

Digital Equity

Supporting Students & Families in Out-of-School Learning

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Digital Equity

Supporting Students & Families in Out-of-School Learning

"Providing our students with access to high-quality digital learning helps set them up for success in our increasingly digital world. As a predominantly rural state, we need to work even harder to make sure that our students have the high-speed Internet that they need to flourish."

– Montana Governor Steve Bullock



Executive Summary

This “Homework Gap,” which impacts low income and rural students especially hard, can exacerbate other preexisting inequalities, making it difficult for students to complete homework assignments.

During the past two decades, efforts to provide America’s schools with high speed Internet access have made great progress. Supported by the 2014 modernization of the federal government’s E-Rate program and state funding efforts, a majority of schools now meet the FCC’s short term connectivity goal of 100 Mbps/1000 students. However, the increasingly ubiquitous use of technology in instruction has resulted in a new digital divide between students who have home Internet access and those who do not. This “Homework Gap,” which impacts low-income and rural students especially hard, can exacerbate other preexisting inequalities, making it difficult for students to complete homework assignments. The lack of home Internet access also negatively impacts school-parent communication and makes it more difficult for parents to support their children academically.

This toolkit provides background context for the Homework Gap, addresses broader implications of household connectivity, suggests resources for scoping the problem, and details five strategies districts are currently using to address these challenges:

- 1. Partner with Community Organizations to Create “Homework Hotspots”**
- 2. Promote Low Cost Broadband Offerings**
- 3. Deploy Mobile Hotspot Programs**
- 4. Install Wifi on School Buses**
- 5. Build Private LTE Networks**

In addition, we outline four steps school leaders can take to collaborate with local governments and their community to take a broader, more holistic approach to digital access and inclusion.

Community Collaboration for Digital Equity

- 1. Assemble a Team and Develop a Shared Vision**
- 2. Assess Existing Community Resources, Gaps and Needs**
- 3. Engage Stakeholders and Partners**
- 4. Develop and Execute a Project Plan**

Access to reliable, robust Internet service and computers are increasingly essential for learning and participation in modern society and should not be a luxury reserved for the affluent. Innovative school and district leaders are rising above fiscal constraints to ensure students have broadband access both during and beyond the school day. While there is no single way to address these challenges, this toolkit provides best practices and resources to help school officials develop digital equity solutions that work for their communities.



Introduction



Goal

To support schools and districts and communities seeking to promote equitable access to digital learning outside of school.


Background

Founded in 1996, the E-rate program was created to help schools and libraries connect to the Internet. In December 2014, the Federal Communications Commission (FCC) modernized the E-Rate program, increasing available funding by 60 percent and restructuring the program to help schools pay for broadband connectivity and network infrastructure. E-rate's initial mission of providing a basic connection to the Internet in every classroom has largely been accomplished. According to CoSN's 2017 Infrastructure Survey, the vast majority of districts (85 percent) report that all their schools meet the FCC's short-term broadband connectivity goal of 100 Mbps per 1,000 students. However, only 16 percent of districts report that all of their schools meet the FCC's long-term connectivity goal of 1 Gbps per 1,000 students, and 53 percent reported that none of their schools meet this goal.



The "Homework Gap"

While there have been significant gains in on-campus connectivity, many students still lack robust Internet connectivity at home. This digital divide, or "Homework Gap," can put students at a significant academic disadvantage. In 2009, the [FCC's Broadband Task Force](#)¹ reported that approximately 70 percent of teachers assign homework requiring access to broadband, a statistic that has likely increased as schools move to more digital learning. A 2015 survey by the [Hispanic Heritage Foundation](#)² found that nearly 50 percent of students said they were unable to complete a homework assignment because they lacked access to the Internet or a computer, and 42 percent of students surveyed believed they received a lower grade on an assignment because they lacked access to the Internet.



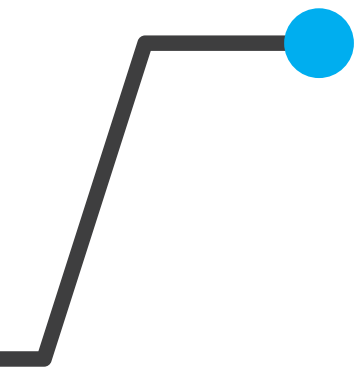
In April 2018, a U.S. Department of Education [report](#)³ found a significant difference between the percentage of all U.S. households with Internet access (77 percent) vs. the percentage of households with students age 3-18 with Internet access (61 percent). 80 percent of 8th graders reported using a computer at home for schoolwork on a weekday, putting students without home Internet access at a significant disadvantage. Geographic locale plays an important role in home-based Internet access; students in remote rural and distant rural areas generally have more limited Internet access than students in suburbs, cities or towns.

¹ Horrigan, John B. "Broadband Adoption and Use in America." 12 Feb 2010, <https://transition.fcc.gov/national-broadband-plan/broadband-adoption-in-america-paper.pdf>

² Pleitez, Cynthia. "HHF, MyCollegeOptions: Survey 3k Students." Hispanic Heritage Foundation, 2 Aug. 2017, <http://hispanicheritage.org/hispanic-heritage-foundation-mycollegeoptions-family-online-safety-institute-and-other-partners-announce-findings-of-new-study-titled-taking-the-pulse-of-the-high-school-student-experience/>.

³ KewalRamani, A., Zhang, J., Wang, X., Rathbun, A., Corcoran, L., Diliberti, M., and Zhang, J. (2018). Student Access to Digital Learning Resources Outside of the Classroom (NCES 2017-098). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved 21 May 2018 from <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2017098>

80 percent of 8th graders reported using a computer at home for schoolwork on a weekday, putting students without home internet access at a significant disadvantage.



Within geographic locale types, there were additional gaps among students of different poverty levels and racial/ethnic groups. American Indian/Alaska Native, Black, and Hispanic students have lower rates of home Internet access than their peers who are White, Asian, or Two or more races. Students living below the poverty threshold have the lowest rates of home Internet access; the two main reasons children ages 3 to 18 lacked access to the Internet at home were expense and lack of interest. Significantly, students without home Internet access had lower assessment scores in reading, mathematics, and science.

In addition to making it harder for students to complete homework, a lack of home broadband access can negatively impact a parent/guardian's ability to support their child's education. In many communities, the majority of school-home communications have moved online. School notices, calendars, news, information about homework assignments, grades and even report cards are sent or are sometimes only available in electronic form. [According to Speak Up 2016 Research](#),⁴ principals and parents identify email and text messaging as the most effective methods of school-to-home communications. Without reliable Internet access, it is more difficult for parents to stay connected to teachers and support their child's education.

