ACCESS: A Culture Creating Effective Systems for Success	
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A. SIGNIFICANCE

1. Project addresses the absolute priority: ♦*Our Rural Community*: Montgomery County within south-central North Carolina (NC), is a rural, hilly, heavily forested area located amid the Uwharrie National Forrest and Mountain Range, covering 491 square miles. It is home to an estimated 27,638 residents; children under age 18 represent 25.5% of the total population (MCS, 2014). Our county has been designated as "low wealth" by the state with 21.8% of families living below the federal poverty level (compared to 12.4% statewide), which can be linked to low levels of educational attainment in comparison to our state and the nation, as seen in Table 1.

Table 1. Comparison of Educational Attainment of Adults Age 25 and Over

Level of Education Earned	Montgomery	NC	U.S.
No High School Diploma	28%	16%	14%
High School Diploma or GED	48%	49%	50%
Associate's Degree	9%	9%	8%
Bachelor's Degree	10%	18%	18%
Graduate or Professional Degree	4%	9%	11%

Source: U.S. Census Bureau, 2008-13

As demonstrated above, the gaps in educational attainment between Montgomery County, NC, and the U.S. are stark, particularly in regard to adults without a high school diploma and those earning a bachelor's degree or other higher credential. In accordance, our unemployment rate stands at 7.1% which is greater than both state (6.6%) and national (6.1%) averages (U.S. DOL, 2014). ♦*Our High Need Students*: Montgomery County Schools (MCS) serves as the only public school system within our county and is comprised of 11 schools, including 6 elementary, 2 middle, 2 high, and 1 learning academy. MCS qualifies under the U.S. Department of Education's Rural and Low-Income School program and serves 4,141 students of whom 74% are economically disadvantaged, as determined by free- or reduced-price lunch eligibility. Our student demographic profile is remarkably diverse, especially given our rural location: 43% white; 31% Hispanic; 20% black; 2% multi-racial; 1% Asian, and Native American and Pacific Islander representation at less than 1% each. This diversity is due to a recent infusion of migrant

families working within our county's agricultural businesses. Among the total student population, 12% are limited English proficient (LEP) and 13% are students with disabilities. Montgomery County is ranked third highest within NC in regard to incidences of teen pregnancy; our rate of 64.8 pregnancies per 1,000 adolescent girls aged 15-19 is significant in comparison to the state rate of 39.6 (NC SCHS, 2012), equaling approximately 9% of the female students in our high schools. As such, our student body is comprised primarily of high-need subgroups, which are historically at-risk for educational failure or require special assistance and support (Cummins, 1986). The challenges in college and career readiness faced by this high-need population, combined with the barriers to educational technology access presented by our rural locale, creates a cycle of inequity that renders our students undereducated, underemployed, and trapped in poverty (Viaene & Zilcha, 2009). ♦*Our i3 Projec*t: To combat this inequity in access and opportunity, MCS has designed an innovative project, *ACCESS: A Culture Creating Effective Systems for Success,* which directly addresses both ***Priority 6: Serving Rural Communities*** and ***Priority 5: Effective Use of Technology (Subpart B)*** and is supported by strong theory as evidenced though research and our logic model (see Appendix D). *ACCESS* will serve all MCS students and teachers K-12, by implementing a districtwide redesign of our educational practices based on the novel approach of imbedding a culture of technology-based education (tech culture) within our rural schools and community, with an intentional effort to record, evaluate, refine, and disseminate an effective model for implementation across our state and nation. While our school system, students, and community represent a very small portion of the total U.S. population, our rural status and the challenges that accompany geographic isolation are shared by many, including 11 million children nationwide, equal to one quarter (25%) of America's public school students (Ashton & Duncan, 2012; Smarick, 2013). Many challenges experienced at MCS have been documented within research of rural school systems, such as: struggles in recruiting and retaining highly effective teachers, fewer rigorous course offerings, insufficient access to educational technology, and issues related to student engagement and

