ISSUE BRIEF

Children, The Digital Divide, And Federal Policy

INTRODUCTION

A decade ago, the increasing importance of technology led policymakers, industry, and advocates to make reducing the digital divide a high priority policy issue in the public and private sectors. Since then, the role of the Internet—at work, at school, at home, and in the community—has continued to grow. Yet policy interest in children's access to the Internet appears to have cooled, due at least in part to a sense that most of the divide has been closed.

Based on the data collected over the past decade, there is no doubt that more American children of all incomes and backgrounds are using computers and the Internet than ever before. But it is also clear that some groups of young people—primarily low income and minority youth—have poorer access to technology than others. This issue brief explores the dimensions of the current digital divide for children and youth, and the past and potential role of federal policy in connecting more young people to the digital world.

Since it was coined in the mid-1990s, the term "digital divide" has mostly been used to describe the gap between those who have "ever" and those who have "never" used a computer or the Internet. But as technology and its role in our society evolve, the concept of what constitutes access is evolving, too.

There is *basic access*: young people's ability to get to a wired computer somewhere, at some time. Then there is *quality* of access: some homes have high-speed connections that make it easy to view graphics and download documents, while others have much slower "dial-up" connections; and some schools have wired computers in each classroom, while others have only a few for the whole student body to share. There is the level of *technological literacy*: the degree to which young people know what they are doing online, how many applications they know how to use, and how easily they can learn new ones. And there is access to useful *content*: the information and software they need to do their schoolwork, protect their health, or find a

job. Put these together, and the resulting definition of access is much more meaningful—but nearly not as easy to turn into a sound bite—as whether a child has ever used the Internet.

With wired computers in most schools and libraries and rising home connection rates, almost all children have at least the possibility of basic access. Yet many advocates argue that ongoing inequities in *meaningful* access have real implications for children's educational and economic opportunities. These inequities are reflected in the use of terms such as "digital opportunity" and "digital inequality" as alternatives to "digital divide."

Whatever they call the current digital divide, policy experts and advocates generally agree that increasing technology access for disadvantaged children is a worthy policy goal. They also see a natural evolution from policies focused on major infrastructure investments, such as wiring the nation's schools and libraries, towards integrating online access into other policy objectives. Instead of technology goals, there are goals to help children learn, develop, and succeed in the workforce with the help of technology. Where policy and political differences arise is over how to define the significance of the current divide, and what role the federal government should play in narrowing it.

THE DIGITAL DIVIDE TODAY

Over the past decade, more and more Americans in every demographic group have used computers and the Internet, with young people leading the way. The wiring of public schools and libraries has given most children some form of access, and a majority of households with children have computers and Internet connections.[1]

However, while the proportion of young people using computers and the Internet has risen in all demographic groups, notable differences remain.
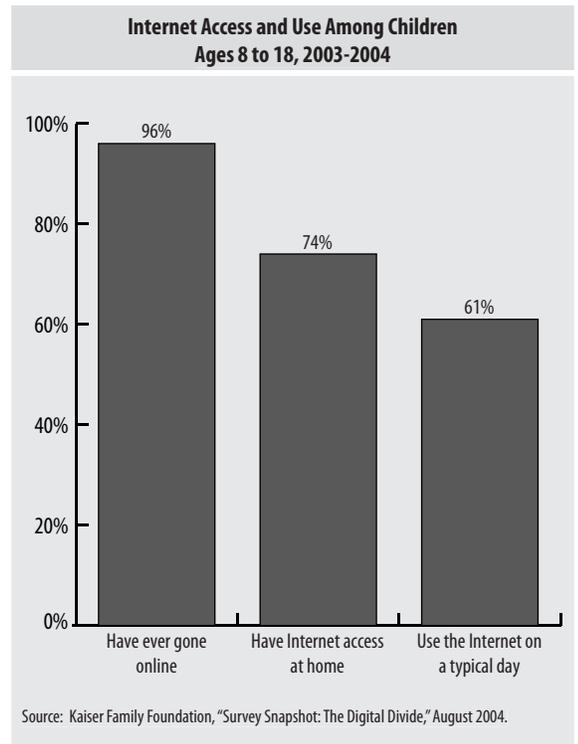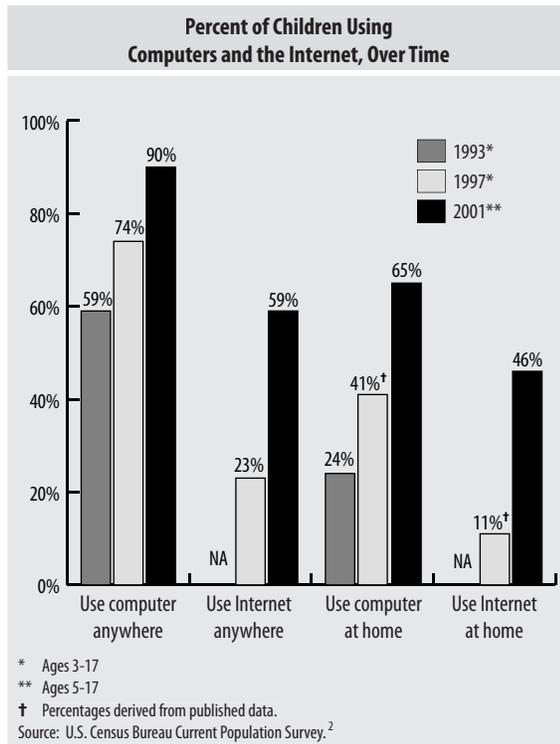
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**Percent of Children Using
Computers and the Internet, Over Time**

Legend:
- 1993* (gray)
- 1997* (white)
- 2001** (black)

Use computer anywhere: 59% (1993), 74% (1997), 90% (2001)
Use Internet anywhere: NA (1993), 23% (1997), 59% (2001)
Use computer at home: 24% (1993), 41%† (1997), 65% (2001)
Use Internet at home: NA (1993), 11%† (1997), 46% (2001)

*   Ages 3-17
**   Ages 5-17
†   Percentages derived from published data.
Source: U.S. Census Bureau Current Population Survey. [2]

**Internet Access and Use Among Children
Ages 8 to 18, 2003-2004**

Have ever gone online: 96%
Have Internet access at home: 74%
Use the Internet on a typical day: 61%

Source: Kaiser Family Foundation, "Survey Snapshot: The Digital Divide," August 2004.