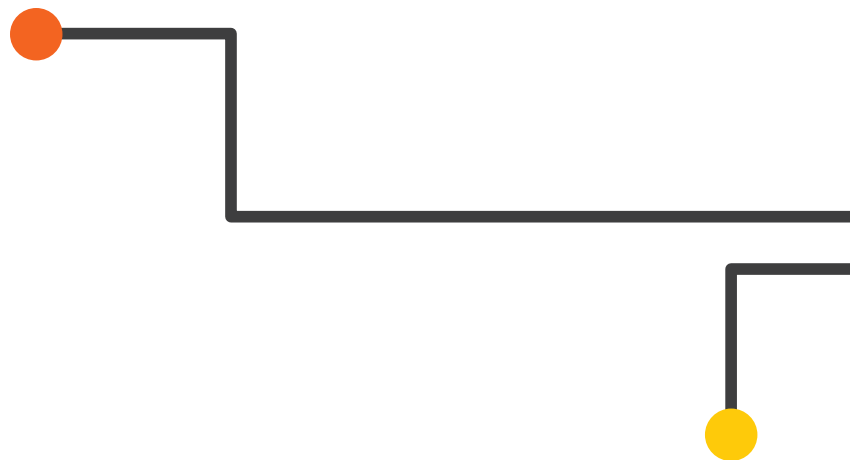
A survey conducted by the Miami-Dade School District following the implementation of a \$3.5 million grant initiative, which provided laptops and an Internet connection for use at school and home, showed that 90 percent of parents found it easier to stay informed about their child's academic performance as a result of the program. A 2017 Mobile Beacon report surveyed households participating in the "Bridging the Gap" program, which provides both refurbished computers and low cost, uncapped Internet service to low income families. 94 percent of participating parents reported that Internet access helped them better support their child academically, and 95 percent cited improved communication with their child's teachers as a program benefit. Similarly, [Tech Goes Home \(TGH\)](#), a digital equity initiative founded in Boston and now operating in several cities across the country, found that nearly 70 percent of families in TGH school-based programming indicated that this was the first time that they had participated in an activity at their child's school. 95 percent of these parents/guardians plan to take part in future activities at their child's school or at the community institution, and home trainers say the program improved their relationships with their families and participants.

⁴"School-to-Home Communications: Most Effective Tools for Parent Communications & Engagement." Project Tomorrow | Speak Up, www.tomorrow.org/speakup/speakup-2016-school-to-home-communications-september-2017.html.

Device Access, Digital Literacy, and Family Context

In addition to broadband connectivity, it is important to consider student access to devices appropriate for schoolwork and the digital literacy skills of both students and their families. While many families might report having home Internet access, such access might be limited to cell phones with limited data plans. Small screens with capped data allowances may make homework completion difficult or impossible. Even if a larger computing device is available, it may be shared by multiple family members, posing additional challenges for students. Low-income parents or guardians may also lack basic digital literacy skills, and thus be unable support their child's digital literacy development. As a result, their children may come to school [lacking the basic computer literacy skills⁵](#) needed for academic and workforce success. A holistic approach to digital equity challenges that addresses connectivity, devices, digital literacy, and the broader family context is more likely to be successful.

Without a Net: The Digital Divide in America is a 2017 Verizon-sponsored documentary that explores how technology access can provide students with valuable learning opportunities and better prepare them for digital age careers. Although the primary focus of the video is on access to technology in school, communities may find it a helpful conversation starter when discussing larger issues of equity in technology access. The [full version](#) of the documentary highlights the digital equity efforts of the [Coachella Valley Unified School District](#), which installed Wi-Fi on school buses and parked them overnight in communities without broadband access.



⁵Richman, Talia. "Computer-Based Tests Are Another Challenge for Low-Income Students, Teachers Say." The Washington Post, WP Company, 30 Apr. 2018, www.washingtonpost.com/local/education/computer-based-tests-are-another-challenge-for-low-income-students-teachers-say/2018/04/30/add5d118-43fb-11e8-8569-26fda6b404c7_story.html?utm_term=.d0a60d6f92b2.



Strategies for Addressing “The Homework Gap”

Some districts find it helpful to bundle home connectivity surveys with other forms distributed at the start of the school year and/or to new students.

Survey Your Community: Scope the Problem

Identifying the scope of the problem is the first step in addressing digital equity challenges. Teachers and school administrators may be able to identify specific students without home Internet access; however, schools and districts should quantify this awareness with survey data. CoSN and the Friday Institute for Educational Innovation at North Carolina State University have created a set of recommended student and parent survey questions (see Appendix B) to help districts understand and track progress in addressing digital equity challenges.

Here are three suggested categories to consider when developing a survey:

- Devices** What types of devices do students use to connect to the Internet? Which of these do they use at home? Which of these are suitable for homework? How many family members share each device in the home?
- Places** Where do students spend time outside of school hours? Do any of these places have Internet connections that students can use? Are there locations where Wi-Fi connectivity could be added, or affordable LTE hotspot solutions made available for student use?
- Speed** What connection speeds do students need to engage in anywhere, anytime learning? Do they have access to these connection speeds in their home and in other locations where they do schoolwork?

Some districts find it helpful to bundle home connectivity surveys with other forms distributed at the start of the school year and/or to new students. Fairfax County Public Schools in Northern Virginia includes home Internet and device access questions on emergency information forms. In addition, a district-wide survey is sent out via email and followed up with automated telephone calls. When necessary, schools make individual phone calls and send paper surveys home in student backpacks. Fairfax issues all surveys in multiple languages. By including the survey information in their student information system (SIS) as required fields, the District makes the data easily accessible to teachers and school officials.

Strategy 1 | Identify Community “Homework Hotspots”

Some districts are partnering with local community organizations and businesses to provide “homework hotspots” for students without home Internet access. According to the 2015 CoSN Infrastructure Survey, 15 percent of school systems report that there is community/business Wi-Fi available for students, a 50percent increase from 2014. School costs tend to be minimal; partnerships can be branded to recognize businesses as partners in advancing digital equity and educational opportunity. In addition to local businesses, other potential homework hotspot partners may include local libraries; YMCA, YWCA, JCC, and other community centers; and churches or other faith-based organizations.

A number of websites and mobile apps can provide information on nearby wireless hotspots. Districts can leverage these tools to identify local organizations with which to partner, or students can use them find locations to get online outside of school. Examples include [OpenSignal](#), [Wi-Fi Free Spot](#), and [Wi-Fi Space](#).

PROS

- Minimal school district costs
- Increased community engagement in digital equity

CONS

- Business hours, student schedules may not be aligned
- Lack of transportation to/from public Wi-Fi access locations
- Public Wi-Fi networks rarely provide any security or age appropriate filtering

Leaders & Innovators

Fairfax County Public Schools (VA). As part of the [Access4All program](#), Fairfax County Public Schools (FCPS) in Virginia mapped free Wi-Fi locations for students. Their [Community Inter-net Access maps](#) list sites in neighborhoods within the district, including libraries, community, family, and other resource centers where students can access Wi-Fi to complete their homework.

Beaverton School District (OR). Schools in the Beaverton School District reached out to community businesses to create “Wi-Fi maps” listing businesses that can provide a safe place for students to study and use the Internet. For example, in addition to listing Wi-Fi hotspots, this [brochure](#) includes behavioral guidelines and information about low cost home Internet plans.

Oxford Public Schools (MS). Oxford middle school teachers have the option to give out coupons for local businesses that provide free public Wi-Fi to students through their online Positive Behavior Intervention System (PBIS). Students earn points for good behavior and can choose to “cash in” their points for coupons at local businesses through the PBIS online store.

Strategy 2: Promote Low-Cost Broadband Offerings

Many local Internet Service Providers (ISPs) provide discounted Internet plans for low income households. **EveryoneOn** is a national nonprofit that creates social and economic opportunity by connecting everyone to the Internet. Through partnerships with local Internet service providers, EveryoneOn is able to provide affordable home Internet plans and computers for households with students eligible for participation in the National School Lunch Program and other government support programs. Participating Internet service providers include AT&T, Cox, Comcast, Google Fiber, Spectrum, and others. Eligible customers receive affordable high speed Internet for as low as \$9.95 per month (plus tax). For most customers, there is no deposit, no contracts, and no installation or modem rental fees. To learn about low cost Internet offerings, affordable computers, and digital literacy training available for families in your community, visit [EveryoneOn.org](#).

While these programs can play an important role, they may not be an ideal solution for students who spend time in multiple homes. Companies commit to offering such broadband discounts for a limited time, and restrictions can exist. Read the fine print before becoming a promotion partner.