achievement due to poverty and other social barriers. This research recognizes that rural schools possess particular strengths, including high-levels of community support, and often serve as pioneers of creative solutions to their barriers (Ayers, 2011; Best & Cohen, 2014). We see the truth of these findings within our own community, as our students and teachers face inconsistent technology access, lack of digital literacy, limited course offerings, and barriers to academic achievement that have historically kept our county's population less educated, underemployed, and economically depressed. ♦*Our Capacity for Districtwide Change*: Despite these conditions, our district has made significant changes within the past four years resulting in great improvements in student outcomes (see Appendix C). MCS has developed a Model for Instructional Excellence, supported by a districtwide Strategic Planning Process and individual School Improvement Plans driven by the mission to "graduate life-ready, globally competitive citizens by engaging in rigorous educational experiences and by building positive relationships and strong partnerships" (MCS, 2014). These efforts have improved the district graduation rate, which has increased by 18% since 2008 for all students, including subgroups (18% for black students and 27% among Hispanics). The dropout rate at MCS has also decreased by 47% since 2007 as a result, and we see improved pass rates on NC End-of-Grade tests by 20% or more for all students, including those with the greatest need among our student population: Hispanics, economically disadvantaged students, and students with disabilities (NCDPI, 2013). *ACCESS* is designed to build on the success of our recently piloted efforts by coordinating the following strategies across our school system: 1) refining our Model for Instructional Excellence to fully integrate Common Core and NC Essential Standards, predictive assessments, professional learning communities (PLC), and instructional specialists; 2) enhancing our Continuous Improvement Model to include an online, data-driven Plan, Do, Study, Act (PDSA) process; 3) expanding our current Learning Management System to better support teachers and students through enhanced digital and personalized learning with data sharing among students, teachers, and staff; 4) growing delivery of college-level courses via technology through NC's College and

Career Promise Program; 5) extending effective teacher reach by using streaming technology to deliver instruction in classes for which we lack enough qualified teachers; 6) instituting virtual PLC and blended professional development to enable alignment across our district and region; 7) testing the effectiveness of these strategies as a model through impact evaluation; and 8) developing a Tech Culture Implementation and Replication Guide to share our model with other rural communities.

2. Project as novel approach compared with what has been attempted nationally: The importance of integrating technology and education, the struggles that rural students and educators face, and the impact on students' ability to develop skills needed to compete in today's technology-based employment market have recently gained national attention (Jones et al., 2011; U.S. DOE, 2010; Slack, 2013; Alliance for Excellent Education, 2010). Several initiatives have been developed to expand the reach of technology within rural schools, as illustrated in Table 2.

Table 2. Rural Educational Technology Initiatives Across the U.S.

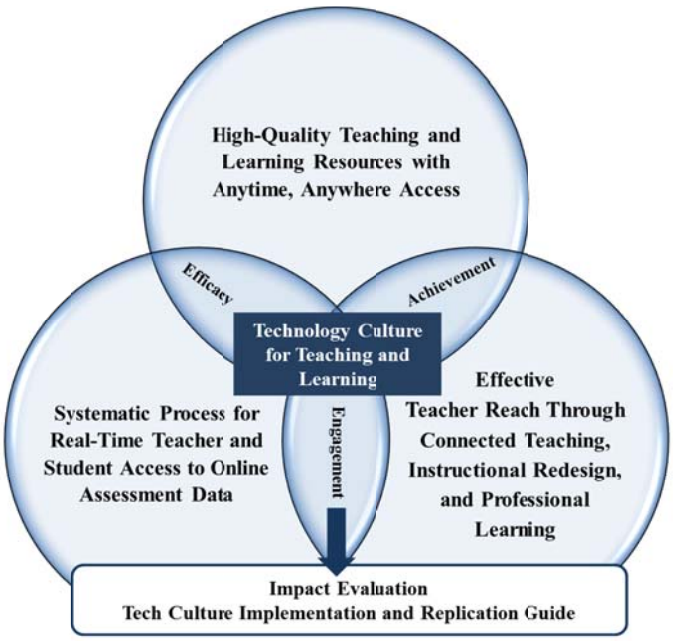
Leadership	Key Strategies	Description
Alabama State Government	Blended and Distance Learning	The state requires all districts to offer Advanced Placement courses via distance and on-line learning (Staker & Trotter, 2011).
Arizona's Vail School District	Educational and Digital Technology Access	Wi-Fi Internet routers are affixed to school busses to enable the continuation of student learning and access to technology during daily, long-distance commutes to and from school via a "mobile study hall" (Dillon, 2010).
The Edison School in Colorado	1:1 Device Access and Digital Learning	All K-12 students (120 total) within the district have their own mobile leaning device and the school system offers a fully online school serving 100 additional students (Butrymowicz, 2012).
Greene County of North Carolina	Digital Learning	Students in grades 6-12 are provided with their own laptop with low-cost, countywide wireless access and free technology training for new users (Ardery, 2008).
Maine State Government	Instructional Technology	Every middle school student and teacher within the state is provided with a laptop (Kessler, 2011; Morell, 2012).
North Carolina Department of Public	Digital Learning and Assessment	Through NC's Race to the Top grant, Home Base, an integrated Student Information System and Instructional Improvement System, was developed to provide all state