According to the most recent major government datasets, based on information collected in 2001, 4 in 10 children have never used the Internet, and lower-income and minority youth are far less likely than other children to have gone online. While 75% of children from families earning over $75,000 a year have gone online, less than half (49%) of those from families earning $20-35,000 and only 37% of those earning under $20,000 a year have gone online. Similarly, while two-thirds (67%) of white children have gone online, just 45% of African American and 37% of Hispanic youth have done so.[3]
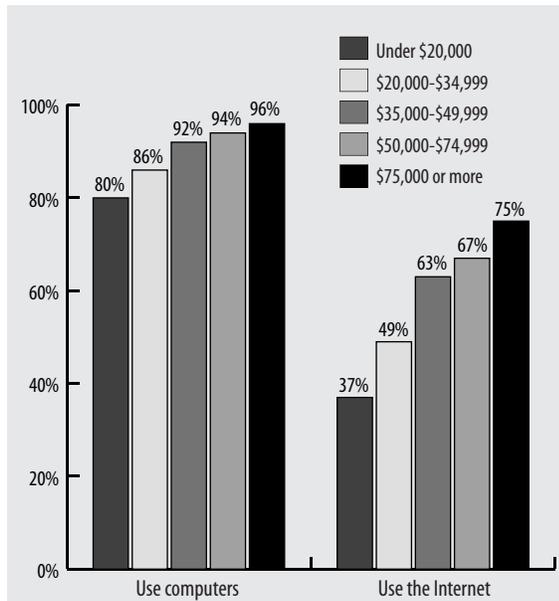
A more recent survey of just over 2,000 8-18 year-old students nationwide found that nearly all (96%) respondents reported having "ever" gone online, with no significant differences according to race, parent education, or median income of the community in which the children went to school.[4]

But as discussed above, simply looking at the proportion of young people who have "ever" gone online can mask important differences. For example, lower income and minority children are less likely to start using computers early in life. According to another recent study that focused on children 6 months to 6 years old, the proportion of children who had never used a computer varied significantly by income, from 39% of children from families with incomes of $75,000 a year or more, up to 69% of those from families with incomes of less than $20,000 a year. This study found significant racial differences in early computer use as well. For example, looking just at 4-6 year-olds, 41% of nonwhite children had never used a computer, compared to 24% of white children.[5]

This early difference in rates of computer use probably stems from the fact that fewer low income and minority children have computers or Internet access at home, an important element in the ongoing divide among older children as well. According to the most recent large government data sets, among children ages 3-17, there are significant disparities in home Internet access based on income and race. For example, while half (51.7%) of all children with family incomes of $75,000 or above have Internet access at home, just 15% of those with incomes between $20-25,000 do. And while more than a third of White and Asian American children use the Internet at home, just 15% of Black and 13% of Hispanic children do.[6]

Again, two more recent studies, while based on much smaller samples, offer more current data. These studies also find significant gaps in home computer and Internet access. Among children 6 months to 6 years old, only 8% of children from homes with incomes of $75,000 a year or more did not have a computer at home, compared to 40% of children from homes with annual incomes between $20-29,000, and more than half (55%) of those from families with incomes under $20,000 a year. Among older children (8-18 years old), two-thirds of those who go to school in areas where the median family income is under $35,000 a year have Internet access at home, compared to 84% of those from areas where the median income is over $50,000 a year.[7]
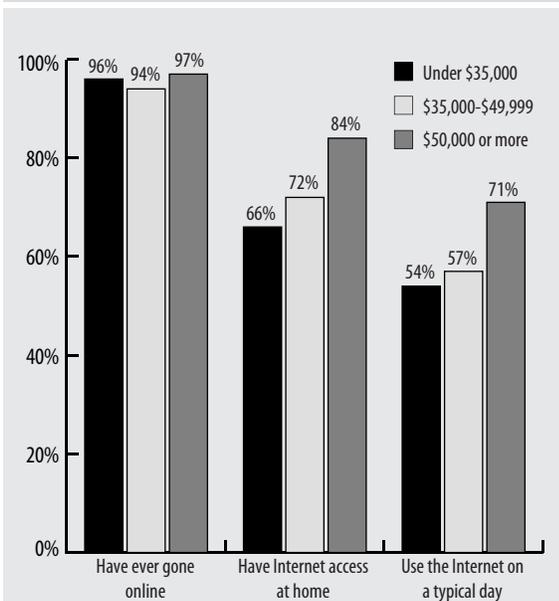
Percent of Children Using Computers and the Internet, by Family Income, 2001

Legend:
- Under $20,000
- $20,000-$34,999
- $35,000-$49,999
- $50,000-$74,999
- $75,000 or more

Use computers: 80%, 86%, 92%, 94%, 96%
Use the Internet: 37%, 49%, 63%, 67%, 75%

Internet Access and Use Among Children Ages 8 to 18 By Median Income, 2003-2004

Legend:
- Under $35,000
- $35,000-$49,999
- $50,000 or more

Have ever gone online: 96%, 94%, 97%
Have Internet access at home: 66%, 72%, 84%
Use the Internet on a typical day: 54%, 57%, 71%

The differences in home access may be part of the reason why children who go to school in lower-income areas are less likely than children in higher-income areas to use the Internet in a typical day (54% of those from communities where the median income is under $35,000 a year, compared to 71% of those from areas where the median income is over $50,000).[8]
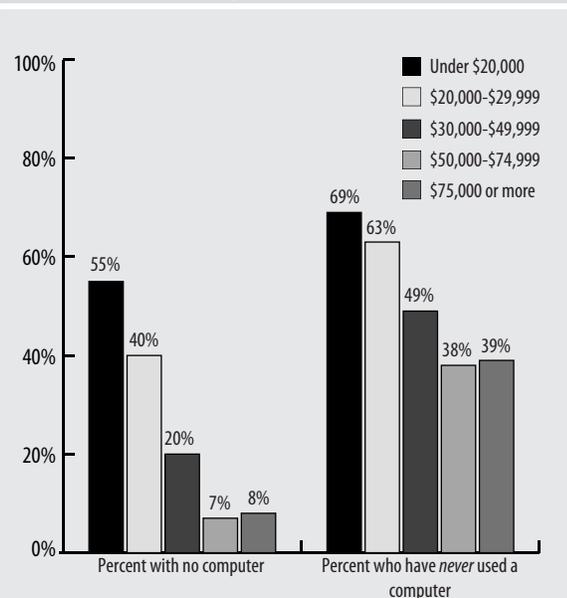
Where Children Go Online

For those without a connection at home, schools are the primary source of Internet access and often the only place they go online. As discussed above, lower-income children are the most likely to lack home access and to rely on schools and other public access points.

