

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554**

In the Matter of:

A National Broadband Plan for Our Future (GN Docket Nos. 09-47, 09-51, 09-137
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**COMMENTS BY CONNECTED NATION and THE NATIONAL
COALITION ON BLACK CIVIC PARTICIPATION-BLACK WOMEN'S
ROUNDTABLE**

NBP Public Notice # 15 – BROADBAND NEEDS IN EDUCATION

444 North Capitol Street, Suite 224
Washington, DC 20001
877-846-7710

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I. INTRODUCTION

The FCC seeks comment on the needs for exploiting the full potential of broadband to improve education in the United States. Based on our experience, educational broadband applications for schools, educators, students, parents, and/or adults seeking continuing or adult education constitute a key weapon in breaking down barriers to broadband adoption.

Both the National Coalition on Black Civic Participation-Black Women's Roundtable and Connected Nation contend, based upon our experience, that local applications that directly impact and improve quality of life are critical to providing the necessary value from broadband that will encourage institutions, households, or small businesses to incorporate broadband and other technology into their day-to-day activities. Educational applications, along with healthcare and workforce related applications, represent one of the most valuable categories of local applications that drive broadband adoption.

Previously, as part of the Commission's on-going proceeding to craft a National Broadband Plan, Connected Nation filed extensive comments on the model it has implemented with and on behalf of several states, which has been honed over the past five years to be scalable and replicable while addressing the unique needs of each state and locality. Part of the Connected Nation model includes a locally driven, research supported, grassroots and team-based effort to identify local barriers to adoption, then build and implement technology plans and projects that can overcome those barriers. Encouraging the creation of educational applications that cater to the needs of each community regularly comprise portions of these county based technology plans. For a detailed review of this model and the experience in various states, please see "Connected Nation, Inc. Comments On A National Broadband Plan of Our Future, G.N.

Docket 09-51 at

http://fjallfoss.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520220269

In these reply comments, Connected Nation, along with the National Coalition on Black Civic Participation-Black Women's Roundtable, will address several issues related to the effectiveness of broadband in improving education. We will discuss the importance of broadband adoption at home, as well as school; how broadband adoption can meet the unique educational needs of African American women and girls; the importance of ensuring that at-risk populations bridge the digital divide; success stories of efforts to raise broadband adoption by focusing on educational outreach; the efforts of public broadcasting to continue its educational mission by bringing digital content into the home and the classroom; and the opportunity for using E-rate to ensure that technology is leveraged in the classroom to the greatest extent possible.

II. BROADBAND ADOPTION: STUDENTS NEED BROADBAND ACCESS AT HOME

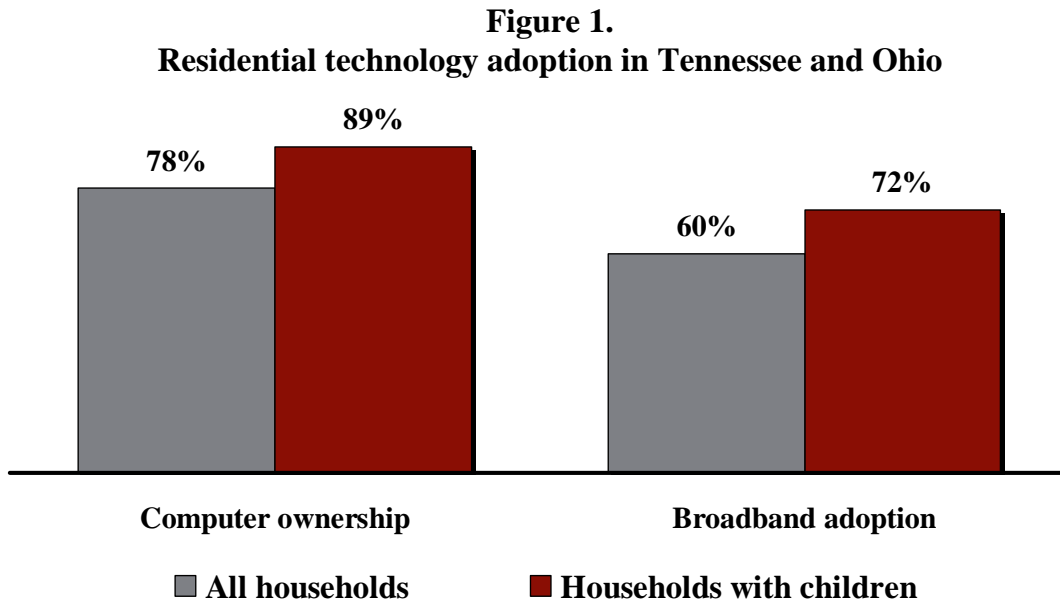
Broadband technology in the classroom is essential to create rigorous, technology-infused learning environments that foster student achievement. However, the use of broadband technology in the classroom cannot be considered in isolation when trying to assess achievement gains for students. Students, especially in minority communities where educational achievement gaps are most prevalent, also need affordable broadband technology at home to extend learning opportunities outside the classroom. Broadband adoption in the home is critical in order for students to excel academically and high-speed broadband access is essential to making educational achievement for minority students a reality.

Research shows that student-access to broadband technology at home makes a significant impact on educational achievement, specifically among low-income children.¹ At the same time, Connected Nation research shows that children of traditionally disadvantaged or vulnerable population groups are significantly less likely to have home broadband connections. In other words, the children who arguably are in greatest need of home broadband for educational applications are the same children who don't have broadband at home.

These data show that across Tennessee and Ohio, technology adoption among all households with children is higher than average. In 2009 Residential Technology Assessments conducted in Tennessee and Ohio, nearly nine out of ten households with children (89%) reported that they owned either a laptop or a desktop computer, compared to the average of

¹ See Linda A. Jackson, et al, *Does Home Internet Use Influence the Academic Performance of Low-Income Children?* (2006) at 5, available at <http://www.apa.org/releases/dev423-jackson.pdf> (last visited August 13, 2009). (Research findings based on HomeNetToo, a field study designed to examine the antecedents and consequences of home Internet use in low-income families. The results of the study revealed that, "Children who used the Internet more had higher GPAs after 1 year and higher scores on standardized tests of reading achievement after 6 months than did children who used it less.")

78%.² Similarly, 72% of households with children reported subscribing to home broadband service, compared to the average of 60% (figure 1).³

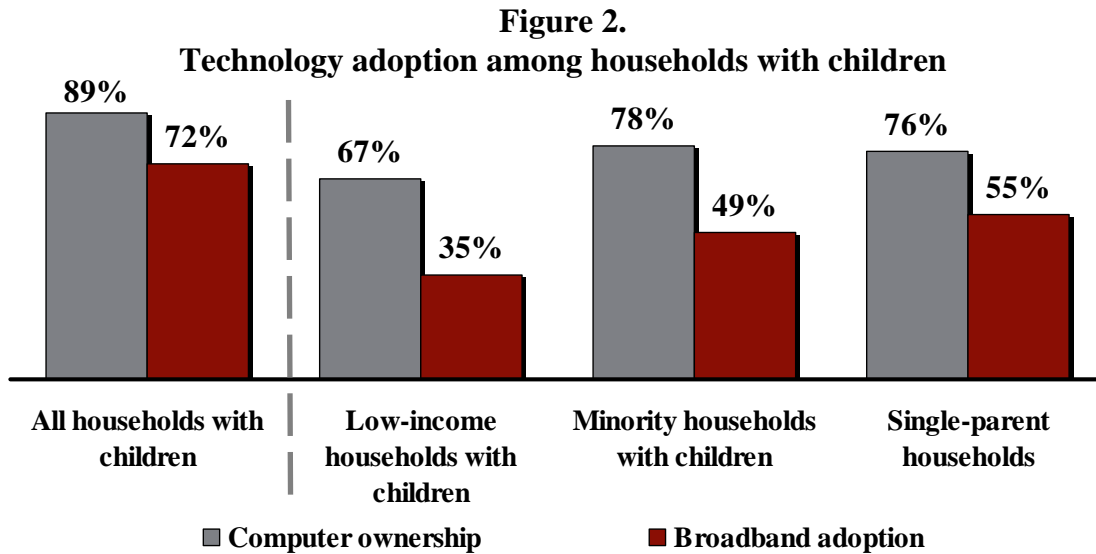


While a large percentage of households with children do subscribe to home broadband service, though, there is still a significant share of families with children who do not have broadband at home, especially among several demographic groups. Children in low-income families, minority families, and single-parent families all report lower-than-average rates of computer ownership and broadband adoption (figure 2).⁴

² Source 2009 Residential Technology Assessments of Tennessee and Ohio. N=2,400 Tennessee and Ohio residents, 858 of whom have children under the age of 18 living at home.

