Feature Article

Bridging the "Digital Divide" in Colorado Libraries. Survey results from the Colorado Public Libraries & the "Digital Divide" 2002 study.

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In the spring of 2002, Colorado public libraries participated in a LSTA funded study to assess the impact of public libraries on bridging the "Digital Divide." This article presents significant findings from that study.

Purpose
Many publicly funded libraries across the United States actively seek ways to promote literacy and free access to information. This is sometimes challenging. At the forefront of the challenges are funding, censorship, and technology equality. Technology has changed the face of communication and information delivery including: the way our children learn; how we stay in touch with each other; the way we do business; and how we define our communities.

The "Digital Divide" is the mainstream buzzword for technology inequality. Since the late 1990s research has determined that the "Digital Divide" is an international phenomenon with far-reaching effects and broad definitions. Studies that have been used to articulate what the "Digital Divide" is provide foundations for further studies on how to bridge that divide. Analyzing the role of librarians and libraries in bridging the divide provides policy-makers with information needed for making effective decisions related to technology in public libraries. By understanding technology use in public libraries, librarians can design a road map for serving customers and better understand the impact library services have on customers and the community.

Methodology
In March 2002, the Library Research Service, a unit of the Colorado State Library and the Colorado Department of Education, conducted a sample survey of 1856 Colorado public library Internet patrons. The survey design included outcome-based questions in order to understand the impact of computers and Internet access provided by public libraries. Questions addressed patron's:

- Internet experience;
- Frequency of library computer use;
- Options available to access the Internet;
- Skills learned or improved though library based access;
- Different ways skills were learned;
- Internet activities and;
- The overall effectiveness of these resources.

Each public library received survey forms based on the population of its legal service area.

- Libraries serving 10,000 or more people were sent seventy-five surveys with a target of twenty-five returns.
- Libraries serving populations less than ten thousand were sent thirty surveys with a target of ten returns.

The survey was distributed by library staff to adults and young adults (high school age or older.) The participating libraries were instructed to distribute the survey to patrons throughout the library, not just in the public Internet access area. This helped guarantee representation of library Internet patrons who were engaged in other activities at the time of the survey. The surveys were handed out on two different days, one weekend day and one weekday. They were divided evenly among morning, afternoon, and evening patrons. Several libraries made photocopies of the survey form and returned more surveys then they were originally issued. Table 1 shows the number of completed surveys returned by libraries serving different size populations as well as the sub-totals of the state's legal service area population those returns were weighted to represent.

<Insert Table 1 here>

Survey responses were tabulated by, sex, age, race, income, and education level.

Overall Findings
People from all walks-of-life rely on computer and Internet access provided by public libraries. The technology *have-nots* are not just the poor and under-educated, they span all demographics. Of the patrons relying on public libraries for Internet access:

- Men (55%) slightly outnumbered women (45%).
- 1 in 4 had a Bachelors degree or higher.
- Fifty percent of patrons over 55 and 15 percent of patrons under 18 had no other place to access the Internet.

The results draw attention to the diversity of patrons using libraries in the twenty-first century. Public libraries are no longer places catering to an audience dominated by women and children. Public library access to computers and the Internet presents all community members with opportunities to learn new

technology skills, communicate on a global level, and access Internet based information regarding education, government, health, employment, and volunteer and recreational opportunities. Most public libraries also offer the benefits of licensed electronic databases and staff expertise and training. As a result, technology "have-nots" are participating in the growing world of digital communication and information.

Of Coloradans who use public library Internet computers and who visited public libraries in March 2002:

- Eighty-four percent indicated that the availability of computers in the library was one of the reasons for visiting the library that day.
- Thirty-four percent have no other access to the Internet except through library computers.
- Nineteen percent rely on staff assistance to learn new technology skills.

These findings have strong implications for public libraries. They indicate that the demand for the technology infrastructure continues to increase and that the skill set of library staff must continue to expand. As library patrons grow more diverse the role of librarians as teachers becomes even more pronounced in the 21st century. Libraries and librarians are a vital part of advancement and the educational process for the communities they serve.

