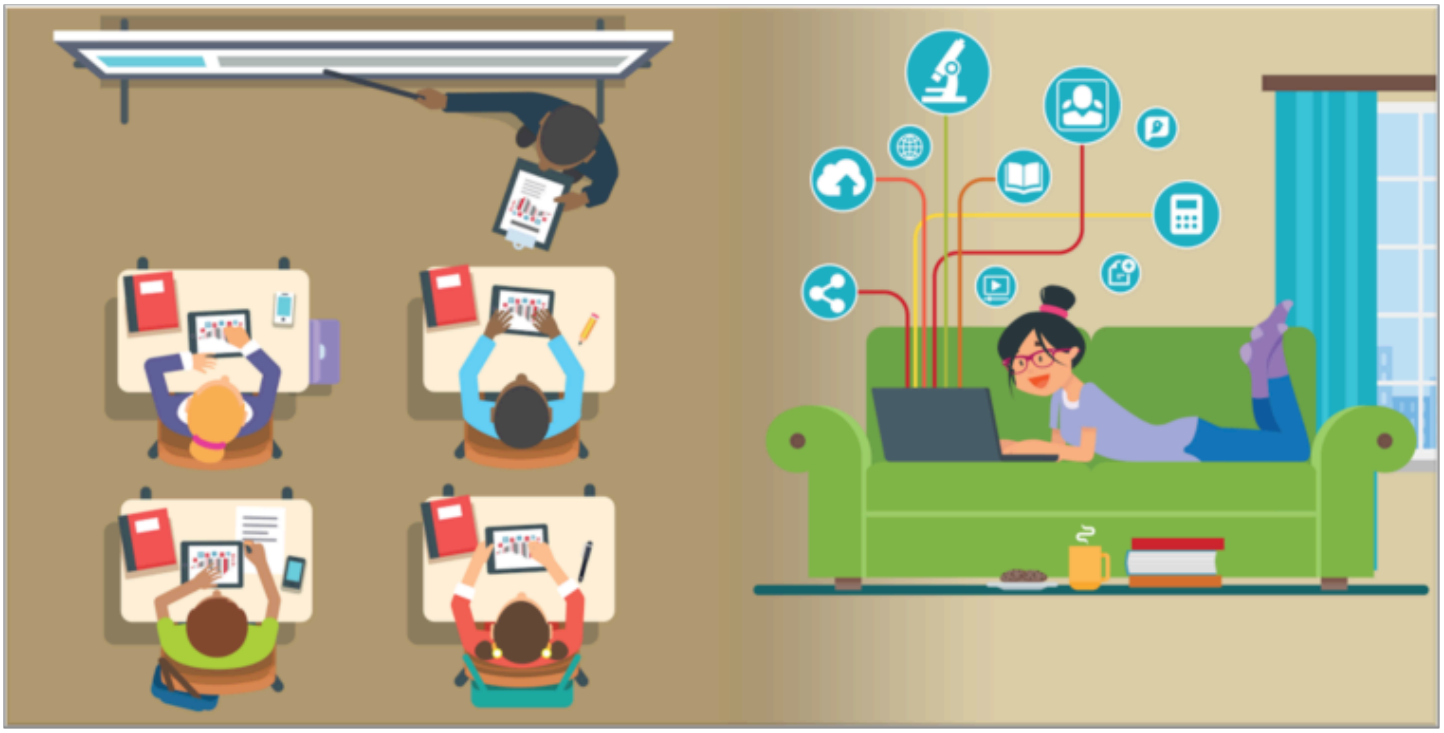
EQUITY FOR DIGITAL–AGE LEARNING

Education Leaders Address New Challenges in North Carolina Schools



Avril Smart, Ph.D. & Jeni Corn, Ph.D.

THE WILLIAM & IDA FRIDAY INSTITUTE FOR EDUCATIONAL INNOVATION

NC STATE UNIVERSITY College of Education

Table of Contents

Acknowledgments..... 2
Introduction..... 3
North Carolina's Digital Learning Plan and Digital Equity..... 5
Redefining Equity for Digital-Age Learning Convening..... 7
Setting the Tone: Digital Equity the New Frontier (Keynote Speech)..... 8
Panel Discussions: Lessons Learned from Local Digital Equity Initiatives..... 9
Barriers and Solutions: Stakeholder Working Group Sessions..... 10
Out-Of-School Internet Access[1]..... 11
Professional Development and Preparation for Educators[2]..... 15
Personalized Learning in High-Need Classrooms[3]..... 18
Building Parent and Community Support[4]..... 20
Planning for Sustainability of Devices, Networks, and Resources[5]..... 22
Conclusions and Next Steps..... 25
References..... 26

Acknowledgments

The Friday Institute Team would like to extend sincere gratitude to the Office of the Lieutenant Governor, the North Carolina State Board of Education and the Department of Public Instruction for partnering with us to host the Redefining Equity for Digita-Age Learning convening. To our sponsor AT&T, thank you for providing food and refreshments throughout the day. We are also grateful for our distinguished panelists and moderators Jane Smith Patterson, Laura B. Fogle, Robin Britt, Linda Jones, Mayor Newell Clark, Damanpreet Johal, Richard Marshall, Trip Stallings, Evelyn Bulluck, Robert Doreauk, Rick Glazier, John Hood, Maria Pitre-Martin and Jeffrey Sural, for their time and thoughtful discussion. Thank you to the External Planning Team, Friday Institute, and NCDPI staff for their contributions to the planning and development of the event. Finally, the success of the event was greatly due to the education stakeholders who attended and lead the charge to addressing digital equity in North Carolina.

Introduction

Digital inequities—or the divide amongst students who have and do not have access to digital resources —has become a national concern among K-12 educators in recent years. Research has documented the impacts of differential access to technology, however, as many districts and schools across the country move closer to fully transitioning to digital-age learning, digital inequity among K-12 students has become a more salient concern.