While school access is undoubtedly important, it is limited by time—both the length of the school day and students' schedules—and variable in quality, from the number and location of wired computers to the ways students are allowed to use them (See The Internet in Schools and Classrooms section).

Does home Internet access improve school performance? Teachers and parents tend to believe it makes a difference (e.g., 93% of teachers believe that home Internet access gives students an education advantage),[9] but it can be difficult to separate the effects of access itself from other factors, such as the level of technology use at school or parents' comfort with the Web. While there are no definitive answers, research in this area is growing, and there are strong indications that home Internet access can enhance and

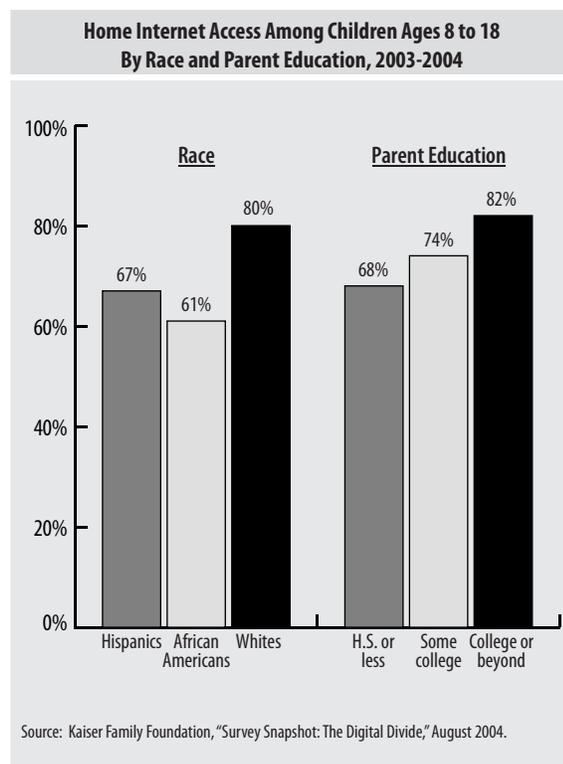**Computer Access and Use Among Children Ages 6 Months to 6 Years By Income, 2003**

Legend:
- Under $20,000
- $20,000-$29,999
- $30,000-$49,999
- $50,000-$74,999
- $75,000 or more

Percent with no computer: 55%, 40%, 20%, 7%, 8%
Percent who have *never* used a computer: 69%, 63%, 49%, 38%, 39%

accelerate learning. Several studies have found that students with access both at home and at school do better academically than their counterparts with only school access.[10]

For example, a Michigan State University study found that after low-income children were given home Internet access, their overall grade point averages and, in many cases, reading test scores, improved. Those who spent more time online saw greater improvements, which researchers attribute to the increased reading that Web use entails.[11]

Of course, children's home access also has limitations and variations in quality, such as equipment and connection speed, the number of household members who share a computer or connection, and parental restrictions on time and usage. But if a young person needs to do research for a school project, look up sensitive health information, explore college options, or take an online course, home access may well be their preferred option. That is why home access is generally considered an important aspect of the quality of online access.[12]

Home Internet Access Among Children Ages 8 to 18 By Race and Parent Education, 2003-2004

Source: Kaiser Family Foundation, "Survey Snapshot: The Digital Divide," August 2004.

The Internet in Schools and Classrooms

In 1994, about one in three public schools (35%) had an Internet connection; by 2002, 99% of schools had one.[13] Getting schools online has undoubtedly increased children's overall access: by 2001, more than two-thirds of school-age children had used the Internet at school.[14]

However, the fact that virtually all schools have at least one wired computer does not mean that all students, or even all students who have gone online at school, are reaping the same educational benefits.

Studies have found that students with Internet-connected computers in the classroom, as opposed to a central location like a lab or library, show greater improvements in basic skills. Teachers are also much more likely to direct and encourage students to use the Internet when classrooms have wired computers.[15]

Since 1994, the U.S. Department of Education has been asking schools about their Internet connections. Over time, these surveys have focused not just on simple access, but also on factors that affect the quality of access, such as where wired computers are located within the school, connection speed, teacher training, and tech-support staffing. Growing awareness that access is more than just hardware has helped identify both substantial positive trends and some disparities at the school and classroom level.

- Most schoolrooms are now online. In 2002, 92% of public school "instructional rooms" had Internet access, up from 51% in 1998 and 3% in 1994. These rooms include labs and libraries as well as classrooms.[16]

- There is one wired computer for about every five students in the public school system. The ratio of students to instructional computers with Internet access was 4.8:1 in 2002, up from 12.1:1 in 1998. Schools with the highest percentage of poor students had a higher ratio (5.5:1) than those with the lowest percentage of poor students (4.6:1).[17]

- Broadband is in most schools, but not at the room level. Just 15% of schoolrooms had a broadband connection in 2002.[18]

- The majority of schools do not have a full-time staff person responsible for technology. Schools with higher minority enrollment are less likely to have a full-time technology coordinator (32%, compared to 49% in other schools).[19]

- Some schools extend access to the Internet beyond school hours. In 2002, wired computers were available to students outside of school hours at about half (53%) of public schools with Internet access. After-school and weekend access did not vary by income or minority enrollment.[20]

Libraries

Public libraries are the third most common place where children go online. While significantly fewer children access the Internet from libraries than from home or school, they are a particularly important source for those without home access. Library access is limited in some of the same ways as school access, from hours of operation to the number of available computers and time limits on use. Low-income and African-American children are most likely to use the Internet from a library.