PROS:

CONS:

- No cost to school/district
- Duration of offerings may be uncertain
- Research shows that few families sign up for this type of service
- May not be a feasible option for families who move frequently
- Family will be responsible for security and filtering

Leaders & Innovators

Revere Public Schools (MA) addresses digital equity concerns in the district’s annually up-dated [Technology Plan](#). According to Superintendent Dianne Kelly, the district has a one-to-one Chromebook program in the high school, one middle school, and two fifth grades, making it important for students to have Internet access beyond the school day. District strategies to support students without home Internet access include:

- Keeping computer labs open for students before and after school
- Working with the public library to provide community Internet access and digital literacy programs
- Publicizing locations that provide free after-school Internet access for students
- Promoting Comcast’s low-cost home broadband program, Internet Essentials, which is available to families with at least one student eligible for the National School Lunch Program (NSLP).

In **Chattanooga (TN)** the city’s public utility Internet provider, EPB, provides subscribers with up to gigabit speeds. In 2015, EPB began offering the [NetBridge Student Discount Program](#)⁶, which provides 100-Mpbs Internet service for \$26.99 a month to households with students eligible for free or reduced lunch. The Hamilton County Department of Education disseminates program information along with applications for free and reduced meals and validates student eligibility for the program.

⁶Staff Report. “EPB Starts Signing up Students, Families for Discounted Internet Service.”Times Free Press, 10 Aug. 2015, <http://www.timesfreepress.com/news/business/aroundregion/story/2015/aug/10/epb-starts-signing-students-families-discounted-internet-service/319127/>.

Strategy 3: Deploy Mobile Hotspot Programs

Mobile hotspot lending programs can be an effective digital equity strategy, especially for students living in households that frequently move and for whom low-cost wired broadband plans may not be an effective solution. Studies cited in an Urban Institute [report](#)⁷ reveal that approximately 13 percent of children under 18 move from one year to the next; low-income children and adults move even more often, and approximately half of all low-income households move within two years.

Mobile hotspots typically (but not always) cap bandwidth on a monthly basis. A number of factors affect how much hotspot data students will need. Basic web research, sending email, and interacting with a learning management system require much less data than streaming video or downloading large files. When planning for hotspot data use, consider the following:

- Do students require access to streaming video to complete homework assignments? Examples might include watching Khan Academy videos, YouTube, or “flipped classroom” videos.
- Will students be working with and uploading large media files?
- Is web access filtered for both content and data? Filtering can be used both to protect students from inappropriate content and to minimize unnecessary data usage. For instance, schools may wish to consider blocking operating system upgrades, mobile app downloads, and consumer entertainment websites to minimize data usage. Educational gaming websites may also use large amounts of data.

Schools and districts that receive E-Rate funding and loan out hotspots directly to students must ensure they have CIPA-compliant filtering. Other schools and districts work with community organizations such as public libraries that make hotspots available for checkout.

Wireless Hotspot Grants

- The [Sprint 1 Million Project](#) provides devices and free high speed Internet access for high school students in Title I schools. The program is currently accepting applications for the 2018-2019 school year, which must be submitted by a high school or district.
- The [T-Mobile EmpowerED](#) program also provides off campus devices and data plans to low income students. Districts and eligible elementary, middle, and high schools can apply on a rolling basis. See the program [FAQ's](#).
- Mobile Beacon’s [Connect for Success](#) donation program provides schools in 50 U.S. cities with up to 25 laptops and 4G LTE hotspots with free high speed Internet service for 12 months. Schools can purchase significantly discounted LTE services after the first year.
- Kajeet created [this list](#) of Homework Gap funding resources.
- The [Digital Wish](#) website provides fundraising tools and information about technology grants.

⁷Comey, Jennifer, et al. “Housing and Schools: Working Together to Reduce the Negative Effects of Student Mobility.” <https://files.eric.ed.gov/fulltext/ED544335.pdf>

PROS:

- Provides Internet access anytime, anywhere
- Particularly relevant for students spending time in multiple households or who move frequently
- With school-provided access, educators can often gain visibility into student activity that can inform academic strategies and help evaluate the use of digital resources

CONS:

- May have data caps
- Not all vendors provide coverage in some areas
- Filtering may be a consideration

Leaders & Innovators

Beaverton School District (OR). In the fall of 2017, [Beaverton School District](#) deployed Sprint hotspots in all of their high schools after receiving a [Sprint 1 Million Project](#) grant. The district worked with Sprint specialists, high school teachers, administrators, and counselors to identify students without home Internet access. Prior to the hotspot program, teachers in low income schools were hesitant to assign online homework, practice or readings because many of their students did not have home Internet access, despite having school-issued laptops. The hotspots have changed the way that teachers deliver instruction. [Learn more about Beaverton’s Sprint 1 Million Project grant.](#)

Green Bay Area Public Schools (WI). Recognizing the important role that home Internet access plays with the advent of “everywhere, all-the-time” learning, [Green Bay Area Public Schools](#) allows students in grades 1-12 to check out Wi-Fi hotspots and laptops from school libraries for up to three consecutive days. The program is designed to help reduce the negative educational impact for students without home connectivity as teachers increase the use of technology in instruction.

Looking for a managed mobile broadband solution with vendor-provided content filtering, district leaders settled on an [initial pilot of 100 Kajeet mobile hotspots](#). Before deployment, district technology staff tested the devices at locations across the city to be sure that cellular coverage was available in the communities of greatest need. Classroom teachers in the 10 secondary schools piloting the program identified students lacking home Internet access and/or computing devices and nominated them for checkout privileges. One unforeseen challenge was the social stigma of poverty initially associated with the program. To prevent these negative associations, students now check out the devices using an unmarked computer bag.

As the district phased in implementation of a 1:1 program at all high schools, they steadily increased the size of the hotspot fleet and now have loaner hotspots available in all GBAPS. To sustain the momentum, next steps include training teachers and library media specialists to better support students with device checkout, engaging the parent community about the checkout option, and providing ongoing device maintenance.

Omaha Public Schools (NE). Inspired by the story of [Estella's Brilliant Bus](#), Omaha Public Schools partnered with Cox Communications and renovated a school bus to serve as a mobile learning lab. Funded by a public service commission grant, the [Mobile Learning Unit](#) travels to high poverty neighborhoods in North Omaha with the goal of bringing technology-enabled learning opportunities to students and their families. An OPS educator provides digital citizenship and literacy training on the bus for both parents and students. Cox has agreed to provide free Internet on the bus for 5 years, which can host as many as 50-75 wireless connections at a time.

Non-profit [Mobile Beacon](#) provides hotspots with unlimited data to schools, libraries, and other non-profits for \$10/month. Their Bridging the Gap program, in partnership with non-profit PC's for People, helps schools, libraries, other non-profits educate community members about high-quality, discounted computer offers and opportunities to purchase uncapped, low cost mobile internet broadband.

The New York City Public Library (NY), in partnership with Queens Library, Brooklyn Public Library and the [New York City Department of Education](#), offers a [Library Hotspot Program](#) which allows the parents or guardians of New York City Public School students to borrow a free Wi-Fi hotspot for use during the school year. Supported by a donation of 5,000 data lines from Sprint, the purpose of the program is to help public school students access on-line resources at home and raise their digital exposure and confidence levels. Each line provides 3Gb data/month (with throttling after the cap is reached) and CIPA-compliant web filtering. Interested families must attend an informational training event, held at library branches across the city, before receiving their hotspot, and must return the hotspot at the end of the school year. The program is so popular that the vast majority of the hotspot fleet is often checked out by December.