Who are Public Library Internet Users?

Patrons at public libraries in Colorado use computers regularly. Almost half of the respondents used the computers more than once a week. Another 12 percent of the overall respondents indicated that they use the Internet more than once a month.
Increased frequency correlates with increased age, higher levels of education, and lower income:

- Age – over half of the respondents over 30 used public library computers more than once a week
- Education – more than two out of five respondents using the public Internet computers more than once a week had a bachelor's degree or higher.
- Income – nearly one-quarter of the respondents who used library Internet access more than once a week were below poverty level.
- Race/Ethnicity – White and Hispanic respondents were more likely than African-American respondents to utilize library Internet access.
- Gender – Male respondents were somewhat more likely than female respondents (54 percent versus 43 percent) to use library Internet computers more than once a week.

The Colorado study reports that Internet use by men and women in public libraries was almost equal, 53 percent were men and 47 percent were women. These numbers reflect the national trend found in the National Telecommunications and Information Administration report *A Nation Online: How Americans Are Expanding Their Use of the Internet* (2002). (1) The U.S.

Department of Commerce tracks statistical information regarding Internet use for men and women. Based on the data from the past 7 years, early in the technology boom women were less likely than men to use the Internet from any location. Through the 1990s, the percentage of women using the Internet has continued to increase. It is likely that the availability of Internet access in public libraries has helped increase the number of female users and, at the same time, attract the less traditional male patron.

The majority of respondents (45 percent) were between the ages of thirty and fifty-four, followed by 34 percent between ages eighteen and twenty-nine, 11 percent age fifty-five or over, and 10 percent under age eighteen.

<insert figure 1 here with caption text: Frequency of Library Computer Use Overall>

Not all library patrons working on the computers and accessing the Internet through public libraries are newbies to technology. The majority of Colorado respondents indicated three or more years of prior Internet experience.
The exception to this is found when exploring age, race, and education as outlined below.

<Insert figure 2 here with caption text: Years of Internet Use - Overall>

Demographic Factors Associated with Years of Internet Use
The study found that significant demographic factors associated with years of Internet use were age, race/ethnicity, and education.

Age
- Of respondents between ages eighteen and twenty-nine, 43 percent indicated more than five years of previous Internet use.
- Only 22 percent of respondents under eighteen and 27 percent of those age fifty-five and older indicated the same level of experience.

Race/Ethnicity
- Out of all respondents, African-American and Hispanic participants had the least experience with the Internet. In fact, 19 percent of African-Americans indicated less than one year of previous Internet use and 42 percent of Hispanics had two or fewer years of previous Internet use. This is compared with 70 percent of white respondents indicating three or more years of previous Internet use.

Education
Respondents with more than five years of Internet experience were more likely to be high school and college graduates. Respondents reporting more than five years of previous Internet experience included:

- forty-seven percent of those with a bachelor's degree or higher;
- thirty-seven percent of those who were high school graduates; and

- twenty percent of those who did not earn a high school diploma.

Measuring the Impact of Computers in Public Libraries

Public libraries provide the primary Internet access point for a substantial portion of every age group of library users.

- fifteen percent of those under age eighteen;
- thirty-four percent of those between ages eighteen and fifty-four; and
- fifty percent of respondents age 55 and over.

Public libraries not only provide a primary access point to the Internet, they provide opportunities to learn and improve technology skills. Online searching was the skill most likely to be learned or improved in public libraries, indicating that the role of information access provider remains the same for public libraries as the format of information changes. The Internet is just the latest information medium.

<insert figure 3 with caption: Developing New Technology Skills Overall>

Demographic Factors Influencing Types of Activities Learned

Significant demographic factors found to influence the types of activities learned were: age, race/ethnicity, education, and income.

Age
- While using library computers, respondents under eighteen years of age were more likely than users of other ages to learn or improve word processing skills (26 percent) and work on web development skills (22 percent.)

Race/Ethnicity
Many minority respondents utilize public library computers to bridge the technology divide they are faced with. Fundamental skills such as searching the Internet, sending e-mail, and using word processing programs are the most common pursuits.