• Fifteen percent of all 5- to 17-year-olds have gone online at a library, including one in four (25%) children living in poverty.[21]

• More than one in four (29%) African-American children have gone online from a library, more than any other racial or ethnic group. Hispanic children have the next highest rate (20%), followed by Asians (17%), Whites (12%), and American Indians (11%).[22]

• More than one in four (28%) children with disabilities have gone online from a library, compared to 17% of non-disabled children.

Connection Speed

Internet connection speeds affect how easily and often children can get online, and what they can accomplish. Higher bandwidths are increasingly necessary to view, use, or download newer content and applications, from encyclopedia entries to online courses to multi-media players. Indeed, experts see connection speed as one of the most important new aspects of the digital divide.

Because broadband connections, such as cable and DSL modems, are more expensive than dial-up service, high-income households are the most likely to have them.[23] According to the latest government data, 20% of Americans with home Internet access used high-speed connections in 2001,[24] with rates ranging from 14% for those with lower incomes to 25% for those with incomes over $75,000 a year.[25]

President George W. Bush has proposed a permanent ban on state and local taxes on broadband access, and set a goal of making high-speed Internet access available in all communities by 2007.[26]

What Children Do Online, and Why It Matters

Technological literacy has become an increasingly essential ingredient for success, both in school and on the job. Word processing and e-mail are now fundamental tools in most colleges and workplaces.

Among Children Who Use the Internet From Only One Location, Percent Who Only Use It from School, by Family Income and Race/Ethnicity, 2001
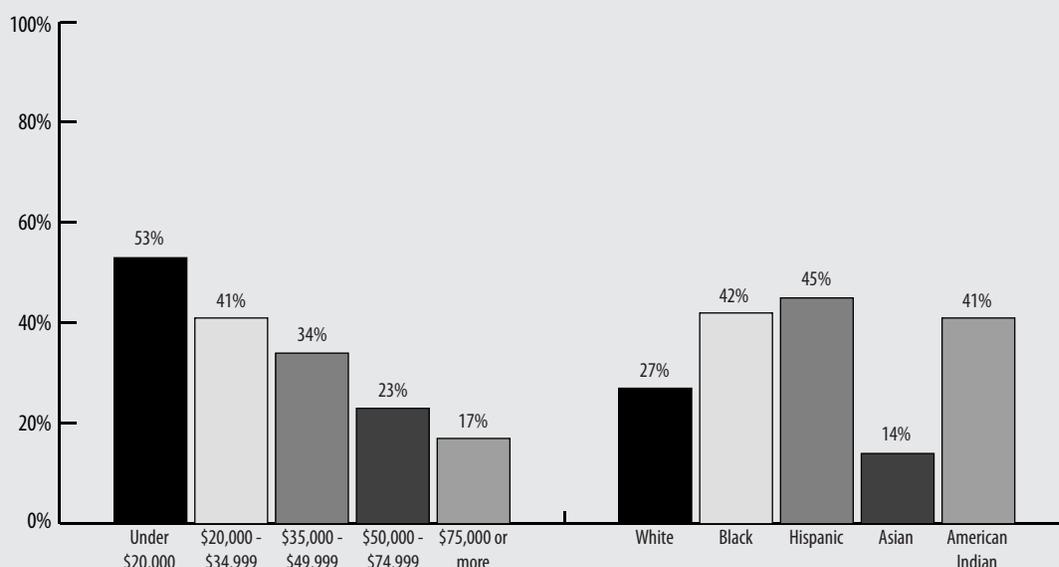
Source: U.S. Department of Education, National Center for Education Statistics. Computer and Internet Use by Children and Adolescents in 2001, NCES 2004-014, by Matthew DeBell and Chris Chapman. Washington, DC: 2003. (Table 7)

According to the Children's Partnership, 8 out of 10 of the fastest-growing occupations are computer-related, and workers who use computers earn roughly 20% more than those who don't.[27]

The Internet is becoming a primary source for everything from finding a local health clinic, to applying for student loans, to finding a job or registering to vote. In one recent survey, 87% of Americans said that "using technology effectively" is a very important skill for youth to have in the 21st century.[28] What children do online is one indication of their technological literacy and access to software. Even when looking only at young people who already have a computer at home, the way they use them varies along lines of age, income and ethnicity.

- More high-income children with home computers use them for word processing than low-income children: 41% of those with incomes under $20,000 word process, compared to 59% of those with incomes of $75,000 or more.[29]

- Among those with home computers, Asians and Whites are the most likely to use word processing: 53% of Asians and 51% of Whites, compared to 46% of Blacks, 42% of Hispanics, and 38% of American Indians.[30]

FEDERAL POLICY AND THE DIGITAL DIVIDE

A Brief History

As computers and the Internet became central to the U.S. economy in the 1990s, closing the digital divide emerged as a major federal policy initiative. The goal was to equip the next generation of workers to compete in an increasingly global and technology-dependent economy. By the late 1990s, making sure that all children had access to computers and the Internet was a regular rallying cry for many policymakers, industry leaders, and funders.

In 1995, the U.S. Department of Commerce issued the first in a series of "Falling Through the Net" reports, documenting various aspects of the digital divide. In his 1996 State of the Union address, President Clinton called for all public school classrooms to have Internet connections by 2000, as well as federal support for teacher technology training and the development of online education resources. With the passage of the Telecommunications Act of 1996 came the E-rate program, which makes it more affordable for schools and libraries to get online by providing discounts on telecommunications services.

Through the end of 2000, programs housed in the Federal Communications Commission (FCC), the Departments of Education, Commerce, Housing and Urban Development, and other federal agencies were part of an administration-wide effort to increase access to information technology, both for young people and the general population. Federal funding for these programs peaked in fiscal year 2001.