In response to the growing relevance of digital equity, President Barack Obama announced the ConnectED initiative in June 2013 designed to enrich K-12 education for every student in the United States. ConnectED has three main foci: 1. Upgrading connectivity in schools and libraries; 2. Improving the skills of teachers on using education technology tools to improve student learning; and 3. Encouraging private sector innovation among leading technology companies to produce feature-rich educational devices that are price-competitive with basic textbooks. Coupled with that work are federal reform efforts from the Federal Communications Commission (FCC) to expand the Lifeline Program[1] and to adopt the E-rate Modernization Order, which takes action toward: 1. Ensuring affordable access to high-speed broadband sufficient to support digital learning in schools and robust connectivity for all libraries; 2. Maximizing the cost-effectiveness of spending for E-rate supported purchases; and 3. Making the E-rate application process and other E-rate processes fast, simple and efficient. Combined, these landmark federal policy initiatives shed light on digital equity as a national K-12 education challenge. They also provide a streamlined approach to improving Wi-Fi networks in schools and a method for expanding the financial support needed to improve internet access for low-income families across America.

Despite federal policy gains, much more work remains to be done at the state level to address the inequities that impact K-12 students' abilities to fully engage in digital-age learning. Variations in funding, policy, computer and internet access are a few of the factors that impact digital inequity differently at the state level. This white paper discusses digital equity challenges among North Carolina students as identified by a group of education stakeholders at the Redefining Equity for Digital-Age Learning Convening and offers potential solutions to mitigate those challenges. The convening served as the inaugural event to launch a dynamic partnership among the Office of the

[1] The federal Lifeline Program for Low Income Consumers was created in 1985 as a part of the Universal Service Fund to provide discount on phone service for qualifying low-income consumers to ensure that all Americans have the opportunities and security that phone service brings, including being able to connect to jobs, family and emergency services. The program was revised on March 31, 2016 to include broadband services.

Lieutenant Governor, the North Carolina State Board of Education, Department of Public Instruction, and the Friday Institute for Educational Innovation. The event brought together more than 100 education stakeholders in a collaborative effort to identify challenges to digital equity that impact North Carolina K-12 students. Working groups discussed five key areas, highlighted major barriers and identified potential solutions. Not surprisingly, lack of funding, outdated professional development strategies, and an unclear understanding of the value for digital-age learning were among the major barriers discussed. Recommendations to address those barriers called for increased collaboration across education levels (e.g., schools, districts and state agencies), more financial support from the state legislature and buy in among all education stakeholders (e.g., parents, the local business community, educators and government).

North Carolina's Digital Learning Plan and Digital Equity

Between January and September 2015, the Friday Institute for Educational Innovation, along with policymakers, education leaders, practitioners, business leaders, and other stakeholders, developed the North Carolina Digital Learning Plan to accelerate North Carolina's ability to provide a personalized digital-age education for all K-12 public school students. The vision for the Plan was comprehensive and ambitious:

> *The digital transition . . . will require changes in instructional practices, new types of educational resources, changes in classroom and school management, revised school staffing models, enhanced school and district technology infrastructure, Internet connected devices for all students and teachers, and educator training and support tailored to specific district and charter deployments. Further, State and local funding and policy frameworks will need to be revised. In short, the digital transition will require comprehensive planning.*

The goals of the Digital Learning Plan were to build upon the existing foundations of previous digital learning efforts, develop a coherent long-term strategy, and provide resources to enable the State's educators and students to benefit fully from digital-age teaching and learning.

The Digital Learning Plan team engaged thousands of North Carolina stakeholders in intensive discussions to determine the digital learning strengths and needs at district, community, and state levels. Among the persistent challenges identified as cutting across all areas of digital learning were issues of inequity and lack of access: community and home internet access; devices and sustainability planning; engagement of parents in the transition to digital age learning; and provision of personalized learning for every North Carolina student.

After reviewing feedback data from educators across the state, the following key recommendations for improving digital equity were presented in the Plan:

1. Organize multi-agency efforts to provide broadband access for all homes.
2. Develop and implement digital learning competencies for teachers and administrators as required by SL 2013-11.
3. Guide teacher and administrator preparation programs to ensure that their graduates are ready for digital-age schools.
4. Provide additional supports to ensure equity of digital learning opportunities for all students.
5. Establish regional digital learning networks to support digital learning initiatives and foster collaborations across districts.

Redefining Equity for Digital-Age Learning Convening

In line with the findings and recommendations in the North Carolina Digital Learning Plan, in June 2016, the Office of the Lieutenant Governor and the Friday Institute for Educational Innovation, in partnership with the North Carolina State Board of Education and the Department of Public Instruction, hosted an event to jump-start ongoing collaborative and thoughtful discussions about strategies for anywhere/anytime access to digital resources for all North Carolina students. The convening provided opportunities for conversations among key education stakeholders with a goal of identifying solutions that will redefine equity for digital-age learning in all North Carolina schools and districts.

This day-long meeting brought together over 100 education stakeholders with representatives from city/state government, institutes of higher education, private business, public organizations, and schools/districts in a collaborative effort to evaluate the challenges of digital equity for North Carolina K-12 students. The convening set two priorities: 1) Develop a shared understanding of the digital equity challenges that are most relevant to North Carolina students; and 2) Identify viable solutions as the state continues to transition to digital-age learning in our schools. The description of equity in the North Carolina Digital Learning Plan framed the event:

> *A successful transition to digital-age learning requires that all students and teachers have reliable and consistent access to digital resources – providing equity of access across all districts and charter schools, small and large, rural and urban, economically sound and economically distressed. Access comprises the network infrastructure that brings Internet connectivity to districts, schools, and classrooms and the devices that provide an interactive interface to students and teachers. Ideally, every student and teacher should have access to a Wi-Fi-enabled laptop or tablet to interact with digital resources, for communication and collaboration, and to create content. To ensure equity, access must be extended beyond the walls of the school and beyond the school day. Equity also requires that all students have teachers who are well prepared to make effective use of digital learning, high-quality educational resources, and the types of personalized, anytime-anyplace learning.*

The schedule for the day was intentional. Each component of the agenda included opportunities for the participants to network and engage in meaningful discussion. Each session addressed digital

equity from multiple perspectives and stakeholder groups. The following sections of this paper will provide an overview of the day including participants' feedback during working groups and recommendations for addressing digital inequities in NC.

