Moving Beyond High School 1:1 to Providing Mobile Hotspots: Asheville City Schools

Challenge: After 5 years of implementing a high school 1:1 program, Asheville City Schools (ACS) needed a solution for students' limited home access. ACS launched its 1:1 program for all ninth grade students in spring 2011, and expanded the program to grades ten, eleven, and twelve by fall 2011. The district combined external federal, regional, and local funding with available district funds to train students in online responsibility and accountability and to help teachers learn how to effectively integrate technology into their instruction. Teachers designed online classes using a variety of tools to create a paperless process for exchanging work and feedback among students and teachers. However, because not everyone had home internet access, many students were forced to use offline workarounds to access content.

Asheville City Schools Context
- 4,408 students
- Graduation rate: 85.4%
- Free & Reduced Meals: 43.8%

Solution: Because ACS is committed to closing the digital divide, the district tested a program that provided Kajeet Smart Spots to a small sample of students. The devices use wireless phone technology to deliver a Wi-Fi signal to student laptops that provides unlimited access to educational data. ACS originally purchased 25 smart spots, and now has 40 devices available to students in need. The "soft" application process relies on science teachers (the district's heaviest users of digital resources) to identify students in need. Students receive the device for a portion of the school year.

Lessons Learned: Students sometimes lose the devices (they are about the size of a deck of cards), and hot spots can be a costly solution ($24/month per student) with limited scalability. ACS is currently exploring a switch to a different wireless provider (student data access would fall from 4g to 3g, but at 40% of the current cost). Going forward, ACS plans to extend the checkout period of the devices for some students to the entire school year and also to integrate the program with the school library checkout process to allow for daily or weekly access for other students as needed.

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Solving Digital Access Needs of Students and the Community:
Community Connection Program

Challenge: A 2009 Chapel Hill-Carrboro Schools program that provided computers to lower-income students was not meeting the needs of the school system or the students. The program—*Community Connection*—awarded refurbished desktop computers to underrepresented students and families in need, in partnership with the Kramden Institute. In 2014, a new program director determined that the program was falling short of its broader digital equity goals. Awardees had better access to technology, but they were unable to service their computers when they broke, and many also lacked home internet connectivity, limiting the usefulness of the computers.

Chapel Hill Carrboro City Schools Context
- 12,237 students
- Graduation rate: 92.6%
- Free & Reduced Meals: 27.9%

Solution: *Community Connection* relaunched with a more comprehensive focus on digital equity. In addition to providing access to devices, the program added at-home connectivity and digital literacy components. Now, students and parents who participate in the training program receive a Chromebook for the academic year that is fully supported by the district (repairs, MiFi connectivity, and ongoing digital literacy training). The district distributed 75 devices at the high school level in its pilot relaunch year.

Challenges remain—such as limiting Wi-Fi access to district-issued devices only and identifying partners for expanding and sustaining the program—but *Community Connection* is now better able to address the broader challenge of digital equity, not just the challenge of digital access.

Lessons Learned: In order to implement a program like this one, it is important to first understand the district's broader needs and the specific needs of the students and families to be served. One of the reasons the program has been so well-received is that it partners with existing city government and non-profit programs that also serve the families it supports, creating a coordinated network of support for families—not just a single pipeline.

District Contact Information
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Getting Computers into Students' Homes

Challenge: Providing devices for home use and home internet access for all students in Charlotte-Mecklenburg Schools (CMS).

District Partner: *Eliminate the Digital Divide (E2D)*. E2D is a Charlotte-based non-profit organization comprised of municipal leaders, college students, corporate supporters and hundreds of civic volunteers in Charlotte. E2D's mission is to end the digital divide by equipping all economically disadvantaged students and families in CMS with at-home access to computers, digital broadband, and the digital literacy training necessary to immediately stimulate academic and professional success; and to design and advocate any practices, assessments, or public policy that make this possible. Since 2013, E2D has worked with 21 schools within the CMS system.

CMS Context
- 146,000 students (2nd largest district in North Carolina)
- Graduation rate: 85%
- FRL: 51%

Solution: E2D took two steps to solve the problem of meeting the need for devices. First, E2D partnered with the City of Charlotte, Mecklenburg County, CMS, and local corporate and philanthropic groups to scale their organization to be able to equip all CMS students who matched their target profile. Second, E2D adopted a business model that requires a nominal commitment from its target recipients. E2D charges families $100 ($40 upfront and $10 every other month for a year) for the computer and for reduced-rate internet access (via a partnership with a local digital broadband provider). After a year, the laptop is theirs and the families only have to continue to pay for the discounted broadband access.

By the end of 2015, E2D had sourced and provided over 1,000 CMS families with digital access and computer training.