³ Ibid.

⁴ Ibid. Low-income=annual household income below \$25,000.

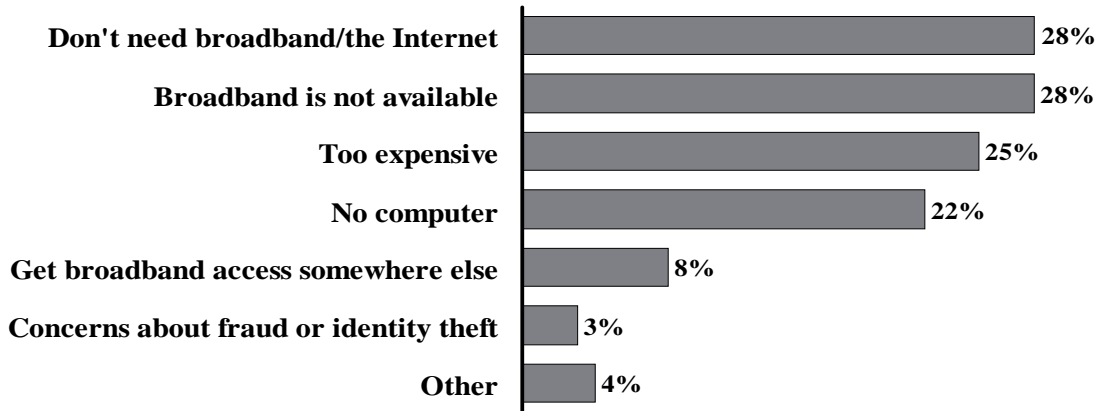


While 72% of all households with children subscribe to home broadband service, only 35% of low-income households with children living at home say they subscribe to broadband. Also note-worthy, fewer than one-half of minority households with children (49%), and only 55% of single-parent households report that they subscribe to home broadband service. As a result, these children have a more difficult time accessing broadband to conduct research or get help with their homework, putting them at a disadvantage compared to their peers living in broadband-connected homes.

The barriers to broadband adoption among households with children are varied. More than one out of four households with children who do not subscribe to home broadband service believe they do not need it, despite the advantages it offers their children (figure 2).⁵ Households with children are equally likely to report that the lack of available broadband service is a barrier to broadband adoption. One out of four households with children say that broadband service is too expensive for them, while nearly an equal share say they lack a computer for access to broadband service.

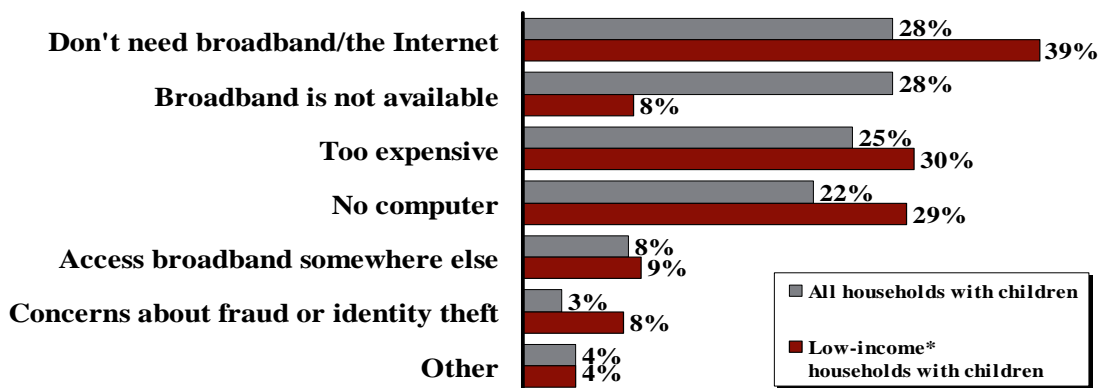
⁵ Ibid. n=244 Tennessee and Ohio residents with children living at home who do not subscribe to home broadband service.

Figure 3.
Barriers to broadband adoption among households with children



Barriers to broadband adoption differ between the different demographic groups who are less likely to adopt broadband. Low-income households with children are much less likely to cite a lack of availability as a barrier to broadband adoption, but they are much more likely to say they do not need broadband or the Internet (figure 3).⁶

Figure 4.
Barriers to broadband adoption among low-income households with children

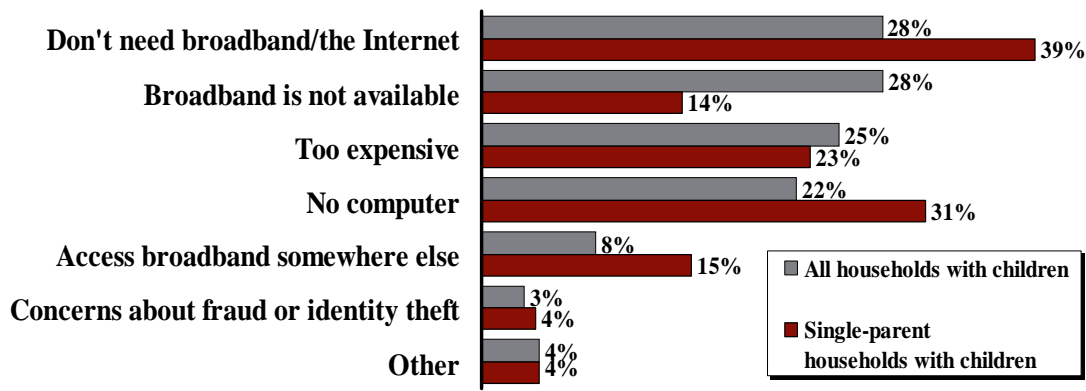


In addition, low-income households with children that do not subscribe to broadband service are more likely to report that the monthly expense and the lack of a home computer are barriers to broadband adoption.

⁶ Ibid. Low-income=annual household income less than \$25,000

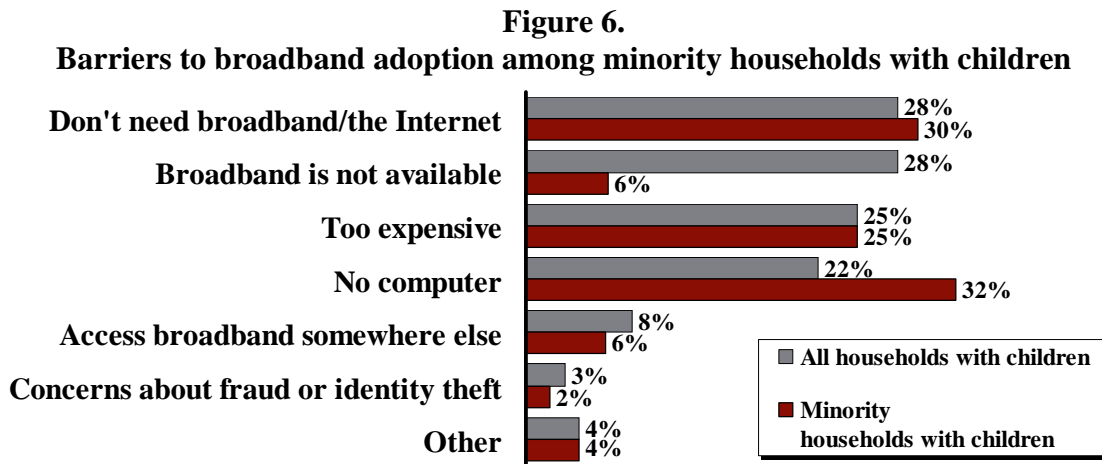
Single-parent households share several of the same primary barriers to broadband adoption as low-income households with children. Single-parent households that do not subscribe to home broadband service are significantly more likely than average to say they do not need home broadband or Internet service and that the lack of a home computer is a barrier to broadband adoption (figure 5).⁷ Single-parent households are also much more likely to say they access broadband service someplace other than home, such as school or their local library. On the other hand, single-parent households are much less likely than average to cite the lack of available broadband service as a barrier to adoption.

Figure 5.
Barriers to broadband adoption among single-parent households



⁷ Ibid.

Minority households with children are also less likely than average to report that the lack of available service is a barrier to broadband adoption (figure 6).