Instruction		schools with portals for students, teachers, parents, and administrators to access data and resources to inform instruction, assessment, and career and college goals (NCDPI, 2014).
Pennsylvania's Quakertown Community School District	Blended and Digital Learning	All students have access to a K–12 Cyber School. Every student receives a laptop in the 9th grade and other students may participate in a bring-your-own-device (BYOD) policy to access digital content and resources on campus (Alliance for Excellent Education, 2013).
U.S. Federal Government	Educational Technology Access	ConnectED will provide 99% of America's public schools with access to high-speed broadband and high-speed wireless by 2017 (Slack, 2013).

While all of the strategies named in Table 2 are thoughtful solutions that work to close the gaps in access common to many rural school districts, none of the initiatives are designed to redefine the way students learn and the manner in which educators teach to achieve long-term impact on the field of rural education. *ACCESS* is designed to advance our district's current strategies from individual promising practices to an evidenced-based model for large-scale replication through the development and evaluation of an innovative model that uses technology to significantly improve student achievement and engagement and increase teacher efficacy to achieve positive, long-term outcomes, with special consideration for the challenges and opportunities presented within a rural setting. *ACCESS* offers a novel approach to the integration of technology in rural education through the development of a coordinated model for districtwide redesign of teaching and learning to support our high need students in meeting college- and career-ready standards. This model will be tested for efficacy and refined and documented for replication by rural districts within NC and across the U.S. Our project activities will encompass the three spheres of impact highlighted in Figure 1 below to instill a tech culture within our school system and throughout our community, supported by evidence-based practices. The model developed through *ACCESS* will: 1) create a systematic process that uses technology to provide equity and access to all students; 2) offer strategies using technology to impact a broad range of students with diverse learning needs, not just advanced students (Hunnum et al., 2009); 3) provide

solutions for addressing unique challenges for rural districts and those with limited resources to make efficient use of teaching and learning (Jimerson, 2006); 4) address a variety of barriers to student achievement, engagement, and teacher efficacy that both rural and poor districts face, such as offering college level and enrichment classes, recruiting and retaining qualified teachers, and lack of teacher efficacy in technology integration; 5) use technology to improve student engagement and achievement in rural areas through strategies focused on meeting diverse learning needs (e.g., LEP, high-poverty, students with disabilities) and student populations with historically higher dropout rates (e.g., Latino/Latina students, pregnant/parenting teens, high-poverty); and 6) fully align these efforts with state and federal college and career ready standards. MCS will also build on the strengths of our rural community to successfully implement *ACCESS*. More than 30 community-based partners have committed to support this project through in-kind and financial contributions (see Appendix G) with $592,755 in matching funds ($549,555 committed, $43,200 pending). This investment will expand our tech culture beyond our 11 schools and into our district's school busses and the local community, allowing student learning to extend beyond our school buildings and traditional learning timeframes. This will be accomplished through the installation of free-use wireless "hot-spots" throughout Montgomery County and by providing a rudimentary "rural connectivity platform" not unlike the systems that broadband providers have piloted in remote areas of Asia, South America, and Africa (Ardery, 2008). We will enhance existing partnerships