Lessons Learned: Community partnerships are vital to closing the digital divide. In the case of E2D, for example, Lowe's has made frequent in-kind donations of laptops and other technology, and other businesses in and around the Charlotte metro area also are getting on board: Ally Bank and MetLife have both supported E2D with donations of technology and devices, and University City Partners provides support in many areas. Districts and organizations can look to cities, nearby colleges, philanthropies, and for-profit entities to partner with them to problem-solve ways to get devices and internet access to all families and students.

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Expanding Digital Learning Efforts to support Outside-of-School Access:
Iredell Statesville Schools

Challenge: With the expansion of Iredell-Statesville Schools' (I-SS) 1:1 program for grades 6-12, digital access became a more prevalent challenge for students who were unable to use their devices outside of school. After winning a 2013 Race to the Top grant to implement a student-centered blended learning model that focused on meeting the individual learning needs of all students, the district identified areas of the county with limited to no connectivity and made it a priority to address that need. I-SS investigated multiple approaches to providing access to students outside of school to include taking advantage of the federal e-rate program, but in all cases, the district did not have the infrastructure to support connectivity. I-SS needed to think differently about leveraging local partnerships to address the issue.

Iredell-Statesville Schools Context
- 20,733 students
- Graduation rate: 86.6%
- Free & Reduced Meals: 44.2%

Solution: In fall 2015, Iredell Statesville Schools signed onto the state's contract with a local cell phone provider to set up a MiFi checkout program for the district. The result: they created a virtual private network that hosts all of the district's MiFi devices and filters and authenticates MiFi connections through the district network. The partnership sponsors 80 hot spots across the district, allowing 1:1 schools to distribute devices. Although the program doesn't completely bridge the digital divide in I-SS, the combination of the MiFi program and other preexisting approaches to access allows many more students to extend their learning opportunities outside of school. The program's next challenges will be increasing the number of available devices, addressing variability in need in different parts of the county, and sustainability.

Lessons Learned: Before distributing devices throughout a district, it is important to consider the variability of need across schools. The approach Iredell-Statesville Schools took was to focus initial program efforts on higher-need schools. In addition, I-SS learned that leveraging student: staff contacts outside of a classroom setting alone can increase the likelihood that students with the most need access the program. For Iredell-Statesville Schools, communicating with and through school counselors has been invaluable to accessing students.

District Contact Information
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**Using Local Partnerships to Expand District Infrastructure:
Kannapolis City Schools**

Challenge: In 2013, Kannapolis City Schools' (KCS) veteran network engineer retired, making it challenging for the district to continue to support its voice and data network at the same level of service. The district was left with the choice of either waiting to fill the vacant position—always challenging for school districts, which often are not able to pay market rate for engineers—or finding new ways to provide support.

Kannapolis City Schools Context
- 5,285 students
- Graduation rate: 85.3%
- Free & Reduced Meals: 78.1%

Solution: KCS reached out to its sister district (Cabarrus County Schools) and Cabarrus County local government to talk about whether they might be interested in addressing the challenge together by reviewing their current network support structures and looking for ways to collaborate on managed network services. The three entities entered a new partnership to develop a more secure and robust network infrastructure, improve scalability, minimize network downtime, and share costs and resources. KCS houses their servers in the County Government Center, which provides backup servers and generators that maintain connectivity and provide redundancy for the district. Cabarrus County Schools houses their own servers but uses KCS's for backup. Together, both school systems and the County government have services and redundancy that, on their own, they would not be able to afford. KCS also now contracts with local government to provide LAN/WAN services for the district. The partnership already has proved beneficial: KCS avoided a possible data disaster when a leaky roof wiped out their local servers. Data recovery was possible due to the backups generated through this partnership.

Lessons Learned: KCS and its local partners identified several lessons learned during their collaboration negotiations. When considering a partnership, discuss the needs and what services each partner can provide up front. Determine fees you are willing to pay and what your partner is willing to accept. Get everything on paper to avoid surprises later in the process. Revisit the contract annually and make adjustments as needed. Finally, meet regularly in person to promote open and consistent communication.

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Getting Computers into Students' Homes

Challenge: Providing devices for home use and digital literacy skills for students across North Carolina.

District Partner: *Kramden Institute*. Kramden Institute is a Durham-based non-profit founded in June 2003. The original intent of the organization was to collect and refurbish older computers and donate those to middle school students in Durham who could not afford home computers. Over time, the goal of the organization has expanded to encompass more than just distributing computers; now, the broader objective is to ensure student success by teaching students critical computer, software, and internet skills. Additionally, the Institute's focus on recycling and reusing computers and parts reflects a philosophy of environmental stewardship by extending the lives of older devices and reducing e-waste.
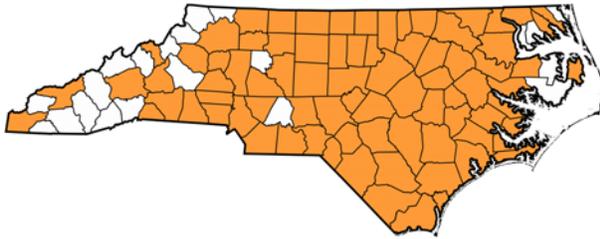
Kramden Institute Context
- Has donated over 22,800 refurbished computers to students in 78 NC counties since June 2003
- Has impacted over 70,000 people through its initiatives