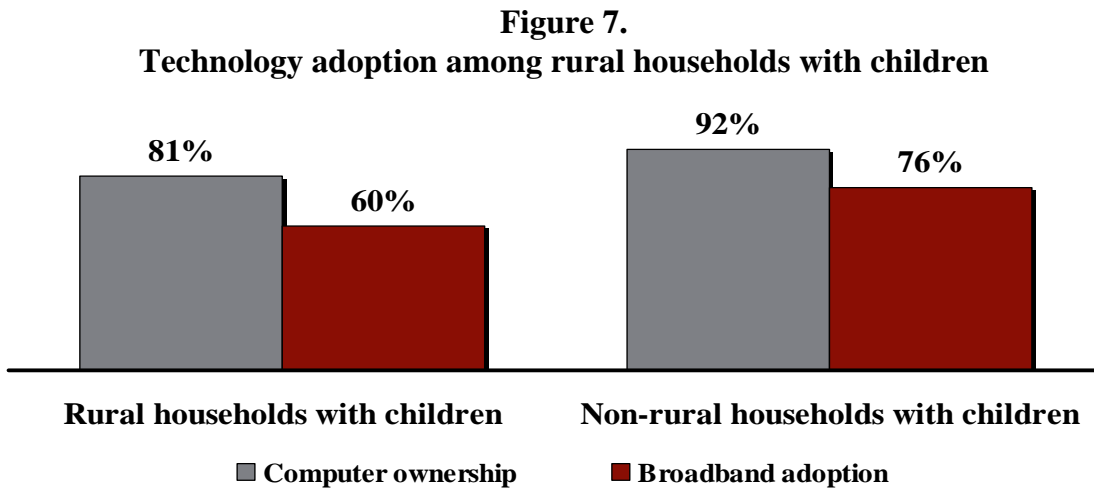


At the same time, nearly one out of three minority households with children that do not subscribe to home broadband service say that the lack of a home computer is a barrier to adoption for them. Interestingly, while most all other demographic groups cite a perceived lack of need for broadband as the top reason for not adopting broadband at home, among minority children it is the lack of a home computer that constitutes the top barrier to broadband adoption. These data suggest that minority parents are more likely to understand the need for broadband at home, yet they are less likely to overcome barriers to computer ownership.

This challenge is particularly significant considering that home-use of culturally responsive broadband technologies can build bridges between minority students' home and school cultures. This technology can drastically narrow the educational achievement gap between minority and white students by using the cultural knowledge, prior experiences, and performance styles of diverse students to make learning more appropriate and effective. For example, adoption of broadband technology in the home can assist students who do not speak

English as their primary language at home to increase language learning skills via technology that translates on-line content and e-mails to and from English and several other languages.⁸

Disparities in technology adoption are evident between different socio-economic groups, but also between rural and non-rural households. Rural homes with children lag behind in both computer ownership and broadband adoption (figure 7).⁹



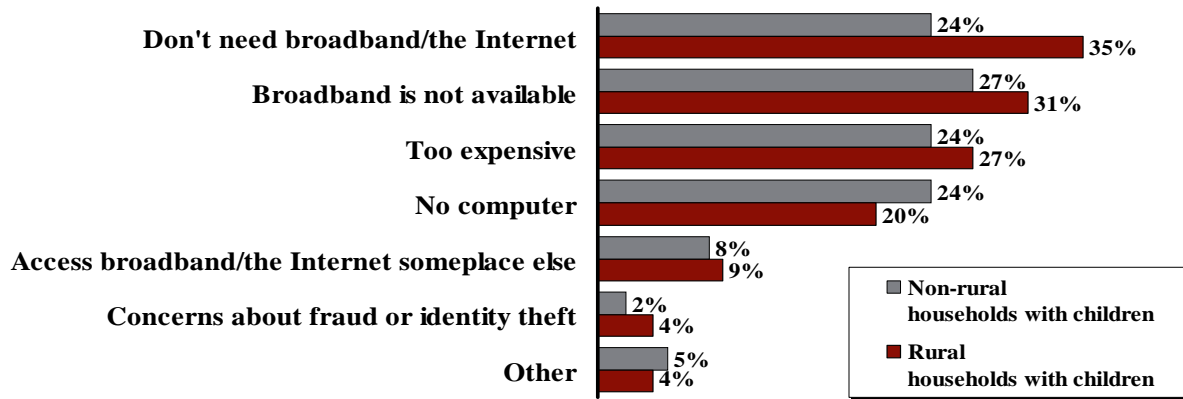
Rural households with children are much less likely to own a computer (81% of rural households, compared to 92% of non-rural households). This, in part, contributes to the even larger gap in broadband adoption between rural and non-rural households with children. Only 60% of rural households where children are present subscribe to home broadband service, compared to 76% of their non-rural peers.

⁸ See Corey Murray, Translation Tool Tackles Language Barrier: Grant Program uses IBM Technology to Help Schools Translate E-Mails, Web Sites, *eSchools News* (March 29, 2007), available at <http://www.eschoolnews.com/news/top-news/index.cfm?i=45788&CFID=2844512&CFTOKEN=46694510> (last visited September 1, 2009) ([this technology program is being used to] “teach members of the Hispanic community about computers, show English-language learners how to conduct online research, better engage parents in their children’s education, and encourage ESL students to share their language--and their heritage--with their English-speaking friends.”)

⁹ Ibid.

When asked why they do not subscribe to home broadband service, a larger share of rural households with children report that a perceived lack of need for home Internet or broadband service is a barrier to adoption (figure 8).

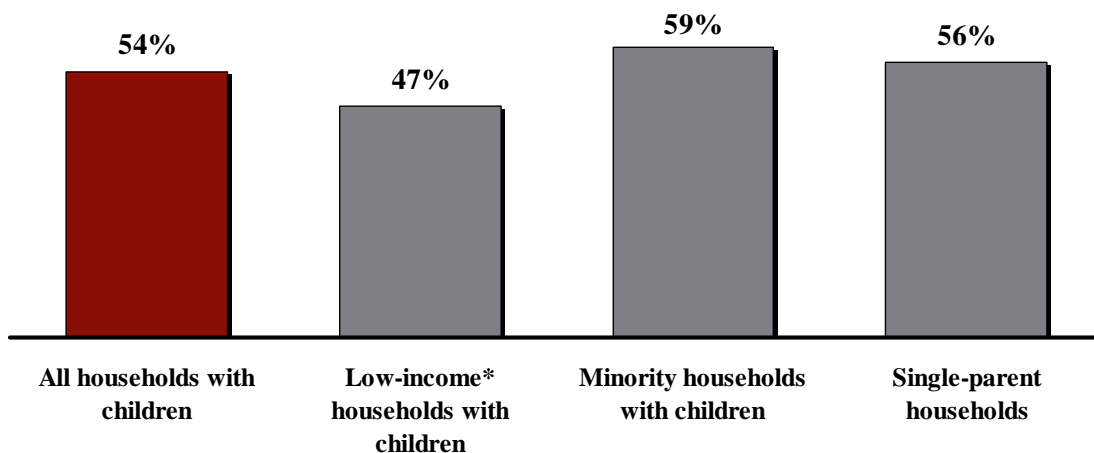
Figure 8.
Barriers to broadband adoption among rural households with children



Rural residents with children at home are more likely to cite the lack of broadband availability and cost as barriers to broadband adoption, and they are less likely than non-rural residents to cite the lack of a home computer as a barrier.

Across Tennessee and Ohio, more than one-half of households with children (54%) reported that they have recently gone online to conduct activities that augment their education, such as taking online courses, communicating with teachers, and conducting research for schoolwork (figure 9).¹⁰

Figure 9.
Use of online educational applications among households with children



Low-income households with children are less likely to use the Internet for educational purposes, but single-parent and minority households with children both use the Internet for educational purposes slightly more often than average, despite the fact that these demographic groups are less likely than average to subscribe to broadband service at home.

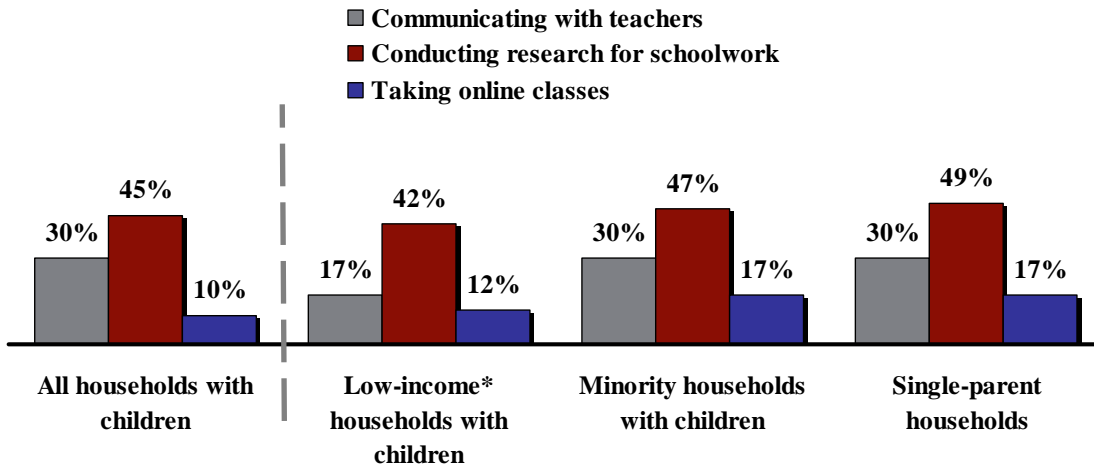
The most popular way for households with children to use the Internet for educational purposes is to conduct research for schoolwork. Across Ohio and Tennessee, 45% of households with children conduct research via the Internet (figure 10).¹¹ Even among demographic groups that are less likely to adopt broadband, such as low-income, minority, and single-parent

¹⁰ Source: 2009 Residential Technology Assessments of Ohio and Tennessee. n=858 Ohio and Tennessee residents who have children living at home.