Figure 1: *ACCESS* Project Model



with local Internet service providers by supplying affordable Internet access within the homes of students from high-need subgroups (economically disadvantaged, pregnant). Instituting wireless capabilities locally will complement the ConnectEd program, creating access for MCS students prior to 2017 and testing the *ACCESS* model for use in other rural districts, volleyed by federally supported broadband (Slack, 2013).

3. Potential contribution of the project to the development and advancement of theory, knowledge, and practices in the field of study: *ACCESS* is designed to advance our district's tech culture strategies from promising practices to a single evidenced-based model, through the development and testing of an innovative approach, using technology to significantly improve student engagement and achievement, and increase teacher efficacy, within a rural setting. To ensure the quality of the model, *ACCESS* will be subject to ongoing evaluation from an independent provider. The evaluation team will perform two impact studies, a quasi-experimental design and a short interrupted time series design with a comparison group, over the three-year grant period to compare student outcomes at MCS to outcomes from two neighboring rural school systems, Anson County Schools and Bladen County Schools, as well as other rural systems throughout the state, allowing us to see the impact of *ACCESS* each year. Our emphasis on the evaluation of *ACCESS* is fully supported by The National Education Technology Plan which recognizes a need to collect and communicate systematically how technology is used to support teaching, learning, and assessment to drive effective instruction and positively impact student learning (Office of Educational Technology, 2010). Research on how technology is used systematically within rural settings to reduce barriers to learning and improve student outcomes is very limited (Hunnum et al., 2009). *ACCESS* offers a solution via a model for the effective use of technology to meet students' learning needs through an integrated approach, and will move the field forward and improve existing practices by contributing: 1) tested policies and processes to support effective integration of technology to enhance teaching, learning, and assessment; 2) digital content that advances 21st century skills and college- and career-readiness (Office of

Educational Technology, 2010); 3) a Learning Management System (LMS) that enables sharing of high-quality content, professional development modules, and student data to serve as a template for other districts; 4) data on outcomes and other evidence of impact associated with implementing a districtwide tech culture within an under-resourced, rural setting; 5) a framework for the effective use of digital learning when teacher recruitment and efficacy are barriers; and 6) a Tech Culture Implementation and Replication Guide to enable large-scale replication. Through these contributions, the *ACCESS* model will transform instruction and learning to allow students equitable access to technology and 21st century skill-building opportunities which are often unavailable to rural students, thereby advancing theory, knowledge, and practice in the field of rural education (Ashton, 2012; Ayers, 2011; Alliance for Excellent Education, 2010; Best & Cohen, 2014; U.S. DOE, 2010).

B. QUALITY OF THE PROJECT DESIGN

1. Clarity of project goals and explicit plan to achieve goals: *ACCESS* is based on strong theory via our logic model (Appendix D) and guided by the goals and objectives in Table 3.