In addition to being parents of school age children, patrons checking out a hotspot cannot have household broadband access, be 18 or older, and must have a valid library card. Although the program is open to all eligible patrons, the informational loaning events are held in libraries located in low income neighborhoods.

PROS:

- Provides Internet access anytime, anywhere
- Particularly relevant for students spending time in multiple households or who move frequently
- With school-provided access, educators can often gain visibility into student activity that can inform academic strategies and help evaluate the use of digital resources

CONS:

- May have data caps
- Not all vendors provide coverage in some areas
- Filtering may be a consideration



Strategy 4: Install Wi-Fi on School Buses

A number of school districts install Wi-Fi on their school buses, allowing students to do their homework during their daily commute or when traveling to after school activities such as sporting events. In addition to allowing students to do homework, bus connectivity frequently reduces behavioral problems while in transit. For example, Huntsville City Schools (AL) [reported a 70 percent drop in discipline problems](#)⁸ after installing hotspots on their buses. This can have a positive ripple effect on such diverse areas as academic outcomes, school culture, and bus driver retention.

Although school bus Wi-Fi is not currently eligible for E-Rate funding, there have been legislative efforts to change this. Stay abreast of this and other education technology policy issues at cosn.org/advocacy.

PROS:

- Leverages existing school district assets
- Students use travel time for learning and homework
- Improved school bus discipline
- Filtered bus Wi-Fi provides a safer online environment for students doing homework

CONS:

- Additional cost
- Motion sickness may be a challenge for some students

Leaders & Innovators

Rolling Study Halls (Nationwide). In 2016, Google and Caldwell County Schools (NC) launched a pilot program called [Rolling Study Halls](#)⁹, which provided students who had long daily bus commutes with school bus Wi-Fi, devices, and an onboard educator to help students with their homework. The program was well received by the school community, and in 2017 Google [expanded the pilot](#)¹⁰ in partnership with [CoSN and Kajeet](#) to 12 more regions and 15 rural districts across the country. Districts were chosen based on district leadership and need, with a focus on rural communities where daily bus commutes average 45 minutes or longer each way. The goal of the program is to extend the learning day by recapturing “lost” learning time spent traveling to and from school and improve academic outcomes.

The **Salamanca City Central School District (NY)** located on the lands of the Seneca Nation of Indians, Allegany Indian Territory, in rural Western New York State. Approximately 40 percent of the district’s 1,250 students are Native American. Due to the district’s rural location and high poverty rates, many students lack home internet access. After launching a 1:1 mobile device program, the district worked with the Seneca Nation to ensure students could access public Wi-Fi at the administration building, library and community center. Additionally, because a high percentage of students participated in athletics and other extra-curricular activities involving long bus rides, the district partnered with their wireless provider to install a cost-effective bus Wi-Fi solution.

⁸Huggins, Paul. “Wi-Fi Helps Bus Discipline Reports Drop 70% for Huntsville City School; More Wi-Fi Planned for 2015-16.” AL.com, AL.com, 17 Apr. 2015, https://www.al.com/news/huntsville/index.ssf/2015/04/wi-fi_leads_to_70_drop_in_bus.html

⁹“Rolling Study Halls | Google for Education.” Google for Education: Google SVA Scholarship, Google, 2 Apr. 2018, https://edu.google.com/giving/rolling-study-halls/?modal_active=none.

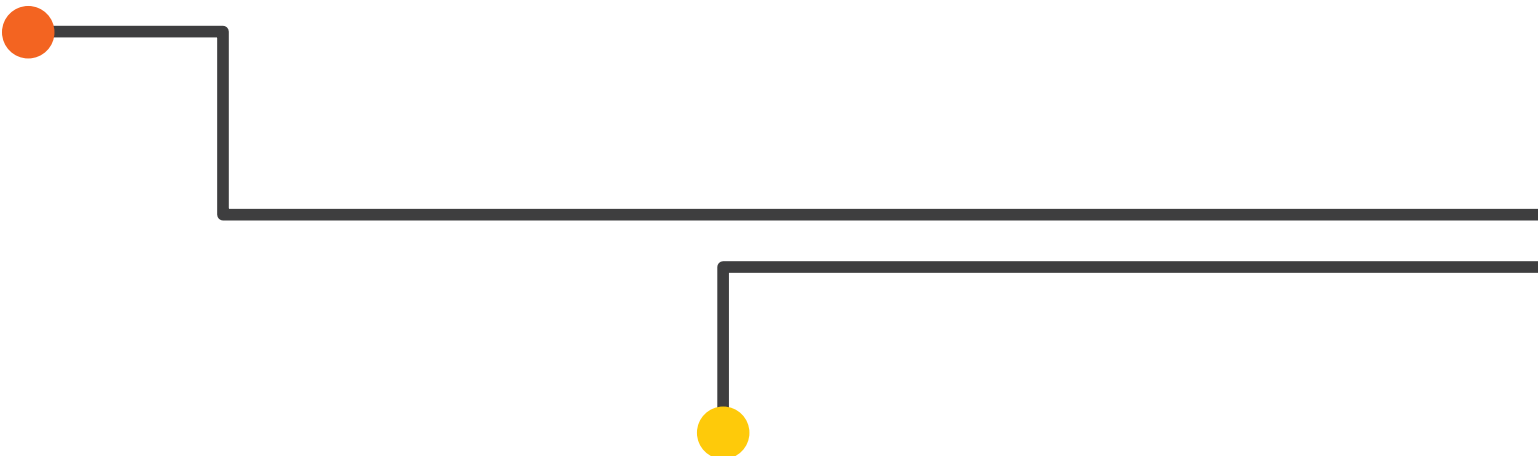
¹⁰Hester, Lily. “Rolling Study Halls: Turning Bus Time into Learning Time.” Google, Google, 2 Apr. 2018, www.blog.google/topics/grow-with-google/rolling-study-halls-turning-bus-time-learning-time/.

Raytown Quality Schools (MO) implemented school bus Wi-Fi utilizing [Kajeet SmartBus](#) technology to support their 1:1 device program for grades 6-12. More than 70 percent of the district's 9,000 students are eligible for free and reduced lunch. After a successful 6-month pilot with 6 school buses, the district began [rolling out Wi-Fi on their entire school bus fleet](#). In addition to helping close the Homework Gap, Raytown experienced a 45 percent decrease in discipline referrals, resulting in a more positive student school experience and allowing school leaders to spend more time working with teachers to improve instruction. As an added benefit, additional bus Wi-Fi components like GPS route tracking and live video provide key security features that give parents increased peace of mind.

Strategy 5: Build Private LTE Networks

Building private LTE networks is one of the most ambitious and innovative digital equity approaches. One way in which districts are doing this is by repurposing Educational Broadband Service (EBS) spectrum. EBS spectrum is a locally licensed prime mobile spectrum band in the 2.5 GHz frequency range used for advanced 4G wireless service. Originally called ITFS (Instructional Television Fixed Service), it was reserved by the FCC in 1963 for broadcasting instructional TV content in classrooms. Due to lack of demand, the FCC eventually let license holders lease "excess" bandwidth to commercial broadcasters. In 2004, the FCC changed the permitted use for that part of the spectrum from television to Internet and renamed it Educational Broadcast Spectrum. Many districts, lacking the technical expertise to run their own broadband networks, leased the spectrum to commercial Internet providers with long term contracts, with the result that the spectrum is not currently available for educational use. However, some leases are shorter than others, and some districts have been able to regain EBS spectrum from companies that can no longer afford the lease. Although there are some areas where EBS licenses have never been issued, the FCC stopped issuing licenses in the 1990's, and districts interested in applying for them must go through a lengthy special waiver application process from the FCC. For additional background and technical information, visit EBSspectrum.org.