Few in Congress dispute the value of helping to connect schools and libraries or low-income rural and urban areas that are underserved by the private sector. However, many have objected to the type and scope of federal involvement in digital divide programs, criticizing what they perceive to be a "top-down" or "big government" approach. Some worry that federal investments compete with or stifle innovation in the telecommunications sector, or believe the government should focus on basic research rather than implementation in this area. Questions about the need for multiple programs with similar goals have also become more pointed in recent years.

The end of the technology boom and the attendant economic downturn changed the environment for digital divide programs. The federal budget moved from surplus to deficit. State and local resources dropped, reducing the leveraging potential of federal funds. Corporate philanthropy and equipment donations, key elements in the push to close the digital divide, began to dry up. As the stock market plummeted, so did foundation endowments, reducing support for both programs and advocacy in the nonprofit sector. Instead of calling for more skilled American workers, businesses began laying people off and sending technology jobs overseas. These changes, combined with improved rates of Internet access and dropping computer and connection prices, lowered the pressure to close what was left of the digital divide.

When the Bush Commerce Department issued its first major report on technology access in February 2002, "A Nation Online," it reported the good news that most children had used a computer and more than half had been online. It also painted a picture of a mission mostly accomplished, and helped make the case for the Administration's proposals to eliminate several of the existing digital divide programs.

While not disputing the overall rise in access, digital divide advocates strongly objected to the tone and conclusions of the report, as well as to the proposed cuts. They argued that with two in five children not online at all, and persistent gaps in access along income and other lines, federal investment was still essential.[31]

Federal Policies and Programs in Place Today

What federal programs and policies are in place today to address the digital divide? This can be a difficult question to answer. Online technology is playing an increasingly large role in many policy areas—from education and health care to job training and tax filing. Any number of federal programs may be helping young people or adults go online for any number of reasons, and increasing access at least incrementally as a

result. However, such efforts are dispersed across agencies and policy areas that are not "about" access per se, and it is no one's job to count them. Even highly sophisticated advocates say they cannot keep close tabs on such efforts.

There are, however, four major programs and policies that form the bulk of federal efforts to increase children's access to computers and the Internet. Three programs–the E-rate discount program, the Community Technology Centers Program (CTC Program), and the Technology Opportunities Program (TOP)–were explicitly designed to address the digital divide. The E-rate is by far the largest and most youth-oriented of these three programs. The CTC Program and TOP have been targeted for elimination by the current administration. The fourth is the No Child Left Behind Act of 2001 (NCLB), the Bush administration's signature education initiative. While not explicitly designed to address the digital divide, NCLB includes substantial resources that could be used to improve children's access to technology. Finally, two programs from the Department of Housing and Urban Development (HUD) provide examples of how technology access can be a component of other policy goals.

The E-Rate

Established as part of the Telecommunications Act of 1996, the E-rate program[32] helps schools and libraries get connected by providing discounts on telecommunications services, including Internet access. Schools and libraries apply for the discounts, which range from 20% to 90% depending on the percentage of low-income children in the local school district and whether it is urban or rural.

E-rate discounts are financed by the Federal Communications Commission's (FCC) Universal Service Fund, which is supported by fees from telecommunications companies, not federal dollars. Total E-rate spending is capped at $2.25 billion per year. Actual E-rate funding rose from $1.71 billion in 1998, the year it went into effect, to $2.25 billion in both 2002 and 2003.

The E-rate is generally credited with accelerating the rate of online access for both schools and libraries. As noted above, 99% of public schools and 92% of schoolrooms were online in 2002, up from 65% of schools and 14% of rooms in 1996. By 1999, more than four in five public schools (82%) had received some level of E-rate discount.[33]

Although schools receive the bulk of E-rate dollars, libraries have also benefited. The American Library Association credits the E-rate with raising the percentage of public libraries with Internet connections from 28% in 1996 to more than 95% in 2002. "With more than $350 million in discounts since 1998, the E-rate has helped change the public library's information technology landscape."[34]

Despite its overall popularity, the E-rate has also received some serious criticism. Perhaps most significantly, in June 2004 the Federal Communications Commission reported numerous instances of waste and fraud in the program, and news reports told of million-dollar servers being installed in elementary schools, and huge consulting fees being charged for maintenance and support.[35] In addition, some opponents have dubbed the E-rate the "Gore Tax," for Vice President Gore's vocal support for the program and the fees that some telecommunications companies passed directly on to consumers (e.g., a "Federal Universal Service Fee" line item in residential phone bills). There have been several proposals to eliminate or restructure the E-rate over the past few years.[36] Congressional hearings and inquiries into waste, fraud and abuse may help pave the way for cuts or other changes.

However, both advocates and opponents are concerned about the Universal Service Fund's long-term financial health. As it is currently structured, the Fund receives fees only for certain types of telecommunications services, such as "land-line long distance." Some are being challenged by newer services, such as e-mail and Internet long distance, that do not generate Universal Service fees. Experts warn that the rising popularity of these and other emerging forms of telecommunication could lead to significant drops in resources for the E-rate and other Universal Service programs over time.[37]

Community Technology Centers Program

Housed in the Department of Education's Office of Vocational and Adult Education, the Community Technology Centers (CTC) Program supports the creation or expansion of CTCs, which provide technology access and training to residents of economically distressed communities. Each year, the CTC Program uses a different priority for selecting grantees. In fiscal year 2002, this priority was adult education and family literacy. In fiscal year 2003, it was providing academic support to low-achieving high school students.

The president's 2002 budget called for eliminating the CTC program completely, as part of an effort to consolidate education-related technology spending under the No Child Left Behind Act (NCLB) of 2001. Digital divide advocates argued that without a dedicated funding stream for CTCs, low-income communities would suffer significant losses in services. In the end, Congress retained the CTC program but funded it at $32.5 million, a 50% reduction from 2001. The President's 2003 budget again attempted to cut the program, and again it survived, this time with $30 million, and the program received $10 million in 2004.

Technology Opportunity Program

The Technology Opportunities Program (TOP) provides seed money for innovative uses of advanced technology in the public and nonprofit sectors. A competitive matching grant program run by the U.S. Commerce Department's National Telecommunications and Information Administration (NTIA), TOP grants support new ways of delivering public services and expanding opportunity that can serve as national models.