Table 3. *ACCESS* Objectives, Benchmarks, and Instruments
Goal 1 – Provide high quality teaching and learning resources that engage students and support anytime, anywhere access.
Objective 1.1: By end of Year 2, increase the extent to which teachers meet the technology instruction standards of the International Society for Technology in Education (ISTE) by 25% over Year 1 baseline, and 50% over baseline by end of Year 3. **Measure/Timeline**: ISTE Classroom Observation Tool[1], conducted annually. **Baseline**: Spring of 2015.
Objective 1.2: By end of Year 2, increase the extent to which teachers expect students to use and apply technology in their day-to-day learning by 25% over Year 1 baseline, and 50% over baseline by end of Year 3. **Measure/Timeline**: NETS-T Teacher Technology Survey[2], administered annually. **Baseline**: Spring of 2015.
Objective 1.3: By end of Year 2, increase the extent to which students report being engaged in school by 25% over Year 1 baseline, and 50% over baseline by end of Year 3. **Measure/Timeline**: Student Engagement Measure – MacArthur[3], a student engagement survey with proven reliability and validity, administered annually. **Baseline**: Spring of 2015.
Objective 1.4: Reduce the average short-term suspension rate in MCS schools by 5% from baseline in Year 1, 15% in Year 2, and 25% in Year 3. **Measure/Timeline**: Average short-term suspension rate per 100 students, reported annually. **Baseline**: 11.96 per 100 (2012-13 data).
Objective 1.5: Reduce the total number of office disciplinary referrals (ODR) indicative of student disengagement in the classroom by 5% from baseline in Year 1, 10% in Year 2, and

15% in Year 3 (total decrease of 30%). **Measure/Timeline**: Number of ODR, compiled annually for disruptive and aggressive behavior, inappropriate language, insubordination, disrespect of faculty, tardiness, and cutting class. **Baseline**: 1,319 ODR in 2013-14.
Objective 1.6: Reduce the number of students chronically absent from school by 5% from baseline in Year 1, 15% in Year 2, and 25% in Year 3. **Measure/Timeline**: Students with 11 or more days of unexcused absences, reported annually. **Baseline**: 482 students in 2013-14.
Objective 1.7: Increase the percentage of teachers who contribute to the academic success of students by 2% over baseline in Year 1, 4% in Year 2, and 6% in Year 3 (cumulative 12 percentage points). **Measure/Timeline**: NC Educator Effectiveness Data, Standard 6, reported annually. **Baseline**: 68% of MCS educators met or exceeded Standard 6 (2012-13 data).
Goal 2 - Expand the reach of effective teachers through connected teaching, instructional redesign, and high-quality professional learning.
Objective 2.1: By end of Year 2, increase the extent to which teachers report high levels of self-efficacy in tech instruction by 25% over Year 1 baseline, and 50% over baseline by end of Year 3. **Measure/Timeline**: NETS-T Teacher Technology Survey[2], administered annually. **Baseline**: Spring of 2015.
Objective 2.2: By end of Year 2, 75% of teachers will participate in at least one virtual PLC and one blended learning professional development opportunity per month, increasing to 80% in Year 3. **Measure/Timeline**: PD attendance sheets; PLC check-in form, compiled annually.
Objective 2.3: By end of Year 2, 85% of teachers will utilize the assistance of a Technology Specialist at least 4 times monthly, increasing to 90% by end of Year 3. **Measure/Timeline**: Technology Specialist log, key informant interviews, teacher surveys, administered annually.
Goal 3 - Create a systematic process for real-time teacher and student access to online assessment data to improve instruction and monitor progress in meeting college- and career-ready standards.
Objective 3.1: By end of Year 2, increase the extent to which students report monitoring their grades online via Home Base by 25% over Year 1 baseline, increasing to 50% over baseline by end of Year 3. **Measure/Timeline**: NETS-T Student Technology Survey[2], administered annually. **Baseline**: Spring of 2015.
Objective 3.2: By end of Year 2, at least 85% of teachers will report an increase in the extent to which they effectively communicate and collaborate with other educators, increasing to 90% by the end of Year 3. **Measure/Timeline**: NETS-T Teacher Technology Survey, administered annually. **Baseline**: Spring of 2015.
Objective 3.3: By end of Year 2, increase the number of students reporting that they meet once every 6 weeks with a teacher to review their grades together via Home Base by 25% over Year 1 baseline, and by 50% in Year 3. **Measure/Timeline**: NETS-T Student Technology Survey[2], administered annually. **Baseline**: Spring of 2015.
[1]NETS-T, 2003; [2]Fredricks et al., 2005; Fredericks et al., 2011; [3]Bielefeldt, 2011; Bielefeldt, et al., 2011