¹¹ Ibid.

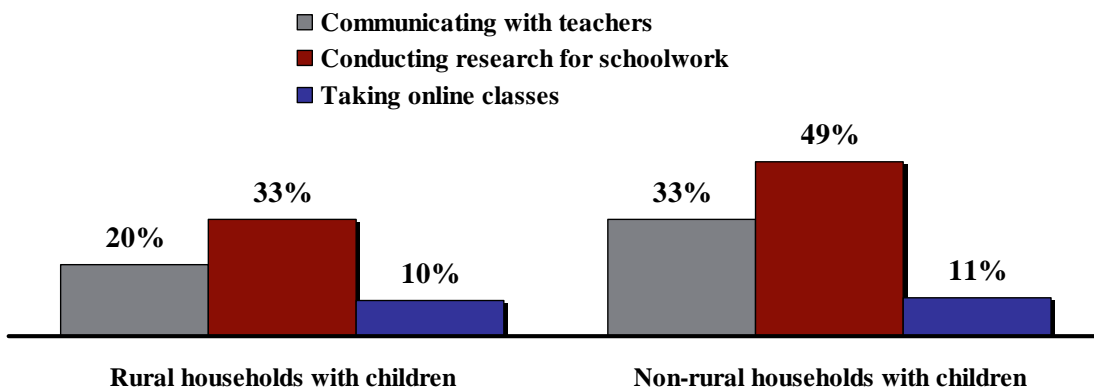
households with children, conducting research for school is the most popular educational use for the Internet, followed by communicating with teachers and taking classes online.

Figure 10.
Use of various online educational applications among households with children



Rural households with children are less likely to communicate with teachers and conduct research online than their non-rural peers, though there is only a slight variance in the share of rural households with children who take classes online (figure 11).¹²

Figure 11.
Use of various online educational applications among rural households with children



¹² Ibid.

III. IMPROVING EDUCATIONAL ACHIEVEMENT FOR MINORITIES THROUGH BROADBAND TECHNOLOGY IN THE CLASSROOM

The use of broadband technology in schools is positively correlated with increased student achievement.¹³ As a result, the urgency to incorporate more broadband technology into U.S. classrooms has been articulated in several educational reform agendas as serving an integral role in bridging the educational performance and achievement gap between White and minority students.¹⁴

The U.S. Census Bureau predicts that by the year 2050, minorities will become the majority population with the nation projected to be 54 percent people of color (and thus no longer “minorities”) by 2050.¹⁵ These statistics alone illustrate that computer literacy and broadband technology use in the 21st century classroom is not an “extra” but an essential educational component in preparing minority students not only for the tasks of everyday life, but to also become essential and productive participants in the national job market and economy of the 21st century.

The availability and use of broadband technology in our schools has grown over the past ten years.¹⁶ But, for most schools broadband access is still not sufficient to accommodate current

¹³ See generally Belinda Gimbert and Dean Cristol, Teaching Curriculum with Technology: Enhancing Children’s Technology Competence During Early Childhood, *The Early Childhood Education Journal*, (2004) Vol. 31 No.3 at 207, available at <http://www.springerlink.com/content/x60223731784x852/fulltext.pdf> (last visited July 30, 2009).

¹⁴ See generally No Child Left Behind Act of 2001, Pub.L. No.107-110, 115 Stat. 1425 (2002); see also U.S. Department of Education, *National Education Technology Plan: Toward A New Golden Age In American Education* (2004), available at http://www.ed.gov/about/offices/list/os/technology/plan/2004/site/docs_and_pdf/National_Education_Technology_Plan_2004.pdf (last visited July 27, 2009).

¹⁵ See U.S. Census Bureau Report, *An Older and More Diverse Nation by Midcentury* (2008) available at <http://www.census.gov/Press-Release/www/releases/archives/population/012496.html> (last visited May 5, 2009) (“Minorities, now roughly one-third of the U.S. population, are expected to become the majority in 2042, with the nation projected to be 54 percent minority in 2050.”).

¹⁶ See, SETDA Urges Schools to Boost Bandwidth, *eSchool News*, June 25, 2008 available at <http://www.eschoolnews.com/news/top-news/?i=54254> (last visited July 30, 2008).

and future educational technology needs.¹⁷ Although national statistics indicate 98% Internet connectivity among U.S. schools, Internet access for many of these schools is often limited and occurs at low speeds.¹⁸ For example, a school is considered “connected” when there is only one computer that is dedicated to school administrators’ use for e-mail purposes.¹⁹ In fact, some teachers with only one computer in their classroom line up their students to use that computer as if it were a drinking fountain.²⁰

In order to overcome this deficit in education, planning and implementation of a robust broadband technology infrastructure in U.S. schools is the key to effectively create rigorous technology-infused learning environments for minority students. Throughout the country, there are success stories that serve as examples of how broadband technology has been effectively implemented to ensure that students, teachers, and school administrators have access to technology resources that help to make students competitive in the 21st century. A National Broadband Plan that adopts these and similar broadband technology educational initiatives can serve to close the educational achievement gaps and advance this nation’s educational agenda.

Other technology tools that require high-speed broadband that are currently used in school districts around the country include Web 2.0 tools such as blogs, chats, podcasts, video,

¹⁷ See State Educational Technology Directors Association, *High-Speed Broadband Access for All Kids: Breaking Through the Barriers*, (2008) at _____, available at http://www.setda.org/c/document_library/get_file?folderId=270&name=DLFE-211.pdf (last visited July 27, 2009).

¹⁸ See dataSpheric, available at http://www.dataspheric.com/services/research/digital_divide/digital_divide_5.php (last visited August 17, 2009) (“University of California at Irvine’s Center for Research on Information Technology and Organizations concludes that only 16% of schools in low-income communities have high-speed Internet access (T1 lines or faster)) see also examiner.com, *Students Plod Along on Slow Web* (May 5, 2008) available at http://www.examiner.com/a-1375160~Students_plod_along_on_slow_Web.html (last visited August 17, 2009) (“...41 elementaries and high schools plod along on 1.5-Mbps T1 connections — barely enough for a single-family home, said Brianna Meyer head of the district’s technology division.”).

¹⁹ See SETDA Urges Schools to Boost Bandwidth, *eSchool News*, June 25, 2008 available at <http://www.eschoolnews.com/news/top-news/?i=54254> (last visited July 30, 2008).

²⁰ See Whit Anderson, *That’s Not a Drinking Fountain or How to Survive in a One Computer Classroom*, North Central Regional Technology in Education Consortium available at <http://www.ncrtec.org/tl/digi/onecomp/index.html> (last visited July 30, 2009).

and wikis. These platforms provide on-going and real-time communication and collaboration among students and teachers with writing, research, publishing, and debating on topics in all subject areas.

Broadband technology can also increase educational achievements for the over two million American children who have a disability. For print disabled students using screen readers and blind students, reading the same textbook with refreshable Braille reading assistive technology can provide access to the general curriculum and higher achievement.²¹

A. FOCUS: AFRICAN-AMERICAN WOMEN AND GIRLS IN EDUCATION

There has been little substantive analysis and data about the educational experiences of African American girls, particularly within a contemporary socioeconomic context.²² Most studies on the experience of African Americans in education, especially at the elementary and secondary levels where gender is considered, give more attention to the underachievement of African American boys. This may be because of African American boys' alarming outcomes on a variety of important educational and social indicators such as lower attendance and graduation rates, higher representation in segregated special education classrooms, higher rates of school suspension, lower levels of gainful employment, and higher involvement in the criminal justice system.²³ Unfortunately, because the emphasis on African American boys has been the focus of education studies, a critical look at the experiences and obstacles confronting African American girls has been conspicuously absent; although, in recent years, this trend has been changing.