Unlike the CTC Program, TOP does not give priority to particular types of eligible programs, although many TOP grants help address the digital divide for youth. Examples of youth-oriented grants include: creating an online support network for children with serious illnesses and disabilities; building a national network for youth centers around the country; providing Internet access, training and after-school programs for youth in a low-income urban neighborhood.

Grant recipients include state, local and tribal governments, health care providers, schools, libraries, police departments, and community-based nonprofits. Created in 1994 as the Technology Information Infrastructure Assistance Program, TOP has provided a total of more than $200 million in grants and generated close to $300 million in matching funds.

TOP's funding peaked at $42.5 million in fiscal year 2001. In fiscal year 2002, Congress fulfilled the Bush administration's request for $15 million in funding, a 65% reduction from 2001. In 2003, the President proposed eliminating the program, saying that it had "fulfilled its mission," but Congress maintained funding at $15.5 million.[38]

Supporters argue that the need for innovation remains high, especially as technology evolves and creates new opportunities and challenges, and that TOP grants have generated lasting value in a variety of fields. The President's 2004 budget proposal again called for TOP's elimination, but it received $12.9 million in funding. As with the CTC program, members of Congress with grantees in their jurisdictions are expected to support the program's continuation.

No Child Left Behind Act

The No Child Left Behind Act (NCLB) both created and absorbed a range of programs with potential relevance to the digital divide. Said John Bailey, current Director of Education Technology at the U.S. Department of Education, "NCLB focuses on closing the achievement gap, which is a different approach to closing the digital divide. We think the policy has taken a major step forward: we're not just thinking about education programs and funding streams, and technology programs and funding streams, but we've made it possible for every program to be an opportunity for technology funding, grounded in very specific outcomes."[39]

In designing NCLB, the Bush administration tried to eliminate what it saw as duplication and inefficiency among education programs, including those focused on bringing technology into the schools. Some programs were consolidated and converted from competitive grants to block grants, which can give states added flexibility in how they spend federal dollars, although not necessarily more money overall.

Under NCLB, the Enhancing Education through Technology (Ed-Tech) block grant program addresses the digital divide most directly. According to the Department of Education Web site, "The primary goal of the Ed-Tech program is to improve student academic achievement through the use of technology in schools. It is also designed to assist students in crossing the digital divide by ensuring that every student is technologically literate by the end of eighth grade, and to encourage the effective integration of technology with teacher training and curriculum development to establish successful research-based instructional methods."[40]

Ed-Tech received $695.9 million in fiscal year 2003, and is authorized for funding as high as $1 billion in future years. It consolidated two Clinton-era programs, the Technology Literacy Challenge Fund and the Technology Innovation Challenge Grant program, which received a combined total of $600 million in funding in 2001. However, other Education Department programs with computer access as a focus experienced cuts, such as the CTC program (described above), Star Schools, Ready to Learn, and Preparing Tomorrow's Teachers to Use Technology (PT3), all of which have been proposed for elimination.

In addition to Ed-Tech, other large block grants, such as the Title 1 special education program, Reading First literacy program, and 21st Century Community Learning Centers after-school program, allow recipients to purchase technology hardware, software, and training if it helps them meet the grants' goals. NCLB also made it easier for states to transfer funds received through a variety of education block grants to other education programs. As a result, states have the option of spending more federal dollars on technology than they did under earlier policies, but they could also spend the same or less.

Digital divide advocates and some education technology advocates worry about the loss of more narrowly targeted funding streams for technology. Given the current pressures on state budgets, they are concerned that states will shift federal dollars from technology programs to meet other education priorities. Ed-Tech supporters contend that schools are increasingly aware of the importance of technology, and that schools' technology plans will become more and more integrated with their efforts to meet NCLB's student achievement standards.

Housing and Access: Neighborhood Networks

Two programs run by the U.S. Department of Housing and Urban Development (HUD) aim to increase Internet access for low-income housing residents. Both are called Neighborhood Networks and were established in 1995, but they are located in separate parts of the agency and its budget.

One is a competitive grant program, which provides funds for creating or expanding "neighborhood network centers" in public and American Indian housing developments. These centers are computer labs run by local public housing authorities or by nonprofits that serve public housing residents. They are supposed to provide a range of services that tie technology access to children's educational advancement and other policy goals, such as helping adults move from welfare to work. This program was funded at $5 million in fiscal years 2002 and 2003.[41] The budgets proposed by HUD and President Bush would eliminate this program by 2005.[42]

The other Neighborhood Networks program encourages privately owned low-income housing developments that receive HUD insurance or financing to establish technology centers. The purpose is "to enhance economic self-reliance of people who receive rental assistance."[43] This program does not make grants, but has provided certification and technical support to an estimated 1,200 centers.

WHERE SHOULD WE GO FROM HERE?

Just as there are many ways to define the digital divide, there are many ideas about what the federal government should do about it. Some are grand in scale, while others are more incremental.

Expanding Home Access

For children and youth, going online for activities like doing homework, researching health questions, or filling out scholarship applications can take more time, or require more privacy, than public settings normally provide. Whether as a primary strategy or part of a menu of approaches, increasing home access is one way to narrow the digital divide.

Some policymakers and advocates believe the best way of increasing home access is by focusing on increasing demand for residential service rather than on directly expanding or subsidizing the supply. They believe that expanding public access, providing technology education and training, and/or developing compelling applications and content, would give more people the opportunity to recognize the benefits of being connected at home. Others argue that a more extensive and direct effort is needed to close the gaps in home access.

A Universal Service?

Some advocates believe that to participate fully in today's economy, home Internet access has become as essential as basic telephone service. Should the government add residential Internet access for low-income households to the basic telephone service already covered by the Universal Service Fund? Even among proponents, this idea is often dismissed as pie-in-the-sky. But others argue that with half of households now online, this is the time to start laying groundwork for an approach that may seem quite reasonable in the near future.