Citizens Broadband Radio Service (CBRS) is a 150 MHz broadcast band of the 3.5 GHz spectrum band (3550MHz to 3700MHz). Historically used by the United States government for radar systems, the FCC, in 2015, established the 3.5 Ghz spectrum as an innovation band and made it available for other uses, such as LTE networks. Although EBS has better propagation and extended coverage than CBRS, the latter may be an option for districts interested in deploying private LTE networks who cannot utilize EBS. The FCC is expected to finalize CBRS licensing rules in late summer or early fall 2018.



PROS:

- Leverages an existing, underutilized resource
- No data caps/overages

CONS:

- Start-up costs may be significant
- Setup and maintenance requires technical sophistication

Leaders & Innovators

Albemarle County Public Schools (VA) is leveraging Educational Broadcast Spectrum (EBS) licenses to provide home connectivity for underserved students through a private 4G LTE network. Spanning 726 square miles at the foothills of the Blue Ridge Mountains, the district is both geographically and socioeconomically diverse, comprised of both urban and rural communities with pockets of poverty and low levels of both broadband adoption and access. According to the [National Digital Inclusion Alliance](#), broadband is not available through either cable or commercial 4G cellular service in many of the [district's rural areas](#).¹¹ Following an initial pilot which included partnerships with local police and fire agencies and began with mounting antennas on school buildings, the district is expanding the EBS service to cover additional areas. With an eye towards sustainability, their strategy includes partnering with a commercial firm to install towers on school campuses, allowing the district to broadcast signal to Wi-Fi devices while also leasing space to commercial carriers, generating revenue to support system upkeep.

¹¹ Siefer, Angela. "Community-Based Solutions for Lifeline Broadband." National Digital Inclusion Alliance, 8 Sept. 2015, www.digitalinclusion.org/blog/2015/9/8/community-based-solutions-lifeline/.



Community Collaboration for Digital Equity



Collaboration between community institutions can result in broader reaching and more sustainable digital equity solutions. Digital equity is not a school or district problem; it is a community problem. Whether school and district leaders are looking to bring broadband to a rural area or just take a broader, more holistic approach to digital access and inclusion, community collaboration is a powerful tool. Schools are uniquely positioned to engage the broader community in conversations about digital equity. In this section, we'll discuss how to leverage community partnerships to build capacity and develop shared digital equity solutions.

Schools and districts looking to build out broadband infrastructure in their communities should review the excellent publications from the [Broadband USA](#) initiative of the National Telecommunications and Information Administration, a division of the U.S. Department of Commerce. Broadband USA provides numerous helpful [publications](#), a monthly [webinar series](#), [technical assistance](#), and other resources for communities seeking to expand their broadband capacity. The North Carolina Broadband Infrastructure Office has published an excellent [Community Broadband Planning Playbook](#) providing valuable broadband planning guidance for communities in North Carolina and beyond. In addition, the Connecticut State Broadband Office has published a helpful [Community Capacity Checklist](#) for communities looking to expand broadband access.

Step 1: Assemble a Coalition and Develop a Shared Vision


Assembling a coalition and developing a shared vision is the first step in digital equity planning. To start, consider engaging with local elected officials (such as the mayor or city manager) to get their buy-in. Invite them to co-chair the effort, stressing the importance of broadband access and digital inclusion for both education and economic development. Their support will make it easier to build a widespread and inclusive coalition. Although coalition members may differ from one community to the next, include a broad variety of stakeholders. The [Open Technology Institute](#) has found that the following organizations play a critical role in the [long-term sustainability of neighborhood technology investments](#)¹²:

- Churches and faith-based social service institutions
- Community-based organizations, community centers
- Libraries
- Schools, educational and workforce education programs
- Colleges and Universities
- Social service facilities, including municipal aid and public/low-income housing
- Cooperatives (food, child care, etc.)
- Hackerspaces/makerspaces
- Hospitals and other health care providers
- Commercial Internet service providers (especially local or independent firms)
- Middle-mile or “bulk” bandwidth providers

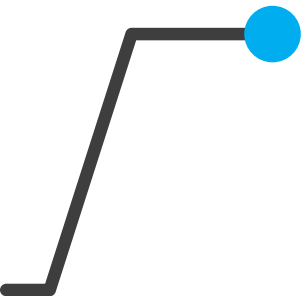
¹²Byrum, Greta. “Building Broadband Commons.” New America, 16 Mar. 2015, www.newamerica.org/oti/policy-papers/building-broadband-commons/.

Other potential community partners include:

- Municipal, County and State governments
- Business Leaders, especially technology companies
- Chambers of Commerce
- Housing authorities
- Non-Profit Organizations
- [Technology Refurbishers](#), such as [PC's for People](#), [Kramden Institute](#), [C2SDK](#), etc.
- Parent-Teacher Associations
- Social services departments
- State Legislators



This broadband planning committee checklist from the North Carolina Broadband Infrastructure Office may serve as helpful template as you build your planning team. Remember, your community-at-large or entities within it may already be working to advance digital equity. Take stock of existing efforts and identify areas where coordination or collaboration make sense. This will prevent duplication of effort and enable the community to better leverage existing resources.



The team vision should be determined by your community's specific needs. A rural town not currently serviced by high speed broadband will have different goals and needs than a community where broadband is available, but perhaps unaffordable or that has low adoption rates. Input from a variety of stakeholders will help ensure buy-in and lay the groundwork for success.

Regardless of the team goals, it is important to identify group leaders who will serve as project champions and keep the work moving forward. Project champions should have strong project management and communication skills and be willing to commit the time and effort necessary to see the project through.

[Leaders & Innovators](#)

Charlotte-Mecklenburg Schools (NC). Recognizing that the challenges of digital equity and home Internet access are a community problem, Charlotte-Mecklenburg Schools in North Carolina formed a community-wide Digital Inclusion Steering Team in 2014. Comprised of representatives from multiple community organizations including the City of Charlotte, Mecklenburg County, the Charlotte-Mecklenburg Library, the Knight School at Queens University, the Knight Foundation, and the Urban League, the group began a dialogue about ways to address digital inequities in their city. Recognizing that connectivity and device access were not enough, they formed [Digital Charlotte](#), a collaboration dedicated to raising the digital media literacy rate of the greater Charlotte area. The organization hired a project manager to prioritize digital equity as part of the community's agenda for equitable access for all.

To help address the challenge of students who lacked home Internet access, CMS schools and Charlotte-Mecklenburg Library built a collaborative program called [ONE Access](#), which allows CMS students to checkout books and digital resources and access library databases by using their student identification numbers. In August 2016, the library supported CMS students by piloting a Wi-Fi lending program. Partnering with Sprint, the five libraries nearest the five highest poverty high schools allowed students to check out—for free—one of 150 available wireless hotspots for Internet access, just like they would check out a book. They also worked with the non-profit organization EveryoneOn and community groups, including PTAs and YMCAs, to educate families about low-cost home Internet options available in their community.

CMS also partnered with [Eliminate the Digital Divide \(E2D\)](#), a local non-profit started by a CMS middle school student, Franny Miller, and her family. E2D teaches high school students to refurbish donated laptops and is narrowing the digital divide by equipping economically disadvantaged CMS students and families with at-home access to computers, broadband, and the digital literacy training necessary to support academic and professional success. The organization has assisted more than 2,500 Charlotte-Mecklenburg area families with technology to reduce the digital divide.

The **Community Foundation of Middle Tennessee (TN)**. Through its support of the Nashville Digital Inclusion Fund, the Community Foundation of Middle Tennessee is helping under-served families and individuals access the digital tools and devices they need to succeed. To date, the program has [trained more than 1,000 families](#), who also receive a laptop upon completion of the program.