²¹ See American Federation for the Blind, available at <http://www.afb.org/Section.asp?SectionID=4> (last visited July 29, 2009).

²² See Veronica Thomas and Janine Jackson, "The Education of African American Girls and Women: Past to Present", *Journal of Negro Education* (2007), available at http://findarticles.com/p/articles/mi_qa3626/is_200707/ai_n21280205/?tag=rbxcra.2.a.32 (last visited June 13, 2009)

²³ See *id.*

While African American girls are often educated in the same woefully inadequate school systems as their African American male counterparts, 59% of African American girls graduate from high school while only 48% of African American boys earn a high school diploma.²⁴ Many African American girls, although performing better in comparison to their African American male counterparts, are at risk for underachievement.²⁵ For example, in 2007, 49% of African American girls (compared with 58% African American boys) scored "below basic" on the 4th grade reading assessment.²⁶ In terms of standardized mathematics scores, 70% of African American girls (as well as 70% of African American boys) scored "below basic" in mathematics.²⁷

Data on African American girls' school dropout rates are disturbingly high in comparison to their White female and White male counterparts. Statistics indicated that in 2001, 9% of African American females and 13% of African American males, ages 16-24, had school dropout status. These rates were higher than those of 6.7% of White females and 7.9% of White males.²⁸

African American girls experience different types of challenges in school than do their African American male, White female, or White male counterparts. They continue to face

²⁴ See id.

²⁵ See id.

²⁶ See id. citing Jihyun Lee, Wendy S. Grigg, and Patricia L. Donahue, National Assessment of Educational Progress, *The Nation's Report Card: Reading 2007*.

²⁷ See Veronica Thomas and Janine Jackson, "The Education of African American Girls and Women: Past to Present", *Journal of Negro Education* (2007), available at http://findarticles.com/p/articles/mi_qa3626/is_200707/ai_n21280205/?tag=rbxcra.2.a.32 (last visited June 13, 2009) citing Marianne Perie, Wendy S. Grigg, and Gloria S. Dion, National Assessment of Educational Progress, *The Nation's Report Card: Mathematics 2005*.

²⁸ See National Center for Educational Statistics, *Dropout Rates in the United States 2002 and 2003*, available at <http://nces.ed.gov/pubs2006/2006062.pdf> (last visited August 21, 2009)

restrictive and negative stereotypes (e.g., "promiscuous," "loud," "provocatively dressed") and images which, in turn, impact how school administrators, teachers, and peers respond to them.²⁹

Overall, African American girls have been conspicuously absent from the science, technology, engineering, and mathematics (STEM) fields, but this trend is slowly changing. African American women have been shown to have a higher level of interest in STEM fields than their white counterparts.³⁰ Early introduction to broadband programs related to the STEM fields into the lives of young girls will increase the momentum of girls and women in the more lucrative STEM careers, which in turn, can increase the economic level of African American communities.

Although educational statistics for African American girls in pre-K thru 12th grade have been lacking, data for African American women in post secondary education exist in abundance. Over the last 30 years, African American women have made considerable gains in post secondary education. African American women earn more degrees in almost every field than African American men.³¹ This is due to the fact that African American women far outnumber African American men in college enrollment and completion.³² According to data from the U.S. Department of Education, African American women make up nearly two-thirds of the population

²⁹ See Veronica Thomas and Janine Jackson, "The Education of African American Girls and Women: Past to Present", *Journal of Negro Education* (2007), available at http://findarticles.com/p/articles/mi_qa3626/is_200707/ai_n21280205/?tag=rbxcra.2.a.32 (last visited June 13, 2009)

³⁰ See Kristine De Welde et al., *Women in Science, Technology, Engineering and Math (STEM)* (2007) available at http://www.socwomen.org/socactivism/stem_fact_sheet.pdf (last visited June 17, 2009)

³¹ See Veronica Thomas and Janine Jackson, "The Education of African American Girls and Women: Past to Present", *Journal of Negro Education* (2007), available at http://findarticles.com/p/articles/mi_qa3626/is_200707/ai_n21280205/?tag=rbxcra.2.a.32 (last visited June 13, 2009)

³² See id.

of African Americans enrolled in college.³³ African American women are also twice as likely to complete college as African American men.³⁴

In addition to significant gains in undergraduate enrollment and completion, graduate and professional degree attainment for African American women is on the rise. In 2006, African American women also made up 71% of all masters degrees and 63% percent of all professional degrees earned by African Americans.³⁵

While African American women have a considerable presence on college campuses, they are disproportionately low-income students (53%)³⁶ and of that number 63% tend to be single parents who are balancing parenting responsibilities with work and school and, as a result, are taking longer to complete their postsecondary education.³⁷ Access to broadband technology will offer these women the ability to gain greater and more efficient access to a college education by enrolling in distance learning programs and participating in classes online. This will provide them with a greater ability to balance their work, family, and school responsibilities while completing their college education in a comparable time with other students, which will help them in accelerating their rise from poverty.

³³ See National Center for Educational Statistics, *Status and Trends in the Education of Racial and Ethnic Minorities* (2007) available at <http://nces.ed.gov/pubs2007/minoritytrends/intro.asp> (last visited August 21, 2009) (“...Black females continued to enroll in degree-granting institutions in larger numbers than Black males, and in 2004, females accounted for 64 percent of the total Black enrollment.”)

³⁴ See id. (“Black females received twice as many associate's, bachelor's, and master's degrees as their male counterparts.”)

³⁵ See African Americans Continue to Make Solid Gains in Bachelor and Master Degree Awards: But Professional and Doctoral Degrees Show Declines, *The Journal of Blacks in Higher Education* (2008), available at http://www.jbhe.com/features/60_degreeawards.html (last visited August 21, 2009)

³⁶ See Center for Women's Policy Report prepared for the National Conference of State Legislatures Annual Meeting, *A Profile of Low Income Women Students in Postsecondary Educational Institutions* (2004), available at <http://www.centerwomenpolicy.org/programs/poverty/documents/PSEProfileofLowIncomeWomenStudents.pdf> (last visited June 16, 2009).

³⁷ See id. (“Nearly three-quarters (71.3 percent) of all women finish a bachelor's degree in six years or less, compared with only 39.4 percent of low income single women who have children. One third (33.7 percent) of low income single women with children take more than 10 years to complete a bachelor's degree.”)

B. FOCUS: SUCCESSFUL EFFORTS TO IMPROVE STUDENT ACHIEVEMENT

- Louisiana has successfully implemented the Algebra I Online Project³⁸. This program provides Louisiana students with a certified and qualified Algebra I instructor, and a high quality Algebra I curriculum, through a year-long web-based course. This program has continuously proven to show positive impact in student achievement and instructional strategies of teachers seeking mathematics certification.³⁹
- In Alabama, the ACCESS Distance Learning program provides opportunities for Alabama public high school students to engage in advanced placement, elective, and other courses via the Internet to which they may not otherwise have access.⁴⁰
- In Tennessee’s Henry County High School, students use a blog to publish daily high school news.⁴¹ In the past, these students were limited to publishing a printed hard copy version of the student newspaper, which, due to budget constraints, was only published once or twice per school year. Broadband technology has made it possible for these journalism students to produce more publications with modern tools of the trade.⁴²
- Students at Jamestown Elementary School in Arlington, Virginia rely heavily on broadband technology through the use of podcasts.⁴³ Students at all grade levels create podcasts in different academic content areas covering topics such as mathematics, story

³⁸ See generally Louisiana Department of Education, Louisiana Virtual School, available at <http://www.louisianavirtualschool.net/?algebra> (last visited July 29, 2009).

³⁹ See State Educational Technology Directors Association, *High-Speed Broadband Access for All Kids: Breaking Through the Barriers* (2008) at 7, available at http://www.setda.org/c/document_library/get_file?folderId=270&name=DLFE-211.pdf (last visited July 29, 2009).

⁴⁰ See generally Alabama State Department of Education, ACCESS Distance Learning, available at <http://accessdl.state.al.us/> (last visited July 29, 2009).

⁴¹ See generally *The Grove Spirit* available at www.henryk12.net/spirit (last visited July 29, 2009).

⁴² See State Educational Technology Directors Association, *High-Speed Broadband Access for All Kids: Breaking Through the Barriers* (2008) at 8, available at http://www.setda.org/c/document_library/get_file?folderId=270&name=DLFE-211.pdf (last visited July 29, 2009).