Our plan of action is driven by the three integrated spheres of impact identified within our *ACCESS* Project Model (Figure 1), using five evidence-based strategies, tailored to meet the unique needs of our rural students and community. Sphere 1: Providing High-Quality Teaching and Learning Resources: There is an emerging understanding of the special challenges faced

within America's rural schools including a lack of adequate access to modern technology to support teaching and learning (Ayers, 2011; Best & Cohen, 2014; U.S. DOE, 2010). To eliminate these gaps in resources we will engage in the following activities districtwide. ♦*Strategy 1*: *Enhancing Our Learning Management System* – Learning Management Systems (LMS) provide teaching and learning opportunities that are highly flexible through the use of an online platform that allows students to participate in classes and complete coursework at their own pace, offering blended, personalized learning during the regular school day or outside of a traditional setting and timeframe. The use of a LMS has shown positive impact on student performance in both national and international studies (Martin & Tutty, 2008; Cavus et al., 2006). We have experienced initial success in piloting our own LMS, launched in the spring of 2012 through use of Moodle open-source learning tools, to provide usage and control of content to approximately 15% of all MCS teachers through 67 courses offered within our middle and high schools (Moodle, 2014). Through *ACCESS*, we will enhance our LMS by adding new digital content and assessments from Home Base, an instructional improvement system, fully aligned with Common Core and NC state standards, that allows real-time analysis of student and teacher performance to enable high-quality, targeted instruction for each student (NCDPI, 2014). Home Base was developed by the State of NC and is required for use in all schools statewide, offering multiple tiers of support through the following digital tools: PowerSchool student information portal; Test Nav summative assessments; and Truenorthlogic for the evaluation of educators. In addition to these required Home Base elements, schools may elect to adopt the use of Schoolnet for digital instruction and assessment and OpenClass, a portal for collaborative, distance learning (NCDPI, 2014). Incorporating these advancements, coupled with 1:1 personal learning devices, will allow our district to mandate and fully support the integration of the LMS in all classrooms, districtwide. This will result in greater consistency in content and use across the district to enable high-quality blended learning experiences for all MCS students, with more equitable and improved learning experiences for many of our high-need subgroups, such as LEP

students and students with disabilities who require additional learning time to understand course concepts, and pregnant or parenting teens who would benefit from flexibility in the timeframe in which courses can be taken (Wolf, 2010). ♦*Strategy 2: Increasing Availability and Use of Educational Technology across the District and Community* – Our district currently has a 1:12 student to educational technology device ratio districtwide (NCDPI, 2013). This lack of 1:1 access provides significant challenges to our district, and will present further barriers to learning as NC pulls funding for printed text books to move to a fully digital learning platform in all schools by 2017 (Hui, 2013). Teachers and students must use our LMS through a limited number of mobile laptop carts (2 per school with 30 devices each), shared across all classrooms. This restricted access limits the impact of our LMS. Through *ACCESS*, we will increase our inventory of educational technology for grades 6-12 to achieve a 1:1 student to digital learning device ratio (via laptop or tablet) and simultaneously upgrade the density of our wireless network to support this increase in devices within our middle and high schools in Year 1 of the project. A 1:1 device ratio and enhanced infrastructure will be achieved for elementary students using local funds, serving grades 3-5 during Year 1, and expanding to reach K-2 in Year 2. To extend the benefit of this enhanced access beyond our school buildings, while accommodating the financial limitations of the families we serve, MCS will partner with CenturyLink to provide wireless Internet access within student homes through low-cost service plans ($9.95 per month per household for economically disadvantaged students). Free home wireless access will be made available to pregnant or parenting teens for limited time-periods via “air cards”, sponsored by a host of local businesses. Friendly Chevrolet Buick and Jordan Lumber & Supply will contribute funding to provide Wi-Fi on select MCS busses with routes longer than 45 minutes (many routes last 2 hours) and on special education busses to enable mobile learning. A group of 20 local organizations have committed to expand connectivity throughout our community via the installation of wireless “hot-spots” at public libraries, municipal buildings, local businesses, and youth-frequented restaurants, provide space for off-campus student “study halls” and parent