As defined in the Telecommunications Act of 1996, "Universal Service is an evolving level of telecommunications service that the Commission should establish periodically under this section, taking into account advances in telecommunications and information technologies and services." The law directs the FCC to consider whether services under consideration: "a) are essential to education, public health, or public safety; b) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers; c) are being deployed in public telecommunications networks by telecommunications carriers; and d) are consistent with the public interest, convenience and necessity."[44]

Based on these criteria, the case for universal home Internet service is likely to grow stronger every year, at least on paper. However, as noted above, the Universal Service Fund is already under pressure to meet its current financial obligations. It would almost certainly require new sources of revenue to cover residential Internet subscriptions, such as fees on a wider range of services or providers, higher fees on the services already covered, or some other funding mechanism. Expanding the scope of covered services or adding revenue sources would likely require a major political push and a more expansive economic climate.

Aside from cost, objections to a subsidy through the Universal Service Fund range from the tactical to the philosophical. There are concerns that the U.S. is too dependent on older ways of delivering telecommunications services, and that subsidizing use of the current infrastructure locks us into an outmoded wiring system instead of looking ahead to wireless and digital convergence. Some believe choosing particular forms of access to subsidize will distort the telecommunications market. Others believe that home access is spreading at an acceptable rate and that further expansion should be left to the marketplace, or do not think that home access is a true necessity (in contrast to basic phone service).

Regardless of the funding source, there remains the challenge of defining—and justifying—what type of connection and/or equipment would be covered. It is difficult, if not impossible, to construct a subsidy for a moving target, and to reach consensus about what types of connection should or should not be covered.

Leveraging Low-Income Housing

Another idea for increasing home access for lower-income children is to require it in low-income housing developed with public funds or tax credits. For example, a Senate bill takes this approach using the low-income housing tax credit (LIHTC). The IRS sets general parameters for what kinds of projects are eligible for this tax benefit, and state agencies select which developers and projects in their state will receive it.[45] The Senate bill would add to the list of required selection criteria: "whether such project has infrastructure permitting the use of high-speed Internet technology in each residential unit." S. 305 was introduced without fanfare in February 2003 by Senator John Kerry (D-MA) and co-sponsored by Senator Orrin Hatch (R-UT); it remained in the Senate Finance Committee as of this writing.[46]

Some states have already moved in this direction. Several give extra points to LIHTC applicants that commit to providing high-speed home Internet access—wiring if not the subscription. In Kentucky, low- and moderate-income development and redevelopment projects must provide home access to receive significant funding from the state housing finance agency. One Economy, a nonprofit organization, is actively promoting such state policies through its Bring IT Home campaign, launched in 2003.[47]

Focusing on Public Access

Another approach to increasing children's access to technology is to increase availability in public settings, including but not limited to schools and libraries. Advocates for expanded public access believe that putting technology and trained staff in neighborhood settings where children are already comfortable, and at hours when they are not in school, is essential to narrowing the digital divide as well as supporting other youth development and education goals. Some public access ideas include:

- Extend E-rate eligibility to community-based organizations, such as CTCs, that can provide both access and related support for children and others who lack home access. As noted above, only schools and libraries currently qualify for E-rate discounts on telecommunications services.

- Expand the E-rate to cover computers and software, not just wires. Schools could make the most of the wiring they already have by providing more places for children to go online and more educational opportunities once they are online.

- Make the wired computers in schools available beyond school hours. As noted above, many schools offer some before- or after-school access; a more expansive public access approach would include evening, weekend, and/or summer access.

- Set a major policy goal of wiring all after-school programs that receive federal funds within five years. Or, at a more incremental level, create incentive grants or other supports for more after-school programs to provide online access and training.

- Increase federal funding for libraries, so they can stay open more evenings and weekends, and provide more wired computers. (Federal funds currently make up only 3% of overall library budgets.[48])

- Put technology centers in all public housing complexes, and require them in developments that receive public financing or other benefits. This approach could build on the Neighborhood Network centers described above, as well as leverage the LIHTC and other financing mechanisms.

Tapping Spectrum Proceeds for Public Access

The Spectrum Commons and Digital Dividends Act would use a portion of the federal proceeds from auctions of the public airwaves to invest in both access and content. Introduced in the House in 2003 by Representatives Markey (D-MA) and Larson (D-CT) as H.R. 1396, the bill would create a Digital Dividends Trust Fund.[49] This fund would expand public access to broadband with the explicit goal of narrowing the digital divide, targeting low-income housing and community centers and unserved rural areas for increased public access. Some of the other things the trust would support are technology-related teacher training, after-school programs, and help for public television stations to upgrade to digital technology.

One other notable feature of this bill is the Spectrum Commons. It would help make free wireless access available at the very local level by setting aside a portion of wireless frequencies for public or unlicensed use. It could help low-income communities create free access zones, or "hot spots," like some businesses and communities have already launched in places like Starbucks, New York City's Bryant Park, and a low-income housing project in Boston.[50] However, communities would have to raise the funds for the connection and antenna, and residents would have to have wireless devices—portable ones for public spaces—to take advantage of this form of access.

Content and Skills: Making Access Meaningful

As discussed above, access to wired computers is just one aspect of the digital divide. To realize the social and economic benefits of technology, children also need the skills, content and applications that can help them learn and succeed. Many advocates see the quantity and quality of access as inextricably linked, and some see a role for federal policy in advancing content and skills development in particular. What follows are three policy ideas that focus specifically on content and skills.

Integrate Content Development into Existing Federal Funding Streams

Since 2000, The Children's Partnership, a nonprofit policy and advocacy organization, has been calling attention to "the content divide." They have documented what they consider to be a significant gap between the information needs of low-income, low-literacy, and other disadvantaged users, and what is available on the Internet. They found that the greatest needs are for local job listings, housing information, and health and education services, at accessible literacy levels and in languages other than English. The group argues that those most at risk of being left behind in the digital economy also need online coaching, tutorials, translation tools, and other applications to help them tap the Internet's potential. While focused on adults' information needs, the Partnership's findings also have implications for young people, many of whom also face language, literacy, and other barriers online. Less Web-savvy older teens and young adults seeking information about jobs and education may also need training and other support to successfully navigate the Web.

Investing in R&D

A bill introduced in November 2003 would use a portion of spectrum auction and usage proceeds to create a Digital Opportunity Investment Trust (DO IT). Rather than focus on access to technology, the DO IT Act would fund research and development for educational software and content.