⁴³ Id.

problems, school current events, classroom core values and mission statements, and responses to books read.⁴⁴

- The use of broadband technology has helped a consortium of small rural school districts in Arizona use two-way interactive television to bring the world directly into their classrooms.⁴⁵ These districts are geographically isolated and use videoconferencing to access hard to obtain educational resources such as virtual field trips and dual enrollment classes.⁴⁶
- A community can leverage the strength of local institutions that are already providing valuable services for the community, such as the local library, youth outreach programs or church institutions that serve the community in a variety of ways. For a vibrant example of how local and regional leadership can leverage existing community resources, see the testimonial from Pastor and Representative Johnny Shaw (TN State Legislative District 80) and other members of his rural community of Stanton, TN, who have leveraged state, local, and donated private resources to work with Connected Tennessee's Computers 4 Kids® program to expand a public computing center catering to children and the elderly in their community, available at this link:

http://www.connectedtn.org/multimedia/one_community_at_a_time/.

⁴⁴ See generally Jamestown Elementary, *Jamestown Podcast*, available at <http://slapcast.com/users/Jamestown?1554Nav=|&NodeID=1086> (last visited July 29, 2009).

⁴⁵ See generally Pinal County Interactive Television Consortium, available at <http://www.pinalityv.org/Home/tabid/358/Default.aspx> (last visited July 29, 2009)

⁴⁶ See State Educational Technology Directors Association, *High-Speed Broadband Access for All Kids: Breaking Through the Barriers* (2008) at 8, available at http://www.setda.org/c/document_library/get_file?folderId=270&name=DLFE-211.pdf (last visited July 29, 2009).

This public computing center is only one of its kind in this rural community of Stanton and today provides essential high-speed access resources as well as educational and training programs to this otherwise unconnected community.

- In Tennessee, Lotez Holloway is 18-years old and entered state custody six years ago because his mother was addicted to drugs. “Lotez’s mother had sold all the furniture in the house for crack, and Lotez and his brother and sister didn’t have any food,” explains his case manager, Connor Hoke. While in the foster care system, Lotez lived in six foster homes and attended four high schools. Lotez was also a recipient of a computer from the Connected Tennessee Computers 4 Kids ® program, and he compares computer availability in the classroom and at home as having the same importance as a pencil was decades ago. Despite his circumstances, Lotez maintains good grades and excellent behavior at school. “Lotez is still able to have a smile on his face. He’s still able to talk about good things in his life, and he’s also able to plan for the future,” says Connor. One of Lotez’s biggest dreams recently came true when he was adopted by a family in Mt. Juliet.
- Audrey Carey was born and raised in Gallatin, TN but moved to Atlanta, GA several years ago with her four children. After living there for five years, Audrey got the call at work one day that her home had caught on fire. Her children were home, and thankfully, no one was hurt. The house, however, was destroyed. Audrey and her kids lost everything and were forced to move from place to place until finally settling into a shelter. Not long after that, Audrey packed up her four kids and all their belongings and moved home. The day after commenting to her mother about how badly she needed a computer for her kids, Audrey received a letter in the mail from her Department of Human Services case

manager telling her she would soon be receiving a brand new computer. She had been selected based on her outstanding performance in the DHS Families First program, a program that emphasizes work, training and personal responsibility. “My kids started jumping up and down!” she says.

Today Audrey is working at a nursing home, attending night school to obtain her GED, and preparing for massage therapy school. And thanks to her new computer, Audrey’s daughter was recently able to perform research to win an essay contest that won her a \$500 prize.

- In Memphis, TN, 20 brand new Dell computers and two printers were donated to the Matthew R. Davis Resource Center on the campus of the New Chicago Community Development Corporation.

The mission of the New Chicago Community Development Corporation (NCCDC) is to build a stronger community by revitalizing the community through housing, economic, and physical development strategies.

"Computers 4 Kids continues to transform lives across Tennessee," said State Representative Ulysses Jones. "Computer skills are vital in today’s global economy. With today’s economic crisis in our country, this is a great program to help all families, regardless of income, meet educational and professional needs."

NCCDC is a compact, mostly residential neighborhood located in the northern section of the City of Memphis. Designate boundaries encompass Chelsea on the south, Morehead to the west, Watkins on the east and the Wolf River on the north.

In October 2001, the City of Memphis awarded (NCCDC) a Community Housing Development Organization (CHDO) designation and awarded capacity building funds.

This designation by the City of Memphis was an answer to the community outcries of revitalization for the area, from the slum and blight to which it had deteriorated. The capacity funds will assist in hiring staff for NCCDC and provide training in the area of housing development, board development and financial management. Today the NCCDC is able to provide affordable housing, community service projects, safety, crime prevention and business & economic development opportunities to the community. State Senator Reginald Tate, State Representative Jim Coley and Chief Information Officer for the City of Memphis, Joe Sanders were also in attendance at the event to show their support of the Computers 4 Kids program. Executive Director of the New Chicago CDC, Eddie Hayes, III, expressed his appreciation for the outpouring of local support and for the tremendous impact the computers will have on the program.

“We are so fortunate that the New Chicago Community Development Corporation was chosen as a recipient of the Computers 4 Kids program,” said Hayes. “This charitable donation will enhance and enrich the lives of the families we serve for many years to come.”

- Computers 4 Kids® established a computer lab equipped with 14 brand new Dell computers at the CWA-Cayce Learning Center in East Nashville, TN. The mission of the CWA-Cayce Learning Center is to identify, address and support the long-term solutions to the educational, health, social and economic needs of those families living in the CWA Apartments and James A. Cayce Homes. The Learning Center serves as a HUD Model Center for the Neighborhood Networks initiative to connect people in poverty to the rest of the world via technology.

Nashville Mayor Karl Dean, on hand to help unveil the computer lab, stressed the importance of making technology available to all Tennesseans, regardless of income.

“It goes without saying that in today’s world, computer skills and Internet access have become essential when it comes to educational and professional resources,” said Dean.

“It is equally important for young people to build the computer skills that are increasingly needed for good jobs. The computers donated by the Computers 4 Kids program will link these kids and families to a world of opportunity and help them succeed in school and in the workplace.”

Named after the first executive director of Metropolitan Development and Housing Agency, the James A. Cayce Homes is Nashville's oldest and largest public housing development. Construction on the 720 rental units began in 1941 and was completed in 1954. The development is located on 63.3 acres between South 6th and South 8th streets in east Nashville.

MDHA is and always has been committed to providing safe, decent and affordable housing for low-income persons in Nashville. To assist the families that would live in Cayce, Martha O'Bryan Center relocated its facilities to the neighborhood in 1949 while the Cayce homes were still under construction.

Fifty years later, the James A. Cayce Homes provide housing for low-income families, but many of the families who live here are part of the intergenerational cycle of poverty and under education. The following statistics, from MDHA, paint a picture of many of the families who live here and turn to Martha O'Bryan Center for help:

- 1,856 residents live in the Cayce Homes, making it Nashville’s largest public housing development.

- 84% of the total population is African-American.
- The average annual net income is \$4,306 – a decrease of \$472 from 2001.
- Women head 88% of the homes and children represent 56% of the total population of Cayce.
- The average family has three members -- a mother and two children.
- 50% of the persons age 25 and up within one mile of Martha O'Bryan Center do not have a high school education.

Typically, families living at or below the poverty line are the first to feel the effects of a softening economy. The recent economic downturn has certainly affected Cayce residents, as reflected in the decrease of average annual income and a reduction in the number of working families.

The children of Cayce attend schools within the Stratford cluster of the Metro Nashville School Systems - Warner and Kirkpatrick Elementary Schools; Bailey and East Middle Schools; and Stratford High School. These are the city's worst performing schools, both in academics and attendance. The out-of-school suspension rate at Dalewood Middle School was 31.8%; Stratford High School's rate was 35.6%. These are well above the Davidson County average of 22.7%, and they have risen each of the last three years. Further, only 9% of males and 10% of females in the neighborhood complete secondary education, not even half as much as the national average.

These challenges make it even more difficult for the families served by the center to become self-sufficient and break the intergenerational cycle of poverty. In times like these, the services and programs provided by Martha O'Bryan Center become critical to families living in Cayce.

- In Kentucky, three years ago, ConnectKentucky's No Child Left Offline® (NCLLO) program made a special delivery. The recipient: an overjoyed Erica Blevins. This Johnson County middle school student was finding it more difficult by the day to keep up academically in an increasingly digital world.

At the time, Erica was completing her 8th grade year at Johnson County Middle School. The straight-forward homework assignments and school projects from previous years were quickly being replaced by research-driven studies. Without a computer at home, Erica's mother, Connie, was forced to search out alternative ways to find computer access.

"It was tough on Erica," said Connie Blevins. "She was spending long hours at school, the public library and at her friends' houses trying to complete her assignments. Sometimes she wouldn't get home until late."