Step 2: Assess Existing Community Resources, Gaps and Needs


After assembling a team and developing a shared vision, the next step is to assess existing community resources, gaps and needs. An initial community assessment might focus on:

- **Identifying existing physical and human capacity community resources.** Depending on community needs, these could range from identifying existing Internet service providers, confirming existing network speeds, and locating physical network resources (e.g., fiber, conduit, towers) to locating public computer centers, community Wi-Fi hotspots and organizations offering digital skills training.
- **Conducting a needs assessment.** For example, the North Carolina Broadband office suggests that an assessment, including surveys and interviews, might include:
 - Neighborhoods and businesses served by broadband
 - Affordability and resident willingness to pay
 - Download and upload speeds
 - Types of available internet service
 - Levels of satisfaction with current services
 - Reasons for non-usage among unconnected citizens and businesses
 - Internet speeds likely to be required for applications in the future, especially for businesses, hospitals, schools, non-profits, and [other organizations](#).¹³
- **Determine what structures or systems are needed to implement and sustain digital equity efforts.** The three “pillars” of the digital equity stool include connectivity, devices, and digital literacy education. Successful digital equity projects include all three pillars as part of their long-range planning.

Funding for Collaborative Community Projects

There are many potential sources for funding broadband and other digital equity-related projects. At the federal level, Broadband USA’s [Guide to Federal Funding of Broadband Projects](#) assists communities looking to leverage federal funding for broadband infrastructure. Other funding sources include state, local, private, and non-profit funding, including private ISP provider funding. State broadband offices can often provide guidance and technical assistance for communities looking to expand broadband access in their communities.

¹³ “Community Broadband Playbook: Assets and Needs.” Broadband Infrastructure Office, 19 Mar. 2018, www.ncbroadband.gov/playbook/assets-and-needs/.



Community Reinvestment Act (CRA) funding. The Community Reinvestment Act (CRA) was enacted in 1977 to prevent redlining and encourage banks to meet the credit needs of all segments of their communities, including low- and moderate-income neighborhoods and individuals.¹⁴ Banks that receive Federal Deposit Insurance Corporation (FDIC) insurance, based on asset size, are obligated to provide banking services and community development investments in Low to Moderate Income (LMI) Communities. Banks can meet their CRA obligations through a mix of volunteerism, grantmaking and investments.

In July of 2016, the Dallas Federal Reserve published [Closing the Digital Divide: A Framework for Meeting CRA Obligations](#), which outlines how federal banks can leverage digital equity projects to meet their CRA obligations. In addition, the [National Collaborative for Digital Equity \(NCDE\)](#) has published [A Guide to CRA Grantmaking for Digital Equity and Economic Inclusion](#) which provides guidance for community leaders exploring the possibilities of leveraging CRA funding for community-based digital equity projects. In addition, the 2017 CoSN webinar [“Closing the Digital Divide: How Schools and Businesses are Working Together”](#) discusses CRA funding in more detail.

Leaders & Innovators

Chippewa Valley Internetworking Consortium (VI). Formed in 1999, [Chippewa Valley Internetworking Consortium \(CINC\)](#) is a regional Community Area Network (CAN) committed to “Broadband Serving the Public Interest.” It became an unincorporated association in 2011 and coordinates regional communication infrastructure projects with city, county and state government, educational institutions, libraries, hospitals, health care, non-profits, and technology providers to facilitate and create innovative, competitive, and sustainable networks. Through a coordinated regional communication infrastructure, CINC helps the Chippewa Valley remain innovative, competitive and economically viable for present and future generations.

Kent County (MD). The government of Kent County leveraged public-private partnerships to bring [fiber Internet connectivity](#) to their rural community on Maryland’s Eastern Shore. Recognizing the role that home Internet connectivity can play in academic achievement, the county rewrote their tower leases in 2015 so that wireless Internet service providers could either pay rent on the tower space or offer low-cost home Internet plans to households with students eligible for the National School Lunch Program. They then entered into a public-private partnership with a dark fiber provider to build a fiber network ring connecting community anchor institutions, which also serve as homework hotspots for students. Learn more about the positive impact of broadband in Kent County schools [here](#).

Step 3: Engage Stakeholders and Partners

After assessing existing resources and identifying community needs, the committee should engage with additional stakeholder groups to determine how best to move forward. Whether laying out the case for a broadband infrastructure project and putting forth an RFP, or expanding upon local digital inclusion initiatives to better support school families, the goal is to strengthen relationships, seek areas of agreement and pull a wider scope of constituents into a [common vision of the future](#).¹⁵

Public-private partnerships can be a valuable way to leverage existing community capacity in support of infrastructure investments. BroadbandUSA has an excellent publication, [An Introduction to Effective Public-Private Partnerships for Broadband Investments](#) for communities looking to expand broadband capacity.

¹⁴ “Community Reinvestment Act Fact Sheet.” Mar. 2014, www.occ.treas.gov/topics/community-affairs/publications/fact-sheets/fact-sheet-cra-reinvestment-act.pdf.

¹⁵ “Planning a Community Broadband Roadmap: A Toolkit for Local and Tribal Governments.” April 2016. www2.ntia.doc.gov/files/ntia_planning_community_broadband_roadmap_042016_0.pdf.



Leaders & Innovators

Boulder Valley School District (CO). In 2017, Boulder Valley School District started a pilot program as part of their [ConnectME \(Connect My Education\)](#) initiative in which they allowed a local broadband provider to install wireless networking equipment on two school roofs, rent free. In exchange, the company provides free Internet service to the households of students living in the transmission area who are eligible for the National School Lunch program. The company installs the necessary equipment in the student homes and can sell Internet access to other households in the service area. Because BVSD owns the fiber running to each school building and paid for it using bond funds instead of E-Rate, they are able to backhaul the company's service. If the program is successful, they plan to expand it to other school buildings under a new long-term contract that may or may not include other concessions.

Tech Goes Home Chattanooga (TGH CHA) (TN) an initiative of the Enterprise Center, an economic development organization, is a digital inclusion program for Hamilton County residents. Partnering with schools, public libraries, churches, non-profits, and other organizations, they offer free courses designed to help residents develop skills and habits required for smart technology and Internet use. Participants receive fifteen hours of classroom training to help them understand why the Internet is relevant in their daily lives, have the option to purchase a new Chromebook for only \$50 upon completion of the course, and receive assistance in obtaining access to low-cost home Internet. TGH CHA is modeled after the national, award-winning Tech Goes Home program. Founded in Boston, Tech Goes Home has successfully provided participants with the tools, education and access required for 21st century skills development since 1999.

The [Tech Goes Home CHA School Program](#) provides digital literacy education for Hamilton County Public School parents and caregivers, accompanied by their children. The program involves 15 hours of group training outside the school day conducted by a Tech Goes Home CHA trained staff member from the child's school. Tutorials focus on topics such as tracking the child's grades and attendance online, securing a professional email, and finding web-based family resources.



Step 4: Develop and Execute a Project Plan

The final step in the process, developing and executing the project plan, should include input from all stakeholders. Even plans for relatively small projects should include detailed project timelines and deliverables. In situations where a formal contract is not necessary, consider using a Memorandum of Understandings (MOU) or other written document to ensure that all parties understand their roles and responsibilities. Most importantly, appoint a project manager to ensure that the project moves forward on schedule.

Once the project is underway, the planning team should continue to meet regularly to evaluate project implementation and refine processes as necessary. Be sure to track and document lessons learned throughout the project implementation process.