trainings on use of PowerSchool to monitor their child's achievement, and provide food to encourage participation in teacher and parent meetings. MCS will bolster the current work of the consortium through *ACCESS* by creating new digital content, informed by professional development in technology based instruction. These efforts are designed to provide options for 24/7 access to streaming instructional content across campuses to promote personalized digital learning anytime, anywhere. This enhanced technology will empower students and educators with a broader dock of learning resources offering standards-based digital content, to provide blended, personalized instruction, with the flexibility needed to support high-need subgroups (Digital Learning Now, 2012). Sphere 2: Enhancing and Expanding Effective Teacher Reach: Only 68.3% of MCS teachers are rated as highly-effective, and we often find our best staff recruited to more populated school districts, offering better resources and compensation (NCDPI, 2012-13). This type of difficulty in recruiting and retaining highly-qualified instructors is common among rural schools (Best & Cohen, 2014), but research indicates this challenge can be overcome by creating an "opportunity culture" that leverages technology to extend the reach of highly-effective teachers by removing the boundaries of geography and time (Christen et al., 2014). *ACCESS* will facilitate a districtwide redesign of instructional practice to integrate our work in elementary specialization and multi-classroom leadership with new distance learning strategies, allowing MCS access to highly effective teachers via technology. ♦*Strategy 3: Expanded Distance Learning Opportunities for Students* – We have experienced initial success in providing a limited number of Advanced Placement (AP) and early college courses via distance learning to 7% of our high school students (NCDPI, 2014). While this is a great resource for our more advanced learners, we are eager to fill gaps in access and expand offerings to support all students by extending the reach of effective teachers at MCS and across our region through streaming technology. The instructional redesign facilitated through *ACCESS* will provide every MCS student with the opportunity to take courses typically unavailable in rural schools, such as remediation; rigorous and advanced classes (Latin, NC Governor's School for

Science and Math); non-traditional subjects and opportunities of special interest to our diverse student body (AP Spanish Language and Culture); and additional postsecondary courses from a broader range of colleges and universities via the Career and College Promise program. MCS currently partners with Montgomery Community College to provide college coursework, but with *ACCESS* will be able to offer dual college enrollment at four additional colleges within our region (see Appendix G). ♦*Strategy 4: Real-Time and Virtual Professional Development for Educators* – MCS currently offers professional development (PD) through the use of Professional Learning Communities (PLC) spearheaded by highly-effective lead teachers, as a best practice to support school reform and "reculturing" (TCCSRI, 2014). Through *ACCESS*, we will add four Instructional Technology Specialists (one at each middle and high school) to provide technology coaching and integration support for teachers. The Specialists will design PD opportunities around the specific needs of the district, schools, and teachers in order to increase teacher self-efficacy and equity across the district. This will also expand the effectiveness of high-quality teachers through the use of virtual PLCs, enabling vertical and horizontal alignment across our district, as MCS instructors learn from experts outside of our district by connecting with other school systems, local colleges, and leading universities (see Appendix G). Technology provided through *ACCESS* will be used to digitally stream trainings to all MCS schools at a single point in time, increasing the reach and reducing the travel costs of traditional PD. Specialists will provide support to instructors in digital curriculum development to serve MCS through our LMS. Two Technology Technicians will also be hired (one at our middle schools and one at our high schools) to provide ongoing assistance with installation of hardware, diagnosis and repair, and maintaining technology to ensure proper functioning in support of student learning and teacher PD. Our elementary schools will be supported with their own Specialists through the use of local funds. <u>Sphere 3: Real-Time Assessment</u>: Timely, ongoing student and teacher assessment is a vital and evidence-based component of *ACCESS*, providing feedback to ensure the success of our district's adoption of a tech culture and long-term success