That's when Blevins learned about Connect Kentucky's No Child Left Offline program through Johnson County Middle School. Through the school-system, her family was awarded an Internet-ready computer. The benefits were immediate.

"It removed all the barriers that were preventing my children from completing their assignments," said Blevins. "They were able to do much-needed research right from home and complete online tests on the KYVU website."

Besides helping her daughters academically, Blevins says it has opened up new doors.

Erica wants to go to college and become an X-ray technician once she graduates.

Broadband has allowed her to explore the profession and her college choices.

“Erica has found several medical scholarships that we would’ve never known about without a computer,” said Blevins.

The computer has also helped bring the family closer together. With home access, the family doesn’t have to spend extra time driving to public locations to use a computer.

“It’s been really nice spending more quality time with the family,” said Blevins. “You don’t realize how much time you spend trying to find a computer until you have one in your home.”

The children aren’t the only family members benefiting from the home computer, either. Blevins has found plenty of ways to incorporate the technology into her daily life. “I never considered how much easier life can be with a computer,” said Blevins. “We maintain our bank accounts online, and we’re able to stay in touch with friends and family through email.”

IV. IMPORTANCE OF TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT

A. THE NEED FOR TEACHER TRAINING IN THE USE OF BROADBAND APPLICATIONS IN THE CLASSROOM

Broadband technology has the ability to provide specialized tutoring, create group-learning environments and provide enriched learning experiences for students. But, students cannot be expected to benefit from broadband technologies in the classroom if the teachers are not familiar or uncomfortable with the technologies. The primary reason teachers do not use broadband technology to enhance their teaching is because they do not feel fully prepared to use broadband technology in the classroom.⁴⁷ In order to assist teachers, even those who are computer-literate, with the vision of broadband technology in the learning process and the tools to incorporate broadband in the classroom, professional development is essential.

Teachers' willingness, comfort, and ability to utilize and integrate broadband technology into their classroom teaching is the key to providing a vigorous classroom experience. Teachers' attitudes and comfort levels with broadband technologies are extremely important in the successful introduction of the technology as a learning tool in the classrooms because even the most sophisticated broadband technology cannot improve learning or thinking without educators, who, aided by technology, can create learning environments that support critical thinking and constructive discussion.

⁴⁷ See National Education Association, *Access, Adequacy, and Equity in Education Technology* (2008) at 18, available at <http://sc08.sceducation.org/conference/k12/sat/stem/08gainsandgapsedtech.pdf> (last visited June 6, 2009). (“Only slightly more than half of the educators felt that they had adequate preparation to integrate technology into instruction, and fewer than half felt prepared to use it for individualized instruction.”).

When teachers and administrators make a sustained commitment to use broadband technology in the classroom, student achievement increases.⁴⁸ For this reason, teachers' preparation and training are the most often-cited predictors of the successful integration of broadband technology into the classroom.⁴⁹ As teachers expand their use of broadband technology in the classroom, their comfort level and ability to utilize new and improved teaching strategies will increase. But, in order to make a shift to expand the use of broadband technology in the classroom, they will need more training and staff development to hone their skills and successfully integrate broadband technology into the learning process. This brings with it a paradigm shift for teachers from their traditional role as content providers to facilitators, which may be a new and unfamiliar role for teachers trained over the past 20 years.⁵⁰ All the more reason that professional development and training in broadband technology as a teaching and learning tool is essential.

B. CURRENT TEACHER TRAINING PROGRAMS FOR USING BROADBAND APPLICATIONS IN THE CLASSROOM

Some school districts are utilizing education portals, curriculum cadres, and online courseware as professional development tools to assist teachers in increasing their comfort level with broadband technologies as a teaching tool. In Arizona, IDEAL is a web portal used by Arizona teachers to access educational resources and services with the ultimate goal of

⁴⁸ See Study: Missouri's ed-tech program is raising student achievement, *eSchool News* (March 13, 2002) available at <http://www.eschoolnews.com/news/top-news/index.cfm?i=34344&CFID=21109423&CFTOKEN=86312665> (last visited August 30, 2009) ("Students who participated in Missouri's educational technology program scored "consistently higher in every subject area" on the state's standardized test compared with students not involved in the program...").

⁴⁹ See generally National Center for Educational Statistics, *Teachers' Tools for the 21st Century: A Report on Teachers Use of Technology* (2002), available at <http://nces.ed.gov/pubs2000/2000102.pdf> (last visited August 30, 2009).

⁵⁰ See generally Doris Carey, *Teacher Roles and Technology Integration: Moving from Teacher as Director to Teacher as Facilitator* (1993).

increasing the academic achievement of all Arizona students and to support school improvement efforts throughout the state.⁵¹ Within this portal, teachers have access to a vast array of online teaching resources, which allow them to quickly search for lesson plans or other resources by content, grade level, and topic.⁵²

Alabama utilizes the Alabama Best Practices Center, which is a two-year professional development program that engages teachers from participating schools in powerful conversations about 21st century learning.⁵³ The Center utilizes a virtual learning community built around an online curriculum called “Keeping Up with the Net Generation.”

The state of Ohio has implemented eTech Ohio, a program that provides online professional development courses for Ohio’s Pre-K through 20 teachers and professionals.⁵⁴ The courses are asynchronous courses that can be taken anywhere and at anytime with eTech Ohio certified facilitators. The facilitators are online daily to respond to the needs of participants. Graduate level course credit can be obtainable by teachers who take the courses.

Also in these comments, we reference as a case study several applications in use by Public Television to improve education and the use of technology, including PBS’ Teacherline, an online professional development curriculum for teachers that is funded by the Ready to Teach program within the U.S. Department of Education.

⁵¹ *See generally* Arizona Department of Education, IDEAL: Arizona’s eLearning Platform, available at www.ideal.azed.gov (last visited July 29, 2009).

⁵² *See id.*

⁵³ *See generally* Alabama Best Practice Center, available at <http://www.bestpracticescenter.org/21stcentury.htm> (last visited July 29, 2009)

⁵⁴ *See generally* eTech Ohio, available at <http://www.etech.ohio.gov/elearning-online-professional-development/index.dot> (last visited July 29, 2009)

C. A PORTION OF THE E-RATE FUNDING SHOULD BE USED FOR TEACHER TRAINING IN THE USE OF BROADBAND IN THE CLASSROOM

The Schools and Libraries Program of the Universal Service Fund (commonly known as the E-rate program), authorized under Section 254(h) of the Communications Act, provides discounts to help schools and libraries in every U.S. state and territory receive affordable telecommunications and Internet access. While the E-rate program has been instrumental in making broadband access available to nearly all of the nation's public schools⁵⁵, teachers cannot take advantage of these funds to improve their broadband literacy, which, in turn, would increase the educational power of broadband technology in the classroom.

Currently, no E-rate funds are authorized to create or improve programs to train teachers on effective use of broadband technologies in the classroom. Allocating a percentage of E-rate funds for this purpose would improve classroom teaching by providing teachers with the skills needed to effectively energize the curricula with technology-rich learning and teaching tools, which is especially needed in minority communities, while leaving significant resources remaining for already established E-rate uses.

⁵⁵ See Universal Service Administrative Company Annual Report 2007, at 2, available at http://www.usac.org/_res/documents/about/pdf/usac-annual-report-2007.pdf (last visited June 5, 2009).

V. CASE STUDY: EDUCATIONAL CONTENT FOR THE DIGITAL AGE

Connected Nation has stressed in prior comments during this proceeding the transformational nature of broadband service – broadband has and is continuing to literally change the way the U.S. and world learns, works, interacts, and communicates.

As the methods for delivery of educational content have changed over the past decades, so too has a major provider of educational content evolved to meet the needs of students of all ages. Public Television in the United States was created to provide universal access to high-quality and educational television to Americans, but has been at the forefront of innovation in creating digital content and delivery methods for the 21st century.

We note comments filed in this proceeding by the Public Broadcasting Service⁵⁶ and the Association of Public Television Stations⁵⁷ that provide details on educational offerings of several types to students and educators, and we highlight some of those applications here, as evidence of innovative, technologically based educational tools that require broadband availability AND broadband adoption in order to be effective.

A. PBS TEACHERS, PBS KIDS, PBS KIDS GO, PBS PARENTS AND PBS PLAY

The PBS website⁵⁸ serves as a multi-modal destination for children, parents, and teachers to locate educational content, activities, and games for use at home or in the classroom. PBS Teachers is comprehensive resource for teachers to find age-appropriate multimedia content for the classroom; a resource center for Science, Technology, Engineering, and Math (STEM)

⁵⁶ <http://fjallfoss.fcc.gov/ecfs/document/view?id=7020350746>

⁵⁷ <http://fjallfoss.fcc.gov/ecfs/document/view?id=7019917683>

⁵⁸ <http://www.pbs.org/>

education; and PBS Teacherline (which is an online professional development program for teachers).