9:30AM to 11:00AM	Opening Session
11:00AM to 12:00PM	Defining Digital Equity Challenges for North Carolina Schools and Districts
12:00PM to 1:00PM	Lunch and Student Panel
1:00PM to 2:00PM	Barriers & Benefits for Equitable Access to Digital-Age Learning
2:00PM to 3:00PM	Solutions & Strategies for Addressing Digital Equity Challenges
3:00PM to 4:00PM	State Level Support for Digital Equity Initiatives
4:00PM to 4:30PM	Closing Remarks

Setting the Tone: Digital Equity the New Frontier (Keynote Speech)

The day started out with an inspiring keynote from James Ford, Program Director at the Public School Forum of North Carolina and the 2014 North Carolina Teacher of the Year. Ford set the tone for the convening by providing an overview of the historical context of education inequities in North Carolina and the ways in which digital equity represents one of the most important topics of the modern era of education. He charged attendees to embrace digital learning as a tool for reversing some of the historic educational opportunity challenges that have faced students in the State. His speech reminded the audience that addressing digital equity challenges requires courage.

> *"If we are to adequately fulfill our mission as educators, we need to adopt a new way of doing things. We need to recognize the conditions, do away with the constraints of convention and embrace a new model of education. We need to radically rethink what school looks like in 21st-century America, and apply an equity lens to our work."*

Following Ford's sobering remarks, the group was then empowered to educate themselves and each other about the pervasive nature of digital inequities in North Carolina. Panel presentations offered the opportunity to learn more about tried and true digital equity initiatives at the school, district, city and state government levels. Stakeholder working groups concentrated on identifying specific challenges to creating digital equity and brainstorming practical solutions.

Panel Discussions: Lessons Learned from Local Digital Equity Initiatives

Panel discussions with students, educators, business leaders, and policy-makers highlighted best practices for combatting digital inequities that could be applied across contexts. The student panel featured the City of Raleigh's Digital Connectors program, an intergenerational approach to providing technology and leadership training to teenagers, young adults and seniors. Students on the panel were previous participants turned program ambassadors who focused their talk on the overall value of a citywide program and how the experience impacted their personal development. Their words echoed the importance of thinking differently about the impact of digital inequities, as their experience taught them that the digital divide in North Carolina affects their age group just as severely as adult and elderly communities.

"I really found my passion for teaching through Digital Connectors. The program helped me consolidate my plan to open up free computer hubs in India to help people in need."

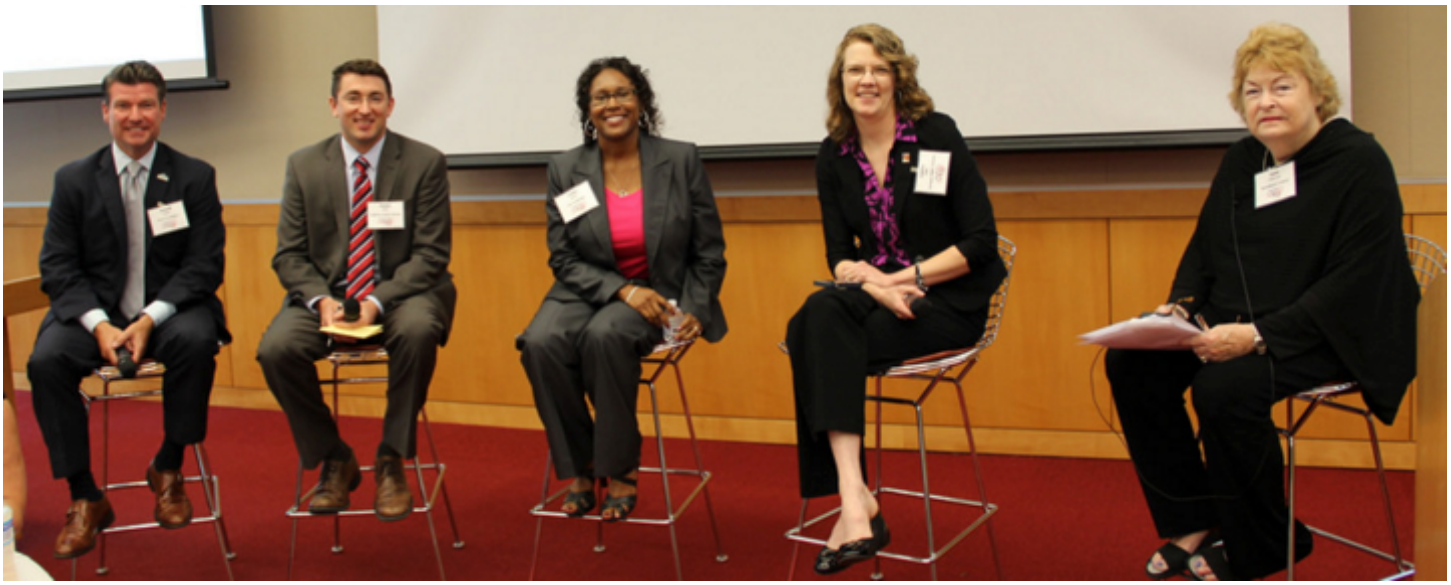
"Digital Connectors helped me develop a deep interest in volunteerism and also in the Grand Challenges of Engineering."

Student Panel: Raleigh Digital Connectors Program Student Alumni (Damanpreet "Preeti" Johal and Richard Marshall)

Other panels with practitioners and policy makers focused on lessons learned and policy implications for failing to resolve the K-12 digital equity challenges in North Carolina. Technology and infrastructure pioneer, Jane Smith Patterson, began the discussion recapping the State's history of improving broadband access in rural and urban areas. She stated that the goals at that time, similar to those identified in more modern digital equity initiatives, were not only to improve the application of technology, and enhance the economy of North Carolina, but to advance educational opportunities for future generations.