With an estimated $1 billion per year, the DO IT trust would attempt to fuel technological innovation in K-12 and higher education, as the National Science Foundation and the National Institutes of Health do in their fields. It would fund projects ranging from online reading tutors to lifelong learning tools and training for responding to disasters. The trust would also digitize the collections of libraries, universities, and museums, making them available online both to schools and the general public.

DO IT approaches technology as a tool for reducing educational and economic inequities among both children and adults. Its supporters see government intervention as an appropriate response to a perceived market failure in educational technology development.[51] The bill does not address whether all schools, libraries, or homes will have the connections and hardware to handle advanced content and applications.

While it has not yet made much headway legislatively, DO IT has received support from major institutions representing educators (K-12 and higher education), arts institutions, libraries, and mayors. Some critics contend that the proceeds from spectrum auctions should be returned directly to taxpayers, or that the trust would be a slush fund for pet projects, or "pork." Others believe that spectrum funds should be directed to infrastructure and access, either instead of or along with content development. Senators Dodd (D-CT), Durbin (D-IL), and Snowe (R-ME) are the DO IT bill's sponsors. A similar 2002 bill, introduced by Senators Dodd and Jeffords (I-VA), died in committee.[52]

Give Adults the Skills to Help

Some policy ideas focus on ensuring that there are well-trained adults to help children make the most of technology when the equipment is there. One way to do this is to invest in teacher training on a massive scale, since school is where children who lack home access are most likely to use the Internet. Another approach would train and deploy Americorps volunteers to provide coaching and other technology support in community settings, such as after-school programs and low-income housing developments. Americorps has a limited initiative along such lines, and proposals such as the Spectrum Commons and Digital Dividends Act, described above, would expand it.[53]

CONCLUSION

A great deal of progress has been made in closing the digital divide. Federal policies aimed at expanding basic access have helped bring nearly all schools and libraries online and supported the development of technology centers in disadvantaged communities. Most children from all major income groups and ethnicities have gone online, but significant gaps in both the quantity and quality of access remain: where their access is located, the speed of their connection, and the skills they are taught for making the most of their online experience.

These gaps could have real implications for children. Will all young people be prepared to participate in an increasingly digital economy and culture? Or will those who are already at risk be left farther behind as those with high-quality access—from better computers at school to high-speed connections at home—move ahead? And what role can or should the federal government play in closing today's digital divide?

The remaining gaps in technology access may well be the most challenging to bridge. They are both less visible and more complex than the gaps we have already closed.

As the first generation to grow up with the Internet starts to enter the larger world, we will undoubtedly learn more about the effects of the digital divide and see new directions for federal policy. In the meantime, there appears to be enough information about today's divide, in all its aspects, to inform a national debate about the educational importance of children's access to technology, what meaningful access looks like, and how much federal investment is enough.

While it may require new language and new approaches, this could be a very fruitful time for federal policymakers, industry leaders, and advocates to refocus on the digital divide.

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Interviews

Between November 2003 and January 2004, telephone interviews were conducted with a variety of experts on digital divide and youth issues. Interviewees included current and former federal officials, staff to legislators on key committees, policy analysts, advocates, business representatives, academic researchers, and youth service providers. While 23 people were interviewed, three declined to be named below, and most preferred not to be quoted directly.

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- Marland Buckner, Federal Affairs Manager, Microsoft Corporation
- Mark Cooper, Director of Research, Consumer Federation of America
- Colin Crowell, office of Cong. Edward J. Markey (D-MA)
- Norris Dickard, Director, Public Policy, Benton Foundation
- Leslie Harris, President, Leslie Harris and Associates
- Larry Irving, President, Irving Information Group
- Tom Kalil, Special Assistant to the Chancellor for Science and Technology, University of California at Berkeley
- Julie Kaminkow, Education Market Analyst, Cisco Systems, Inc.
- Brian Komar, Director of Strategic Affairs, Leadership Conference on Civil Rights
- Wendy Lazarus, The Children's Partnership
- Laurie Lipper, The Children's Partnership
- Michael Oden, Associate Professor of Community and Regional Planning, University of Texas at Austin
- Kevin Richards, office of Sen. Edward M. Kennedy (D-MA)
- Emily Sheketoff, Executive Director, ALA Washington Office, and Associate Executive Director, American Library Association
- Ryan Turner, Nonprofit Policy and Technology Analyst, OMB Watch
- Darrell West, Professor of Political Science, Brown University
- Anthony Wilhelm, Vice President for Programs, Benton Foundation; currently Director, Technology Opportunities Program, National Telecommunications and Information Administration, U.S. Department of Commerce
- Virginia Witt, Executive Director, San Francisco Beacon Initiative
- John Zoltner, Director of Programs and Policy, CTCNet

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NOTE: All percentages used in this report were rounded to the nearest whole number (e.g., 80.5% to 81%).

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[40] U.S. Department of Education Web site. [http//www.ed.gov/programs/edtech/index.html]

[41] U.S. Department of Housing and Urban Development, program information on Neighborhood Networks grant program, multiple Web pages including http://www.hud.gov/offices/pih/programs/ph/hope6/grants/fy02/, and http://www.hud.gov/offices/pih/programs/ph/hope6/grants/fy03/index.cfm.

[42] HUD's justification for not seeking funding for the HOPE VI program, through which the Neighborhood Networks program is funded, can be found at http//www.hud.gov/offices/pih/programs/ph/hope6/grants/fy02, and http://www.hud.gov/offices/pih/programs/ph/hope6/grants/fy03/index.cfm. ?ee also www.hud.gov/about/budget/fy05/budgetsummary.pdf.

[43] Program description on HUD Web site at http://www.hud.gov/offices/hsg/mfh/progdesc/nnw.cfm.

[44] U.S. Telecommunications Act of 1996, Section 254 (c).

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[47] For examples of state and local initiatives to expand residential access in low-income housing, see http://www.one-economy.com/BIH-activity.asp. For details on the Kentucky policy, see Kentucky Housing Corporation, "New Policy to Connect More Kentucky Families to the Internet." Press release, October 1, 2002. [http://www.kyhousing.org/news/resources/PR10-01-02.pdf]

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