- sixty-eight percent of all minority respondents improved search strategies.
- fifty-two percent of Hispanic respondents improved e-mail skills;
- twenty-three percent of African-American respondents use library computers to improve web development skills, nearly three times more than white respondents; and
- thirty-five percent of African-American respondents improved word processing skills, twice the percentage of white respondents;

Education
- People with a bachelor's degree or higher were the least likely to improve or acquire new search, e-mail, word processing, or Web-development skills through the library.

Income
Once again, fundamental skills such as using e-mail and word processing programs are the focus of library Internet patrons faced with poverty.

- thirty-one percent of those improving e-mail skills were below poverty level.
- twenty-seven percent of respondents improving word processing skills at the library were below poverty level, compared to 14 percent for respondents making $50,000 or more.

<insert figure 4 with caption text: How Library Patrons Learn New Skills>

With progressive improvement of interactive resources, self-learning dominates.
- Sixty-two percent of respondents taught themselves new technology skills.
- Nineteen percent of respondents learned new technology skills with staff assistance.

Factors That Influence How New Technology Skills Are Acquired
Significant factors that influence ways in which new technology skills are acquired include: age, race/ethnicity, income and education.

Age
- Older patrons with less computer experience rely on Internet access through public libraries, staff assistance, and library courses more than any other group. This might suggest that people over 55 use public library technology more than any other age group because of the availability of help.

Race/Ethnicity
- Approximately 17 percent of Asians/Pacific Islanders utilized library courses to acquire new skills. This is two to three times more often than any other group.

Income
- Of respondents learning new skills through a library course, 11 percent were below poverty level.

Education
- As educational attainment increases, patrons were more likely to ask staff for help or enroll in a library computer course.
- Of those patrons lacking high school diplomas, 68 percent indicated that new technology skills were self-taught (learned without staff assistance) compared to 50 percent of those with a bachelors degree or higher.

What are Public Library Computers Used for?

To assess the impact of technology in Colorado libraries, respondents were asked to select from six categories of specific activities engaged in as a result of their recent use of the computers. Activities included:

<Insert Table 2 Here caption text: How Library Patrons Spend Computer Time>

The most widely engaged in activities were:
- seventy-two percent - looking for information on a specific topic;
- fifty-eight percent - e-mail;
- forty-eight percent - surfing the Web;
- thirty-nine percent - staying in touch with someone;
- thirty-eight percent - looking for a job;
- twenty percent –seeking educational opportunities;
- twenty percent - finding health-related information for self, friend, or relative.

What has the Greatest Impact on Internet Use?

Descriptive statistics do not suffice to explain completely why one group of individuals has higher or lower rates of computer use and Internet use. Three factors that appear to influence Internet activity are income, level of education, and age. *A Nation Online: How Americans Are Expanding Their Use of the Internet*, reports that education and income have independent effects on Internet use. "People who have lower education but live in households with high family incomes are less likely to be Internet users than those who have high levels of education and live in households with low family income."(2) One out of four Colorado respondents was below poverty level. Costs of hardware, software licensing, and network capabilities are still relatively high and one of the obvious elements of digital exclusion. Responding to this need is one of the most important aspects of digital inclusion.

Income
- Poor respondents used the Internet for recreation more than any other group.
- Once income exceeds $25,000, most recreational uses of the Internet decline markedly.
- Sixty-six percent of poor respondents use public Internet computers to send and receive e-mail. This was more than any other income group.
- Fifty-two percent of the poor respondents surf the web for fun.
- Forty-four percent of respondents looking for educational programs on public library computers have annual incomes less than $19,000.
- Thirty-five percent of poor respondents use library Internet computers to look for jobs.
- Twenty-nine percent of respondents using public library terminals for distance education were below poverty level.
- Twenty-eight percent of those seeking information on social programs were below poverty level.
- Twenty-seven percent of respondents using public Internet computers to stay

in touch with someone were below poverty level.