Representatives from school districts, city and state government spoke directly about current barriers

to implementing localized digital equity programs such as identifying adequate financial support, increasing the scale of programming to promote greater impact and generating buy in among state level stakeholders to move initiatives forward. Their feedback pointed to the need for creating more cross sector collaborations and generate a shared ownership of digital inequity as a challenge for all K-12 education stakeholders.



Practitioner Panel: Barriers & Benefits of Equitable Access to Digital – Age Learning Left to Right: Newell Clark (Mayor, City of Lexington), Robin Britt (Director of Instructional Technology & Personalized Learning, Guilford County), Linda Jones (Director of the Raleigh Digital Connectors Program, City of Raleigh), Laura B. Fogle (Technology Facilitator, Durham Public Schools) and Moderator Jane Smith Patterson.

Barriers and Solutions: Stakeholder Working Group Sessions

Participants spent most of the day in working group sessions discussing 5 key digital equity challenges (1. Out-of-School Internet Access; 2. Professional Development and Preparation for Educators; 3. Personalized Learning in High-Need Classrooms; 4. Building Parent and Community Support; and, 5. Planning for Sustainability for Devices, Networks and Resources). A team of facilitators guided small groups through collaborative learning activities designed to both define the challenge and develop thoughtful recommendations for practical next steps.

During the first working group, participants reviewed research articles, reports, videos, and other publications from across the country discussing digital equity. Their task was to use that information to draft a problem statement that fully defined the scope of their specific digital equity challenge. The

second working group used the problem statements to frame a discussion about solutions that could move North Carolina closer to addressing digital inequity in K-12 education.

Left to Right: Darren Bell (Community Connection Program, Chapel Hill-Carrboro City Schools), Lori Special (Youth Services Consultant, State Library of North Carolina), Rashad Slade (Director of Instructional Technology & Innovation, Guilford County Schools), Jean Davis (Executive Director of MCNC) Laura B. Fogle (Technology Facilitator, Durham Public Schools) and Michael Flood (Vice President of Strategy, Kajeet).

The following sections summarize each working group's definition of their specific digital equity challenge and their suggested recommendations. Research articles, publications and other resources that inform the summaries are cited in the reference list. For access to all presentations, session resources, and participant contact information from the convening please visit the Digital Learning Plan Website (go.ncsu.edu/redefiningequity).

Out-Of-School Internet Access[1]

Challenges: Out-of-school Internet access is the most pressing issue in the discussion surrounding digital equity in North Carolina. In 2008, as part of the North Carolina School Connectivity Initiative, MCNC and other groups contributed to the effort to provide statewide connectivity for the K-20 community. The State has made great progress in providing resources, access, and devices for

students within schools and districts; however, there is still a substantial gap in home connectivity, particularly among the rural, poor, and under resourced communities in North Carolina. In addition, while nearly 99% of North Carolina schools and libraries are connected to the Internet, connectivity alone has become an outdated standard for measuring digital equity. Service level access speed and quality at the household level has become the new barometer for high-quality broadband connectivity.

In reviewing the research provided in the first working group, participants concluded that access is not just an educational issue but also a social/economical one. Over 100 million Americans do not have home Internet access. Research on the limitations of access points out that household income is the biggest factor affecting Internet adoption among families, and that broadband Internet is approximately 50% more expensive in the United States than in other countries (Council of Economic Advisors, 2015). This means families are negotiating several competing expenses, of which Internet access is a low priority. Furthermore, among low-income families with mobile internet access, about three in ten (29%) say that they have hit the data limits on their cell plans. Nearly one-quarter (24%) say that they have had their cell service (and thus their Internet connection) interrupted in the past year due to lack of payment, and one in five (21%) say they have a hard time getting enough access to their family's smartphone because competition in the home for limited resources (i.e., in-home competition for use of a device or for access) is significant (Rideout & Katz, 2016). The fact is, for most lower-income families, internet is often the first service to be cancelled in lieu of other household priorities.

The workgroup also concluded differential progress in technology adoption between schools and communities further exacerbates the already-large achievement gap among students. Data show that for lower income households, affordability of internet access is a far greater barrier to student achievement than device costs. Approximately 28% of families have no "home access" overall, however, 43% of households below the poverty level do not have internet access. Lower-income households are four times more likely not to have broadband access than their middle to upper class peers. Students that fall into this "homework gap"—households where Internet access is limited or in many cases nonexistent—lag behind in education and are less competitive in the workforce.

Barriers and Solutions: Closing the gap in Internet access among poor, rural communities will require efforts to reduce barriers in affordability, relevance, and computer literacy. Federal programs like the FCC's Lifeline program, and President Obama's Connect Ed Initiative have made great strides to elevate digital equity and the homework gap as pervasive issues in K-12 education. Additionally, these programs have provided funding for families to subsidize the cost of broadband connectivity and provide additional resources to educate and empower families about the use of technology as

a tool for escaping poverty. At the state level, the working group recommended that North Carolina adopt multiple approaches to addressing this challenge:

Barrier	Solution
State and Local Policies • Federal policy has taken giant leaps forward to subsidize school technology budgets; however, state and local policies are slow to provide assistance for parents and caregivers to purchase effective devices and connectivity for their home. For example, House Bill 129 creates restrictions on city governments across the State that seek to provide internet services to their citizens. The policy hinders local governments' efforts to pursue affordable municipal internet services.	• North Carolina lawmakers and local government officials should develop more effective statewide policies that support providing affordable out-of-school internet to parents of K-12 students. • NCDPI should develop resources to educate schools and districts about how to leverage federal funding policies (i.e., E-rate and Lifeline Programs) that support increased internet access.
Parent and Community Involvement • Parents and caregivers are not fully aware of the benefits of a digital-age education. • Digital equity gaps outside of school has not been discussed as a relevant issue locally or statewide.	• School and district personnel should partner with local non-profit organizations to develop training programs for parents, caregivers and their children that foster greater understanding of the value of digital-age learning. • North Carolina policy makers, The NC State Board and NCDPI should publicly address digital equity as a major issue affecting K-12 education across the state.