B. E-LEARNING FOR EDUCATORS

Funded by a grant from the U.S. Department of Education through the Ready to Teach Program, E-Learning for Educators is a 10-state consortium led by Alabama Public Television (APT) that provides online teacher training and professional development services. Comprised of the state departments of education and a respective state-based Public Television partner in Alabama, Delaware, Kentucky, Maryland, Mississippi, Missouri, New Hampshire, North Carolina, Pennsylvania, and West Virginia, E-Learning for Educators has provided at least one course (if not more) to more than 25,000 teachers, with an estimated 1,000,000 children impacted⁵⁹ as a result of the program's offerings.

C. MARYLAND PUBLIC TELEVISION'S (MPT) THINKPORT

Created by MPT and the Johns Hopkins University Center for Technology in Education, Thinkport⁶⁰ is an online web-portal that provides four different "channels" of content for students and educators. Tailored to fit the needs of Maryland's education system, Thinkport allows teachers to save content for future use; provides teachers online professional development resources; and provides parents and children with at-home resources allowing education to continue after the school day ends, with families using broadband together for educational purposes.

⁵⁹ <http://www.aptv.org/APTPLUS/ELearning/index.asp>

⁶⁰ <http://www.thinkport.org/default.tp>

D. KENTUCKY EDUCATIONAL TELEVISION'S (KET – THE KENTUCKY NETWORK)

ENCYCLOMEDIA

KET's Encyclomedia⁶¹ is a web-based educational resource offered without charge to schools in Kentucky. KET Encyclomedia provides guides on KET educational programming, over 5,000 videos and over 50,000 catalogued and searchable clips for educational use inside and outside the classroom. Encyclomedia's content is also sorted by grade level and, through a partnership with the Kentucky Department of Education, is designed to fit Kentucky's education curriculum.

E. INNOVATIVE APPLICATIONS REQUIRE BROADBAND ACCESS AND ADOPTION

Prior to the transition to digital television completed earlier this year, Nielsen data indicated that three out of four households that access television over-the-air (OTA) watch Public Television in a typical month,⁶² and OTA households were more likely than others to watch Public Television.⁶³ Prior to the DTV transition, the estimated 22 million OTA households in the US were disproportionately lower-income⁶⁴, rural, elderly⁶⁵, and/or Hispanic⁶⁶. A study⁶⁷ by the National Association of Broadcasters (NAB) in 2007, confirmed this data, indicating that OTA households tended to be:

- Poorer (and more likely to rent and live in multi-family housing);

⁶¹ <http://www.ket.org/education/encyclomedia.htm>

⁶² Nielsen Media Research, NTI custom cume analysis for PBS, October 2004..

⁶³ Knowledge Networks Statistical Research, in a survey commissioned by the Corporation for Public Broadcasting

⁶⁴ *Federal Communications Commission Media Bureau Staff Report Concerning Over-the-Air Broadcast Television Viewers*, MB Docket No. 04-210 (Feb. 28, 2005).

⁶⁵ See testimony of Lavada E. DeSalles on Behalf of AARP, Before the House Subcommittee on Telecommunications and the Internet of the House Committee on Energy and Commerce (March 10, 2005) (citing Nielsen Media Research data).

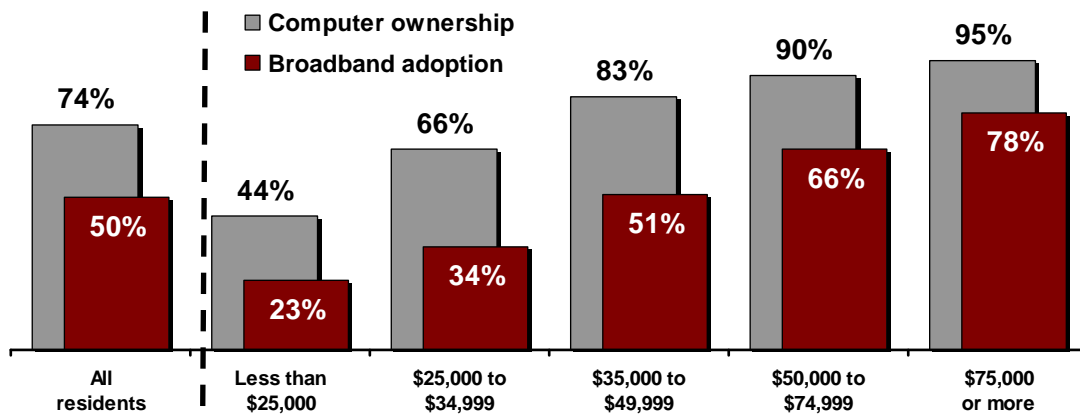
⁶⁶ *Federal Communications Commission Media Bureau Staff Report Concerning Over-the-Air Broadcast Television Viewers*, MB Docket No. 04-210 (Feb. 28, 2005).

⁶⁷ Strategy One study, March 16, 2007: *National Association of Broadcasters National OTA Benchmark Survey*

- Older;
- More female;
- Less connected to the Internet;
- More likely to be African-American (but only slightly more likely); or
- More rural.

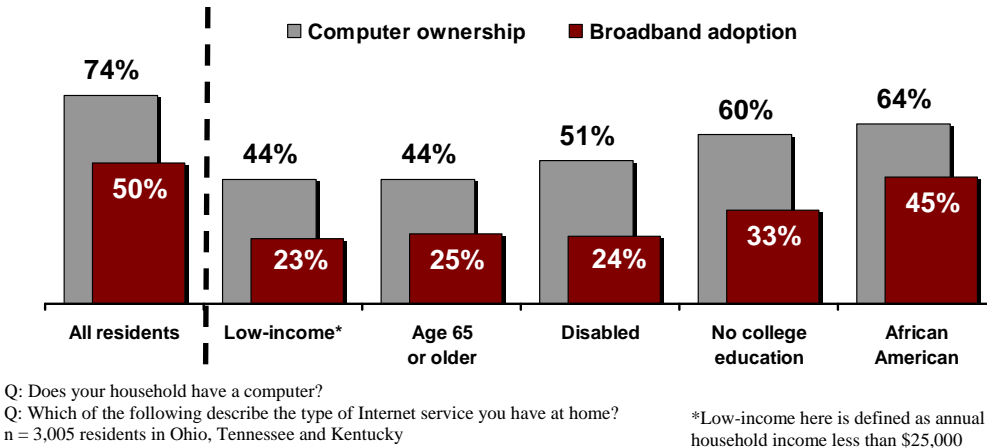
This data correlates strongly with Connected Nation research showing that broadband adoption gaps are most prevalent in lower income households (see figure 12) and among at-risk populations (see figure 13), and the correlation indicates that households more likely to watch Public Television are less likely to have a broadband connection in the home.

Figure 12.
Computer Ownership and Broadband Adoption by Income



Q: Does your household have a computer?
 Q: Which of the following describe the type of Internet service you have at home?
 n = 3,005 residents in Ohio, Tennessee and Kentucky

Figure 13.
Low Adoption Demographics



All of the applications above provide concrete examples of educational applications developed by public service media in the U.S. to meet the digital age; in addition to the features mentioned above, most offer teacher lesson plans, offline activities for students, and other resources designed to accompany and enhance multimedia content, as well as a safe place on the Internet for students to find education and entertainment.

None of these resources, however, are available without access to a high-speed Internet connection, and none of these resources are available to the homes of teachers or students that have not yet adopted broadband.

V. CONCLUSION

Throughout the preceding comments Connected Nation and the National Coalition on Black Civic Participation-Black Women's Roundtable have provided input regarding the importance of ensuring broadband connections at school and at home; the importance of providing teachers with the necessary resources to incorporate technology into the framework of their lesson plan; data showing adoption rates and broadband educational use trends; how broadband adoption can improve the educational needs of African American women and girls; and examples of successes and applications possible when technology is harnessed to provide more educational opportunity.

Resources available through high-speed Internet services allow education to be brought to students of all ages wherever they are and whenever it is convenient for the end-user. By erasing distance, broadband can allow schools to extend their reach and service to more people through increasingly innovative methods.

Through effective planning and integration of Federal resources available through the FCC, the NTIA, the U.S. Department of Education and other agencies, and by working with a wide-array of private sector and non-profit partners, the National Broadband Plan can provide a roadmap to better student achievement and a stronger school system in the United States serving all students at all socio-economic levels.

Respectfully submitted,

/S/

Connected Nation, Inc.
The National Coalition on Black Civic Participation-Black Women's Roundtable