- Twenty-seven percent of people looking for volunteer opportunities were below poverty level.
- Twenty-two percent of poor respondents used the public Internet computers to complete a school assignment.
- Twenty-five percent of all the respondents who use public library computers to look for community services were below poverty level.
- Seventeen percent of poor respondents participate in online chat.
- Sixteen percent of poor respondents play interactive games.
- Ten percent of poor respondents listen to music.

Educational Level

Educational level affects what library patrons do with Internet time.

- Online chat at public Internet computers was three times more likely for people who haven't gone to college.
- As educational level increases, patrons are more likely to ask staff for help or sign up for a library course.
- Sixty-nine percent of people without high school diplomas surf for fun, while only 42 percent of people with bachelor's degree or higher do so.
- Forty-five percent of the people using public Internet computers to locate services within the community had a bachelor's degree or higher.
- Interactive gaming and streaming music decline when education increases.
- Forty-four percent of those looking for a job via public Internet computers have a bachelor's degree or higher.

Age

Kids use the Internet differently than adults. Respondents under the age of eighteen engage in a wider array of activities than any other age group.

Kids are more likely to:
- Look for specific information – 73 percent
- Surf the Internet for fun – 71 percent
- Work on or complete school assignments – 60 percent
- Look for educational programs – 29 percent
- Play games – 29 percent
- Chat – 28 percent
- Listen to music – 22 percent
- Look for volunteer opportunities – 13 percent

Kids are least likely to:
- Use the Internet for e-mail – 48 percent
- Locate information concerning a social program – 6 percent

Other areas where kids had the lowest response rate were age-restrictive activities such as trading and monitoring stocks and looking up candidate information before voting.

Respondents over the age of fifty-five have less variation in their Internet activities. Older adults were most likely to:
- Find health related information for a friend, a relative, or self – 33 percent
- Trade or monitor stocks – 18 percent
- Improve their own health or health of a family member – 11 percent
- Purchase or sell a home or rental property – 6 percent

Other areas where older adults had the lowest response rate were related to education and employment.

Older adults were least likely to:
- Look for specific information – 67 percent
- Use the Internet to stay in touch with someone – 34 percent
- Surf the Internet for fun – 30 percent
- Look for educational programs – 9 percent
- Look for community centers – 9 percent
- Conduct research for an employer – 8 percent
- Post to a news group or bulletin board – 5 percent
- Look for state information – 5 percent
- Look for volunteer opportunities – 4 percent
- Play games – 3 percent
- Listen to music – 3 percent
- Increase income – 3 percent
- Chat – 2 percent

Conclusion

Computers and the Internet are vital parts of everyday life. They provide a doorway to information on a global level and expand the reach of every community. Ensuring all community members access to electronic resources and developing the technical skills to participate in the global economy are important contributions of public libraries to their communities and to the state.

Colorado public libraries provide 2,297 computers for public use, of which 1,492 provide Internet access, costing $2,576,885 annually. (3) Internet access through public libraries is an active step in bridging the "Digital Divide." Community members who would otherwise be left behind actively use these public resources. More than two-thirds of the library patrons polled have no other access to the Internet except through library computers. Without this freely available resource, many people would be limited in their ability to access information, find opportunities, and compete globally in the growing digital environment.

Coloradoans from all demographics rely on Internet access at public libraries. They are learning new technology skills from library staff members and library courses as well as teaching themselves and learning from friends and family.

As education and income rise, use of the Internet also rises, leading to increased

access to global information. Properly trained library staff will increase awareness of valuable online resources and help the technologically disadvantaged develop new skills that can be used daily in the information age. By providing public access to the Internet, Colorado public libraries are fulfilling a mission to "Give instruction unto those who cannot procure it for themselves." (*Confucius)* (4)

<1>References

(1) National Telecommunications and Information Administration and Economics and Statistics Administration, "A Nation Online: How Americans are Expanding Their Use of the Internet." (Washington D.C., 2001).

(2) Ibid.

(3) Library Research Service and the Colorado State Library, "Public Library Profiles – 2002. Available on line, accessed March 11, 2004. www.lrs.org/

(4) Confucius, Book XIII, Sec. 9