Barrier	Solution
Stakeholder Groups Working Independently on Digital Equity Issues • There is no common language or goal supporting out-of-school internet access efforts. Stakeholder groups work independently to address digital equity in their respective contexts without aligning their focus with local or global concerns.	• State level associations and education agencies should develop a task force to develop a multi-tiered strategy for addressing out-of-school access at the state, county and local levels. The goals of the group would be: 1. Articulate a cohesive purpose statement for internet access initiatives that focuses on the value of digital-age learning; 2. Create best practices and guidelines for schools and districts as they develop their own initiatives; and, 3. Create networks of educators to collaborate in developing solutions.
Separating In and Out-of-school Access Challenges • Dissociating the benefits of in-school and out-of-school internet access limits the possibility for leveraging the education community as a bargaining tool when negotiating affordable internet access. Without framing internet access as an asset to high quality education, school and district leadership lose sight of potential partnerships with internet service providers (ISPs).	• Schools and districts should change the conversation with ISPs from focusing strictly on internet access to providing an education focused solution. Introducing educational access as the goal can prove beneficial to families and lower the risk to the ISP. Ultimately a strategy like this one will drive adoption by families and lower need-to-serve for schools and higher commercial adoption for carriers.

Professional Development and Preparation for Educators[2]

Challenges: As technology becomes more pervasive in education, professional development and preparation for educators must evolve. The use of technology in the classroom makes information a scroll and a click away; therefore, teachers need to be prepared to lead students in that environment. On one hand, the shift from traditional instruction to a more innovative model for professional learning presents new challenges for schools and districts when it comes to providing access to resources, technology, and infrastructure. On the other hand, digital-age learning presents an opportunity for educators to increase student enrichment by addressing teachers' abilities to effectively leverage technology for instruction.

Digital-age teaching and learning means that professional development is individualized and self-directed. The one-size-fits-all, sit-and-get approach is no longer aligned to the needs of students or teachers. Instead, professional development and educator preparation needs to model what digital teaching and learning looks like in the classroom. Teachers need to become designers for learning experiences and analysts of student learning. Their role has become less traditional and more focused on helping students become independent, anytime, anywhere learners.

Face-to-face, blended, and virtual learning communities are three ways to personalize professional development and encourage autonomy among teachers. Additionally, to meet student needs, teachers need to become facilitators of learning. In other words, they will need professional development that empowers them to design technology-rich, rigorous instruction that transforms student learning. Seven specific characteristics describe effective professional development focused on digital teaching and learning: Collaboration and Co-Learning, Community Lead, Competency Based, Individualized/ Personalized, Challenging, Change Oriented and Encourages Communication.

Barriers and Solutions: Participants at the convening offered several recommendations for improving professional development and preparation for educators that required cross level partnerships. Among other solutions, felt strongly that the State's Department of Public Instruction (NC DPI) should build long standing partnerships with school and district administration to address out-of-school internet access.

Barrier	Solution
Resistance to Change among Educators • Educators are comfortable with traditional approaches to professional development that call for a sit-and-get strategy led by administrators and outside authorities. There is a fear surrounding technology integration (e.g., loss of instructional time, lowered test scores, etc.) that creates a resistance to innovative professional development.	• School and district leadership should support participation in professional development provided by institutions that focus specifically on professional development for digital-age learning (e.g., NCPAPA, DLP-DL, NCASA, NCTIES, etc.) • Schools and districts should be entrepreneurially oriented. In providing professional development they should afford educators opportunities to take risks, be proactive and embrace innovation.
Common Language for Digital-age Professional Development • Lack of clear communication on how to define professional development for digital-age learning often leaves schools and districts confused about common language, clear learning targets for educators, and points of contact for follow-up. • Leadership at the school and district levels, have little time to identifying reliable, high quality, and vetted professional development resources to meet their needs.	• NCDPI should partner with LEAs to design professional development resources that clearly define digital-age professional development based on the NC Digital Teaching and Learning Competences. The partnership should then focus on: 1. Developing a reliable system for vetting and curating locally developed resources that demonstrate best practices for professional development; 2. Publishing a list of local education stakeholders to teachers, staff, and community members in need of professional development services.

Barrier	Solution
Funding Professional Development • Schools and districts do not have enough funds available to support coaches or professional development staff that can create and provide professional development. • Districts and schools rely on their ability to "think outside the box" and re-allocate funding to support their professional development needs.	• The North Carolina State Board should advocate for new funding policies in support of professional development among educators. • Schools and districts should connect with local business partners to develop innovative ideas to fund professional development (i.e., Provide teachers more time by adding a month of employment)
Lack of Knowledge about Available Resources • Districts don't often make connections between state agencies (e.g., libraries, colleges/universities, etc.) that provide content and school level personnel. • Lack of clarity on the roles of Instructional Technology Facilitators within schools and districts. • Educators have little time to vet professional development resources to identify high quality, relevant professional development resources.	• NCDPI should develop a website dedicated to providing information on locally created digital-age professional development training resources. Districts from across the state can use the site to advertise their own professional development offerings and access resources created by other educators throughout the state. • Districts should identify one person who: 1. Vets professional development resources that are used throughout the district 2. Compiles high quality curriculum pacing guides and other resources created within the district. 3. Identifies online professional development opportunities on topics relevant to educators in the district.

Personalized Learning in High-Need Classrooms[3]

Challenges: The traditional structure of education no longer supports the digital-age learning needs of students, especially those labeled as high needs. In resource-poor, high need settings, students often enter the school day with additional burdens that impact their ability to fully engage in the learning environment. These burdens put particular strain on teachers to not only be lesson planners, graders, and managers of whole-group instruction but also act as counselors, social workers, and mentors. Personalized learning strategies offer teachers the opportunity to empower students to take control of their learning process while providing the time to give specialized attention to the students who need it.