Frequent, regular communication - both internal and external - is key to project success. This is especially important when there are unforeseen challenges or project delays. Managing community expectations is critical to the success of any project. For example, Kent County, MD posted [bi-weekly progress reports](#) on their website to keep the community apprised on their county-wide fiber buildout. BroadbandUSA's [Introduction to Stakeholder Outreach](#) is an excellent resource for communities looking to develop communications strategies for digital equity initiatives of any size.



Leaders & Innovators

The digital equity case studies below from the [CoSN blog](#) detail how school districts and their communities have developed sustainable digital inclusion efforts.

[Nashville, TN](#) - Government, education, business, and community leaders collaborate on digital inclusion efforts.

[Provo, UT](#) - Getting to digital equity in a gigabit city.

[Revere, MA](#) - An exemplary partnership between a mayor and superintendent.

[Charlotte-Mecklenburg, NC](#) - A district partners with a number of community organizations to promote digital equity.

[Chattanooga, TN](#) - A superfast Internet city helps lower-income parents and students develop the digital literacy skills for success

[Additional case studies](#) - Explore other school district digital equity success stories from Kajeet.

For more examples of communities that are advancing digital equity in innovative ways, check out the winners of the [Next Century Cities Digital Inclusion Awards](#).




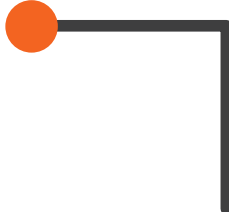


Conclusion



There is no silver bullet, no one-size fits all solution to our nation’s digital equity challenges. Every digital equity initiative must be customized to fit the local context; what works in one community may not be the best solution for another. Like other social challenges, the hidden academic and socioeconomic costs that arise from families lacking Internet access, devices, and digital skills are not always immediately visible. However, in an age where more than 8 in 10 middle-skill jobs (82 percent) require digital skills¹⁶, digital equity has become the civil rights issue of our time. Schools and district leaders should include digital equity as an essential aspect of all equity and inclusion initiatives, to provide every child with the high quality education they deserve.

Digital equity has become the civil rights issue of our time.



¹⁶ The Digital Edge: Middle Skill Workers and Careers. Capital One and Burning Glass Technologies, 2017, The Digital Edge: Middle Skill Workers and Careers, www.burning-glass.com/wp-content/uploads/Digital_Edge_report_2017_final.pdf.



Appendix A: Additional Digital Equity Resources



Several non-profit organizations and federal programs provide resources, technical assistance and capacity-building expertise for broadband expansion digital inclusion efforts. Communities seeking to develop digital equity initiatives will find these entities to be a great source of support:

Broadband USA. The National Telecommunications and Information Administration (NTIA), part of the U.S. Department of Commerce, developed the BroadbandUSA initiative to provide assistance to communities that want to expand broadband capacity and promote broadband adoption. BroadbandUSA provides numerous helpful publications, a monthly webinar series, a guide to federal funding, technical assistance, and other resources for communities seeking to expand their broadband capacity.

ConnectHomeUSA. ConnectHomeUSA is an initiative to bridge the digital divide for HUD-assisted housing residents in the United States under the leadership of national non-profit EveryoneOn. ConnectHomeUSA creates a platform for community leaders, local governments, non-profit organizations, and private industry to join together and produce locally-tailored solutions for narrowing the digital divide. Public Housing Authorities can apply for the program, which provides high speed connectivity, devices and digital literacy training for residents of HUD-assisted communities. Learn how ConnectHomeUSA communities have partnered with schools and developed other education focused partnerships.

Connect Americans Now. Connect Americans Now is a coalition of organizations seeking to promote the use of TV white spaces to close the homework gap in rural areas.

Connected Nation. Connected Nation is a non-profit, 501(c)3, working to develop and provide tools, resources, and methods to help local communities, states, and federal agencies create and implement solutions to their broadband (high-speed internet) and digital technology gaps.

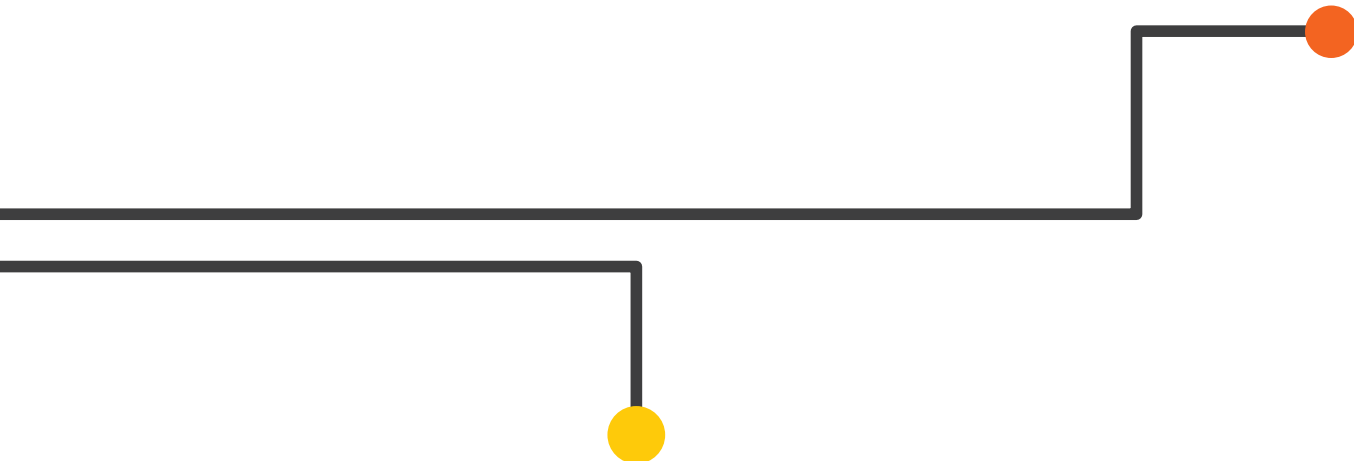
FCC Lifeline Program Modernization. In 2016, the FCC voted to update the Lifeline program with changes that were scheduled to begin in December 2016. The changes included expanding the program to include broadband service, requiring Lifeline providers to offer devices that are Wi-Fi enabled and have hotspot functionality, and creating a new process to add broadband providers to the system. However in January 2017, new FCC leadership put these reforms on hold. For more information, see *Advancing Digital Equity: An Update on the FCC's Lifeline Program* from the Alliance for Excellent Education and CoSN.

National Digital Inclusion Alliance. The National Digital Inclusion Alliance is a unified voice for local technology training, home broadband access and public broadband access programs. They work collaboratively to craft, identify and disseminate financial and operational resources for digital inclusion programs while serving as a bridge to policymakers and the general public.

North Carolina Broadband Infrastructure Office (BIO). The North Carolina Broadband Infrastructure Office has a wealth of resources and information for community development and broadband infrastructure expansion. Their Community Broadband Planning Playbook provides practical guidance for any community looking to expand broadband internet access.

Next Century Cities. Next Century Cities supports mayors and community leaders across the country as they seek to ensure that everyone has fast, affordable and reliable Internet access. Next Century Cities is committed to celebrating these successes, demonstrating their value, and helping other cities to realize the full power of truly highspeed, affordable, and accessible broadband.

The **Schools, Health and Libraries Broadband Coalition (SHLB).** SHLB advocates for open, affordable, high-capacity broadband for schools, libraries, health care providers, other anchor institutions and their communities. SHLB's public resources include webinars, white-papers, an informative blog, and an annual conference; additional resources available for members include regular broadband policy updates, monthly policymaker calls, and the opportunity to develop partnership with other SHLB members.