Solution: Kramden has taken two approaches to solve the problem of meeting the need for devices and digital literacy. *Kramden Tech Scholars* is a core program to assist students in grades 3-12 without a working home computer. The program relies on principals, teachers, guidance counselors, and school social workers to identify and nominate deserving students. Tech Scholars receive digital literacy training and practical skills that help students use their devices for daily school and home tasks. As part of Kramden's efforts to help the local community, Kramden's *Tech Equipment Partners Program* offers affordable, heavily-discounted computer equipment to local non-profits, schools, churches and other institutions in need. All proceeds from these sales go directly back into funding refurbished computers for students without devices.

Lessons Learned: Because the problem is larger than distribution alone, equalizing digital literacy opportunities for all students in the state will continue to be an ongoing challenge. Many students still do not have internet access, and many more still are not served by Kramden and other programs like it. Taking the next step will require greater cooperation across organizations; to that end, Kramden created the Triangle Digital Inclusion Task Force and is working to develop local and national partnerships with a wide range of organizations (private and corporate foundations, philanthropic organizations, districts/schools, others from the tech field) that share their goal to reduce the digital divide.

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Taking Out-of-School Access One Step Further: URcast Network to Mobile Modems

Challenge: As Lee County Schools incorporates more digital learning into classroom instruction, the district, like so many others, continues to be limited by student inability to access online content at home. The district has been 1:1 for over 7 years and has used content distribution applications like URcast to support continuous learning outside of the classroom. URcast has allowed teachers in Lee County to frontload student devices with the content they need before they leave the classroom and to differentiate instruction based on student home access. Even with these accommodations, some students still were limited by lack of home internet access.

Lee County Schools Context
- 10,153 students
- Graduation rate: 89.1%
- Free & Reduced Meals: 67.8%

Solution: In April 2016, Lee County instituted a small pilot program to improve home access and instruction for 92 3rd grade English as a Second Language students. The program started in six classrooms across the district and is supported by three instructional technology facilitators, three technicians, one WAN engineer, one LAN engineer, and a project director. The county contracted with a cellular company to acquire modems that provide 2 gigabytes of mobile data for students without home internet connectivity. In advance of the program, the program director drove to several communities across the district with the routers and Chromebooks to verify that students could obtain signals at home from the routers.

Lessons Learned: Leadership was very strategic about thinking through key details—cost, filtering, instructional supports, etc.—so as not to burden teachers or parents, and to promote student success. A major lesson learned, according to one program coordinator, was: "You can't plan enough before implementation to make sure all the pieces are in place." The district also learned that informational events like parent nights are critical to ensuring that everything goes smoothly and that parents are on board. Lee County parent nights included instruction on how to connect Chromebooks to modems and on how to ensure the 2 gigabytes of home data was preserved for students' instructional needs. Finally, Lee County learned that it pays to be firm with cellular companies to get a good deal for families. For example, the district insisted that family participation not require a credit check that might make parents hesitant to participate.

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**Providing Digital Learning-Focused Professional Development on a Budget:
Richmond County Schools**

Challenge: Richmond County Schools' (RCS) limited budget allows for only 1 mathematics and 1 English-Language Arts director at the district level to support professional development for over 600 teachers. In March 2015, RCS launched a 1:1 Chromebook pilot program that has since expanded to all high schools in the district. Given the increased need for professional development on integrating technology into classroom instruction, the district is faced with the challenge of providing sufficient training and support to all teachers with limited resources.

Richmond County Schools Context
- 7,579 students
- Graduation rate: 81.0%
- Free & Reduced Meals: 64.4%

Solution: In an effort to scale access to the expertise of the district's content area directors, over the last two years Richmond County flipped its professional development. In the new model, teachers come to half-day professional development sessions with one of the two directors to help with their understanding of North Carolina's Standard Course of Study. Soon thereafter, staff development days are scheduled, and teachers work within their school-based Professional Learning Communities to continue their learning by creating lesson plans and resources for instruction together. With this change in the structure of district-provided professional development, teachers get a full day to collaborate on lesson planning by cooperatively integrating the new resources and strategies learned from content area directors. In the next year, the district plans to expand the training by implementing a train-the-trainer model in which a lead facilitator from each school works for a half-day a month with technology facilitators and then trains teachers at her or his school.

Lesson Learned: Being a small district is not always a drawback. As one Richmond County official noted, "The nice thing about the district is that since we're small, it is pretty easy to scale things. We have teachers who are largely willing to try new things and supportive principals."

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