Practicing personalized learning in schools who have large percentages of students who are underperforming, means tailoring students' experiences—what they learn, how, when, and where they learn it—to their individual needs, skills, and interests. This customized approach to learning requires that teachers get to know their students as individuals to build meaningful relationships. Teachers can work with smaller groups of students for longer periods of time to truly address their specific learning needs. By contrast, traditional classroom models have not encouraged teachers to build deep relationships with students—instead, the attention is placed on direct instruction and student management not the whole student.

Personalized learning engages students in a way that frees teachers for individualized instruction, intervention, and feedback. In thinking about applying these principles of learning to high needs classrooms, the stakeholder group identified four major ideas for high quality student-centered learning: 1) Learning is personalized; 2) Learning is competency based; 3) Learning takes place anytime, anywhere; and 4) Students are responsible for their own learning. While these concepts require the use of specific implementation strategies and resources, they also require a commitment from district and school leadership to change their mindset on approach to student learning.

Barriers and Solutions: Personalized learning in high-need classrooms means teachers need time together to participate in high-quality professional development and to collaborate with their peers. Schools and districts should support their teachers as leaders in modeling the skills they want students to develop. Instruction should be rigorous and focused on real-world content that is relevant to the experiences of students from all backgrounds. In order to provide personalized learning for all students, especially those in high-need settings, we must help schools: create a shared vision; facilitate a culture shift and shared ownership of the culture; give all stakeholders permission to try, to fail, and to succeed; provide flexibility for individual districts, schools, and classrooms; engage and communicate with all stakeholders; ensure a high possibility for success; and, plan for sustainability/scalability. Additional recommendations for solutions include:

Barrier	Solution
Time • Teachers in high needs classrooms struggle to find time to plan for personalization, develop student learning plans, engage in appropriate professional develop and include parents in the learning process. • School leadership do not have adequate time in the academic schedule to train teachers on personalized learning.	• Schools and Districts should develop appropriate adaptive programs for protected planning time. Teachers need dedicated time to design heterogeneous vs homogeneous groupings of students, effective PLC's and curriculum that meets the individual learning needs of students. • School and District leadership should implement badging programs that promote individual professional development among teachers.
Stretching Funds - Doing More with Less • Within high needs schools, professional development is one of many competing needs that require additional funding.	• NC DPI and districts should partner to provide consistent access to guidance documents that identify free digital resources on grants, community partnerships and professional development focused specifically on high needs schools. • Educators at high needs schools should partner with local schools and districts to share resources and apply to grants for support.

Barrier	Solution
Community Wide Barriers • Broader contextual factors like lack of transportation, community acceptance, and home access present additional barriers to implementing personalized learning strategies in high needs classrooms. While out-of-school access is a broader challenge as it concerns digital equity, in high needs setting anywhere any time learning is compounded by much larger social and political issues (e.g., poverty, inefficient state policies/strategies, socio-cultural practices, etc.)	• Schools can work together with city public transit organizations, churches, YMCAs, ISPs and others, to provide students with options for out-of-school access to the internet. For example, churches or commercial businesses could offer students few use of internet during after school hours.
Human Capacity/Teacher Pipeline • NC as a whole is experiencing a significant decline in enrollment in education degree programs, recruitment and retention of qualified teachers. Staffing high-poverty schools with effective teachers is a more critical challenge for many districts because of their high turnover rates among teachers, organizational instability and a concentration of less experienced, lower performing teachers.	• Districts leadership should partner with lateral entry programs and local colleges of education to create new teacher training sites in high needs schools. • Schools and districts to examine their human resource practices to identify opportunities for improving teacher retention.

Building Parent and Community Support[4]

Challenges: Family engagement is a shared responsibility in a digital learning environment. It takes participation from every actor in a students' success ecosystem to play an active role in the child's development. Parents agree that integrating technology into classroom instruction is important for their children's future success; however, there are a few barriers to engagement that make it difficult for some parents to demonstrate full support for digital-age learning. For example, school policies focused on parent involvement seem to appeal to middle class families and lack consideration for the challenges that often prevent under-resourced parents and caregivers from being active

education advocates (e.g., varying levels of access to resources, lack of information, language barriers, and competing family priorities.) To fully engage the wider range of parent and community supporters in the education context, school administrators should create strategies for involvement that reach parents where they are whether they are digital natives, novice or under-resourced. The need for intentional parent involvement efforts that keep in mind the complexities of differences in socio-economic status, geographic designations and intergenerational poverty help to solicit groups that would have been otherwise missed by email, chat, and teleconferencing as a means of communication.

Barriers and Solutions: Addressing parent and community support for digital-age learning requires collective effort among educators, policymakers, local business, state and community leaders. Crosscutting challenges like poverty and lack of connectivity make each stakeholder group an essential component of resolving this digital equity challenge. As participants discussed challenges to building parent and community support in North Carolina, they identified several areas that require collaboration among stakeholder groups:

Barriers	Solutions
Fragmented Approach to Parent Engagement • Little two-way communication between parents and educators that cuts across racial and cultural differences. • Lack of vision for the goals of parent engagement in digital-age learning efforts.	• Schools and Districts should create community marketing campaigns that emphasize the connection between access to technology and educational opportunities among students. • Schools should examine their surrounding education communities to identify context specific engagement strategies for parents from multiple backgrounds. • District leadership should create more Youth-Home-School programs that focus on the whole family and address larger issues like intergenerational poverty, transportation, etc. • Teachers and school leadership should consistently implement community based forums that provide education resources on digital literacy, education advocacy and navigating the school system for parents in the surrounding areas. • Schools should design extended access programs for providing devices and internet access to families who have been most significantly disenfranchised (i.e., rural communities, people of color, etc.).