Appendix B: Sample Out-of-School Connectivity Survey

The student and parent survey items on the following pages can be used by the district or at the school level to give context to the so-called 'homework gap' in your community. A good survey will begin to uncover and profile in some detail the nature of the challenges that your students, and parents/guardians may experience. Minimally, a survey should address devices, places, and speed.

Below are templates intended as a starting point; customize or alter them to suit your situation.

For example, if a district has already decided to send Chromebooks home with students, the parent survey might ask, "If your child is assigned a Chromebook by his/her school, what options exist to connect that device to the Internet using Wi-Fi in your home?"

Student Survey:

What type of technology do you use at home? (Check all that apply)

- Desktop PC
- Laptop
- iPad
- Android tablet
- Kindle or Nook
- Chromebook
- Smartphone
- None
- Other (please specify)

What type of device do you primarily use for schoolwork?

- Desktop PC
- Laptop
- iPad
- Android tablet
- Kindle or Nook
- Chromebook
- Smartphone
- None
- Other (please specify)

What school related activities do you do on your device?

- Reading
- Writing
- Math
- Projects/Presentations
- Research
- Other (Please specify)

How do you access the Internet at home?

- Cable modem
- Fiber to the home
- DSL (through the phone company)
- Dial-Up (must connect via phone dial)
- Cellular service
- Satellite service
- Other
- No Internet access

For what other activities do you use your device?

- Social Media (e.g., Twitter, Instagram, Snapchat, etc.)
- Games
- Music
- Movies
- Digital Art
- Media (e.g., online magazines, TV shows, etc.)
- Other (Please specify)

Do you use the Internet to complete your schoolwork outside of school?

- Never
- Sometimes
- Often
- Always

How many other members of the household share the device you primarily use for school-work?

- 1
- 2
- 3
- 4
- 5+

Do you use your personal device for schoolwork while at school?

- Yes
- No

What other places in your community do you visit to access the Internet?

- Library
- Commercial business (e.g., coffee shop, restaurants, etc.)
- A friend's house
- A family member's house
- Place of worship
- Other (Please Specify)

What is the connection speed that you need, to engage in anywhere, anytime learning?

- Moderate. Enough to get online, check in, and comfortably browse the web.
- Fast. Enough to smoothly stream video, quickly download large files, etc.
- Lightning speed. Fastest possible connection for all sorts of projects.

Do you have access to this connection speed in your home?

- Yes
- No
- Most of the time, but not always
- Sometimes, but not enough
- Other situation (explain)

Do you have access to this connection speed in other places in the community where you do school work?

- Yes
- No
- Most of the time, but not always
- Sometimes, but not enough
- Other situation (explain)

Parent Survey:

What type of technology do you use at home?

- Desktop PC
- Laptop
- iPad
- Android tablet
- Kindle
- Chromebook
- Smartphone
- Other (please specify)

How many devices are being used in the household?

- 1
- 2
- 3
- 4
- 5+

How do you access the Internet at home?

- Cable modem
- Fiber to the home
- DSL (through the phone company)
- Dial-Up (must connect via phone dial)
- Cellular service
- Satellite service
- Other
- No Internet access

Overall, how comfortable are you using your home device?

- Not at all comfortable
- Not very comfortable
- Somewhat comfortable
- Very comfortable

How many other members of the household share the device(s)?

- 1
- 2
- 3
- 4
- 5+

If you have a smartphone or mobile broadband modem, who is your Service Provider for the Data Plan?

- AT&T
- Verizon
- Sprint
- T-Mobile
- Kajeet
- US Cellular
- Other (please specify)

Would you be willing to allow your child to use a personal device in school if it were part of the curriculum?

- Yes (please explain)
- No (please explain)

What is the connection speed that you need for your child to stay connected to learning and school, and for you to stay connected to their school?

- Moderate. Enough to get online, check in, and comfortably browse the web.
- Fast. Enough to smoothly stream video, quickly download large files, etc.
- Lightning speed. Fastest possible connection for all sorts of projects and activities.

Do you have access to this connection speed in your home?

- Yes
- No
- Most of the time, but not always
- Sometimes, but not enough
- Other situation (explain)

Do you or your child have access to this connection speed in other places in the community where you go or where your child does school work?

- Yes
- No
- Most of the time, but not always
- Sometimes, but not enough
- Other situation (explain)

Acknowledgements

CoSN thanks the sponsors of Digital Equity Initiative, Filewave, HP, and Kajeet, for the support that made the 2018 update of the Digital Equity Toolkit possible.

The 2018 update was led by Susan Bearden. The following individuals provided additional assistance:

Scott Boone	Director of Information Technology, Kent County, MD
Pete Bonilla	Manager of Wireless Service, King's County Office of Education, CA
Doug Casey	Executive Director, Connecticut Commission for Educational Technology
Carrie Coogan	Deputy Director for Public Affairs and Community Engagement, Kansas City Public Library
Susan Corbett	Chief Executive Officer, Axiom Technologies, ME
Rob Dickson	Executive Director of Information Management Systems, Omaha Public Schools, NE
Melissa Dodd	Chief Technology Officer, San Francisco Unified School District, CA
Diane W. Doersch	Chief Technology & Information Officer, Green Bay Area Public Schools, WI
Michael Flood	VP Strategy, Kajeet
Karen Hanson	Manager, Partnerships and Interagency Affairs, National Telecommunications and Information Administration
Matt Hiefield	TOSA and District Curriculum Developer, Beaverton School District, OR
Amy Huffman	Research and Policy Specialist, North Carolina Department of Information Technology
Dr. Laura Jacob	Supervisor of Technology, Kent County Public Schools, MD
Dianne Kelly	Superintendent, Revere Public Schools, MA
Jill Knox	Instructional Technology Coach, Oxford School District, MS
Crosby Kemper, III	Librarian, Kansas City Public Library, MO
Daniel Landsman	Customer Experience Program Manager, New York Public Library, NY
Elliott Levine	Distinguished Technologies and Director of Education, HP Director of Sales Engineering, Fi Sci
Jie Lewis	Director of Strategic Sales, Filewave
Stephen Mirante	Chief Innovation & Information Officer, Desert Sands Unified District, CA
Kelly May-Vollmar	Director, Technology Services, Fauquier County Public Schools, VA
Louis McDonald	Senior Manager, National Programs, EveryoneOn
Amber Petty	

Andrew Moore	Chief Information Officer, Boulder Valley School District, CO
Lorrie Owens	Administrator, Information Technology Services, San Mateo County Office of Education, CA
Allison Reid	Coordinating Teacher, Wake County Public School System, NC
Keith Rittel Gus	Superintendent, Provo City School District, UT
Schmedlen	Vice-President, Worldwide Education, HP
Avril Smart	Research and Engagement Manager, Alliance for Excellent Education
Ira Socol	Chief Technology Officer, Albemarle County Public Schools,
David Taylor	VA Senior Vice President of Marketing and Sales, Kajeet
Justin Talmadge	Technology Integration Specialist, Mercer Island School District, WA
Dr. LaTricia W. Townsend	Senior Research Scholar, Friday Institute for Educational Innovation, NC
Dr. Valerie Truesdale	Chief of Technology, Personalization and Engagement, Charlotte- Meck- lenburg Schools, NC
William Vallee	Broadband Policy Coordinator, Connecticut Broadband Office
Rick Xu	Director of Sales, Baicells Technologies
John Windhausen	Executive Director, Schools, Health, Libraries Broadband Coalition

The development of the 2016 Digital Equity Toolkit was led by Jayne James with the support of Founding Sponsors Kajeet, Dell, Qualcomm, and Google Fiber. Anne Schwieger did the initial work on the toolkit. Victor Rivero provided editing and design for the document.

