technology needs?

Thank you for taking the time to fill out this survey. Please return it in the envelope provided and indicate below if you are interested in participating in a 15-minute interview.

_____ Yes, I would be interested in participating in a 10 - 15 minute interview and providing additional information about the information technology services at this facility.

_____ No, I'm not interested.

If interested in participating, please fill out the following contact information:

Name (printed):

Address:

Phone number:

Best time to call would be, indicate day and time: _____

E-mail address:

We will be contacting you during the next three months.

(USE THIS SPACE FOR ANY ADDITIONAL COMMENTS)

<p style="text-align: center;">— END OF SURVEY —</p>

4. Protocol of Site Observation

Site observation provides an opportunity for the evaluator to describe through narrative and diagram the impact of the physical environment on end user and provider in support of the learning experience. The physical environment includes the storage, use and display of all computer controlled devices and related equipment, materials and supplies.

1. Facility name and location.

2. Basic diagram of facility area.

3. Brief description of facility/equipment layout.

4. Basic diagram of equipment setup.

5. Brief description of equipment storage area and access to related hardware and software by end user.

6. Brief description of equipment storage and setup for broadcast and/or reception by provider.

7. Key personnel and staff involved in project transmission and/or reception.

8. Diagram and brief discussion of communication model used.

9. List or description of supporting materials or equipment used by presenter.

10. List or description of supporting materials or equipment used by participants.

11. Narrative of observed interaction between end user and project staff, equipment and program.

12. Record of other noteworthy or unusual actions or activities during observation.

APPENDIX C

WEBSITE CONSTRUCTION:

1. **Assumptions and Target Audience**
2. **Proposed Page Layout and Content**
3. **Navigation Chart**

1. Assumptions and Target Audience

Goals

- To create online access to four technology programs and TOP information
- To be functional and promote adoption of information technology strategies in underserved communities
- To provide links to model programs and TOP home page•
- To motivate further inquiries
- To be easy to use without training or instructions
- To be easy to update

The development of the web page was based on the following assumptions:

I Content

- Start with existing TRPI/TOP project plan
- Brief, top-level overviews
- Some details of project included
- Profile project activities concisely

II Audience

- Provide key information about technology use and model applications
- Content is easy and quick to access and content is useful

III Other

- Update during project life and reference for 3 - 6 months after end of project
- Include electronic versions of related articles for downloading

Home

Current Projects

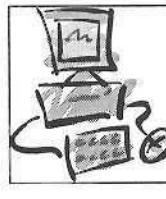**IT Stats**

DSS

Resources

Contact Us

Tomás Rivera Policy Institute Information Technology Issues

Funded by the National Technology Infrastructure Agency (NTIA), Technologies Opportunities Program (insert TOP home link here), the Tomás Rivera Policy Institute highlights the merits of four national programs in order to replicate these useful programs in communities with limited resources. Highlighting programs with the right mix of partners and community involvement—coupled with useful strategies on how to bring these about—will benefit communities that may have little experience and exposure to advanced telecommunications-based applications.
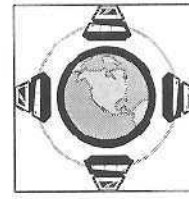
This evaluation study furthers the current understanding of the use and effects of information infrastructure in public and nonprofit sectors; establishes a knowledge base of applications for general dissemination and in support of continued leading-edge research and evaluation furthering the development of the nation's information infrastructure; and, accelerates the diffusion of technology innovation in the public and nonprofit sectors.
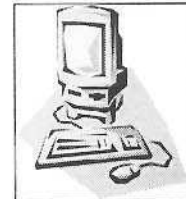
UCLA   Cybrary   TSTC   Queens Library

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