Planning for Sustainability of Devices, Networks, and Resources[5]

Challenges: The current typical budgeting process at the local and state level is limited in several ways that inhibit effective sustainability planning in support of digital equity. For example, limitations on who is at the table when budget decisions are made, what is considered as part of the budgeting process, how funds can be used, and how the budget is connected to outputs and outcomes are all challenges to strategic planning that affect the lifespan of digital-age learning programs. State level budget cut considerations also have a heavy impact on how schools and districts allocate resources

in support of sustainability. Participants recalled past examples of state level budget cuts the North Carolina, Senate legislators' considerations to remove a $7.5 million new principal preparation program, a $10 million increase for a school Internet connectivity initiative, slash after-school program funding by almost $5 million and scrap House plans for a $2 million teacher scholarship program aimed at filling shortages in math and science and hard-to-staff schools. Any lack in state-level support can cripples the planning process at district and school levels, and puts pressure on local leadership to "get creative" in an effort to locate and stretch additional funding options. Districts find ways to reallocate federal funding for professional development, student resources, educator communication, and collaboration and devices, to circumvent limitations to available state provided funding.

Barriers and Solutions: The challenge with sustainability planning is identifying ways to evolve the systems that drive budgeting practices such that they are more directed toward a broad and complete "sustainability mindset" and are meaningfully integrated into the other operational functions of the unit (whether the state or even the single school). Leadership will need to conceive of creative ways to rethink how funding is allocated and identify flexible options for local- and school-level funds that work in support of long-term digital learning solutions. Budgeting for sustainability is a culturally integral and integrated part of all other planning and implementation of digital learning.

Barriers	Solutions
Lack of Funding • Families experience a lack of resources to support digital access for their children. • There is a lack of funding within school systems to be able to allocate toward digital age learning resources for students. • There is a lack of buy in at higher levels of government to allocate funds for digital access. Priorities lie elsewhere.	• DPI should provide community liaisons at the state level to help establish a better understanding of the needs of individual communities. • Schools and Districts should repurpose existing resources to provide access for families (using schools as community centers after school hours) • DPI should involve district level leadership in conversations at the state level about allocating funds for programs associated with technology access. • Educators at all levels should generate more communication streams between government agencies and representatives from each level of the education system on the process for writing policy, grants and guidelines for sustainable budgeting. • DPI should be more intentional about analyzing existing policy that prohibits forward movement in digital learning initiatives and making recommendations for revisions.

Conclusions and Next Steps

As schools transition to more extensive use of digital resources and tools the current challenges to digital equity will become more salient. Thankfully in recent years' federal policies and programs like ConnectEd, the FCC's Lifeline Program and E-rate, brought national attention to digital inequities in K-12 education. While those efforts continue to push the country's thinking as it relates to providing access to high quality digital-age learning for rural and underserved communities, federal programs cannot be successful without state leadership doing their part to fully address digital inequity. It is incumbent upon states who continue to transition to digital-age learning, to engage education leaders and stakeholders in a collective effort to reverse the negative effects of digital inequity.

The Redefining Equity for Digital-Age Learning Convening was a first step to creating a collective vision for equitable access to digital-age learning in North Carolina. Education stakeholders participated in thoughtful group discussions defining the most prevalent digital inequities in the State and generated solutions to addressing those challenges. The following points reflect consistent recommendations across each of the 5 challenges identified at the event. The group concluded that moving forward, efforts to address digital inequity in North Carolina will require:

1. Cross sector collaboration among districts, county agencies, public safety networks, colleges, libraries, and other community anchors to ensure maximum network coverage for K-12 students and their families;
2. Improvements to state level policy that support flexible funding for digital-age learning in school districts and city governments;
3. Adequate training for educators, students and parents on the value digital-age learning;
4. Professional development for educators on effective digital-age learning strategies for various education contexts; and,
5. A pool of resources on best practices for implementing digital learning initiatives that can be shared at the school and district levels.

The Friday Institute team is committed to prioritizing digital equity as one of its areas of focus. By bringing to bear the resources of our organization and of our partners across the state, we will begin to address this challenge through research that exposes the ways in which digital-age learning could potentially reverse disparities in education opportunity among traditionally under-served students. For additional information or questions please contact Dr. Jeni Corn (jocorn@ncsu.edu or 919-513-8527) or visit our website at www.fi.ncsu.edu.

References

1. Out-Of-School Internet Access

Discovery Education, (October, 2015). Dr. Darryl Adams, Superintendent, Coachella Valley Unified School .... Retrieved from https://www.youtube.com/watch?v=Xod5xvlD1AE

Dobo, N., (June, 2015). Poor students often lack a home Internet connection. Is this FCC program a solution? Retrieved from http://hechingerreport.org/poor-students-often-lack-a-home-internet-connection-is-this-fcc-program-a-solution/

Kang, C., (February, 2016). Bridging a Digital Divide That Leaves Schoolchildren Behind - The New York Times. Retrieved from https://www.nytimes.com/2016/02/23/technology/fcc-internet-access-school.html

Rideout, V., & Katz, V. S., (2016). Opportunity for All? Technology and Learning in Lower-Income Families. Retrieved from http://www.joanganzcooneycenter.org/wpcontent/uploads/2016/01/jgcc_opportunityforall.pdf

Ross, T., March, 2015). When Students Can't Go Online - The Atlantic. Retrieved from https://www.theatlantic.com/education/archive/2015/03/the-schools-where-kids-cant-go-online/387589/

Smith, G., (March, 2012). Without Internet, Urban Poor Fear Being Left Behind In Digital Age - The Huffington Post. Retrieved from http://www.huffingtonpost.com/2012/03/01/internet-access-digital-age_n_1285423.html

The White House, (July, 2015). Mapping the Digital Divide, Council of Economic Advisers Issue Brief. Retrieved from https://obamawhitehouse.archives.gov/sites/default/files/wh_digital_divide_issue_brief.pdf

2. Professional Development and Preparation for Educators

(April, 2016). Future Ready: Path to Pedagogical Change - YouTube. Retrieved February 6, 2017, from https://www.youtube.com/watch?v=OFLQMK7EsUc

Committee for Economic Development, (April, 2013). Digital Learning: Meeting the Challenges and Embracing the Opportunities for Teachers. Retrieved from https://www.ced.org/reports/single/digital-learning-meeting-the-challenges-and-embracing-the-opportunities-for

Digital Learning Day, 2016. Digital Equity and Teacher Preparation: Improving the K–12 Teaching .... Retrieved from http://www.digitallearningday.org/2016-online-event-schedule/digital-equity-and-teacher-preparation-improving-the-k-12-teaching-pipeline/

Kleiman, G., (February, 2016). Digital-Age Teaching and Learning - The Hunt Institute. Retrieved from http://www.hunt-institute.org/resources/2016/02/digital-age-teaching-and-learning/

Powell, M., (February, 2016). Navigating Toward Personalized Professional Development - Education Week Teacher. Retrieved from http://www.edweek.org/tm/articles/2016/02/01/navigating-towards-personalized-

professional-development.html

The White House, (2016). Section 2: Teaching with Technology - Office of Educational Technology. Retrieved from https://tech.ed.gov/netp/teaching/

3. Personalized Learning in High-Need Classrooms

Arnett, T., (January, 2015). Why teachers can't deliver real personalized learning in today's schools.- Christiensen Institute, Retrieved from http://www.christenseninstitute.org/blog/why-teachers-cant-deliver-real-personalized-learning-in-todays-schools/

Darling-Hammond, L. & Friedlaender, D., (May, 2008). Creating Excellent and Equitable Schools - ASCD. Retrieved from http://www.ascd.org/publications/educational-leadership/may08/vol65/num08/Creating-Excellent-and-Equitable-Schools.aspx

Education Cities, (2014). Personalized Learning at Scale: Case Studies of Leading Cities. Retrieved from http://nextgenlearning.org/supporting-documents/personalized-learning-scale-case-studies-leading-cities

Pipkin, C., (May, 2015). The Power of Personalized Learning for School Improvement - EdSurge. Retrieved from https://www.edsurge.com/news/2015-05-27-the-power-of-personalized-learning-for-school-improvement

Wolf, M. A. & Dreier, A., (June, 2015) . Making it Personal: Hawk Ridge Elementary's Personalized Learning Approach - NCSU Go Links. Retrieved from http://go.ncsu.edu/npsfl3:fiweb2

Wolfe, R., (July, 2015). Personalized learning is especially good for students of color - The Hechinger Report. Retrieved from http://hechingerreport.org/personalized-learning-is-especially-good-for-students-of-color/

4. Building Parent and Community Support

(2010, May 12). American Dream Challenge Parent Involvement Speech by Joshua .... Retrieved February 6, 2017, from https://www.youtube.com/watch?v=CayFWAy7yQs

Connected Educators, (2015.). The Importance of Parent and Community Engagement - Corwin. Retrieved from https://us.corwin.com/sites/default/files/upm-binaries/64285_All_Hands_on_Deck_Ch_1.pdf

Digital Opportunity for Youth Issue Brief, (2010). Empowering Parents Through Technology - The Children's Partnership. Retrieved from http://www.childrenspartnership.org/wp-content/uploads/2016/06/Empowering-Parents-Through-Technology%E2%80%94To-Improve-the-Odds-for-Children_October-2010.pdf

Price-Mitchell, M. (2016). Enhancing Family-School Partnerships in the Digital Age - Amplify. Retrieved from https://www.amplify.com/viewpoints/enhancing-family-school-partnerships-digital-age

Schoolwires & Project Tomorrow., (2013). Engaging digital parents: A guide for K-12 administrators guide - School Wire. Retrieved from http://offers.schoolwires.com/reachdigitalparents

Smith, J. G., (2006). Parental Involvement in Education Among Low- Income Families: A Case Study - The School Community Journal, V16, 1 Retrieved from http://www.adi.org/journal/ss06/SmithSpring2006.pdf

Weiss, H. B., (April, 2014). Family Engagement as a Shared Responsibility in a Digital Learning Environment - Harvard Family Research Project. Retrieved from http://www.hfrp.org/publications-resources/browse-our-publications/family-engagement-as-a-shared-responsibility-in-a-digital-learning-environment

5. Planning for Sustainability of Devices, Networks, And Resources

Ball, B., (June, 2016). As legislative leaders tout teacher raises, educators highlight major shortcomings in the House and Senate - NC Policy Watch. Retrieved from http://www.ncpolicywatch.com/2016/06/06/as-legislative-leaders-tout-teacher-raises-educators-highlight-major-shortcomings-in-the-house-and-senate-budgets/

Ball, B., (June, 2016). Federal complaint says new N.C. policy harms poor children with special needs. - NC Policy Watch., Retrieved from http://www.ncpolicywatch.com/2016/06/15/federal-complaint-says-new-n-c-policy-harms-poor-children-with-special-needs/

Bailey, J., Schneider, C., & Ark, T., V., (April, 2013). Next in DLN Smart Series: Funding Students, Options, and Achievement. Retrieved from http://www.digitallearningnow.com/news/press-releases/next-in-dln-smart-series-funding-students-options-and-achievement/

Education Industry Association, (2015). Improving Ed-Tech Purchasing - Digital Promise. Retrieved from http://digitalpromise.org/wp-content/uploads/2014/11/Improving_Ed-Tech_Purchasing.pdf

Education Resource Strategies, (n.d.). Fair Student Funding and Other Reforms. Retrieved from https://www.erstrategies.org/library/fair_student_funding_and_other_reforms

Metiri Group, (n.d.). Transformative Budgeting for Digital Learning - New Jersey Digital. Retrieved from http://njdigitallearning.org/wp-content/uploads/2015/04/Transformative-Budgeting-final.pdf

U.S. Department of Education, (2014). Dear Colleague Letter: Federal Funding for Technology - Office of Educational Technology, Retrieved from https://tech.ed.gov/federal-funding-dear-colleague-letter/