of our educators, students, and community (Park et al., 2013; Best & Cohen, 2014). ♦*Strategy 5: Improved Support for Plan, Do, Study, Act (PDSA)*: Through our district's Continuous Improvement Model we have designed an online, data-driven PDSA process, which has been endorsed by our state education leaders as a best approach to achieve school culture reform (NCDPI, 2013). With *ACCESS*, this process will be enhanced to promote the effective use of technology within classrooms, and support real-time teacher and student access to meaningful data that continuously improves instruction, develops necessary interventions and enrichments, and monitors progress in meeting college- and career-ready standards (Wolf, 2010). This enriched method of assessment will allow instruction to be adapted in an on-going manner, and personalized based on student outcome data from district-based assessments provided via a real-time, digital platform through Home Base, which in addition to offering instructional content, captures assessment information through PowerSchool's student e-portfolios, and reports on instructor effectiveness tied to student outcomes through Truenorthlogic educator evaluations (NCDPI, 2014). This data will be aggregated and assessed on an ongoing basis by the *ACCESS* Management Team and third-party evaluators to ensure continuous improvement of the model.

2. Identification of potential risks to project success and strategies to mitigate those risks: MCS is aware of the risks to effective technology integration within rural education systems (Alliance for Excellent Education, 2010; Best & Cohen, 2014; U.S. DOE, 2010). *ACCESS* is designed to address complex barriers within our district and community as detailed in Table 4.

Table 4. Risk Assessment and Mitigation

Potential Barrier	Solutions through *ACCESS*
The rural location of MCS and our physical geography (heavy forestation, mountainous terrain) currently imposes challenges with access to wireless networks and consistency in digital connectivity	• Additional LAN networks and routers will be installed in all schools, "sistered" to increase our capacity to receive and transmit wireless signals within and between MCS buildings, enhancing the strength of our digital infrastructure. • MCS will partner with local government and businesses to provide wireless "hot-spots" at various locations throughout the county to increase the availability of free, high-quality access to the Internet within our community. • Select school busses will be outfitted with Wi-Fi to

	maximize learning during the significant time students spend commuting to and from school (routes can be up to 2 hours).
Fiscal limitations of MCS in implementing a districtwide tech culture with adequate access to necessary digital technology	While our current Title 1 funding provides adequate support for instating a tech culture within our elementary schools, MCS does not have the same fiscal support for our middle and high schools. *ACCESS* will fill the gap by providing needed technologies to instill a tech culture districtwide.
Internal bias in the assessment and evaluation of *ACCESS* implementation, impact, and outcomes	MCS will hire an independent, third-party evaluation provider, The Evaluation Group, to ensure that unbiased, high-quality feedback and data are provided on an ongoing basis to inform and enhance *ACCESS* implementation.
Some teachers may be reluctant or need significant support to successfully engage in the shift to a tech culture	The following will be provided to ensure seamless transition to a tech culture for our educators: enhanced access to technology; PD to support technology use and integration; Instructional Technology Specialists; Technology Technicians; enhanced digital instruction content; substitutes to enable PD; and content development compensation.
High-need demographic composition of our student population	• By partnering to offer low-cost home Internet access, economically disadvantaged students will have enhanced flexibility in the place and time in which learning may occur. • Through partner funded "air cards", pregnant students will have free access to flexible digital learning opportunities at home after giving birth or when absent from school to care for their children (typically 6-8 weeks of lost learning time).
Sustaining *ACCESS* beyond the three-year federal grant period	• As described in Section C, our MOU, and letters of support (Appendix G), *ACCESS* is enabled by 34 local partners. The number and diversity of these partnerships, each built on mutually agreed-upon terms and based on the strengths and investment interests of each partner, ensures support for the project beyond the life of the grant. This "many hands make light work" approach to forging community partnerships allows investment in a manner that can be easily sustained. • *ACCESS* is designed and well-timed to integrate with the federal ConnectED initiative, while also contributing to the development and advancement of theory, knowledge, and practices in rural tech culture integration.

C. QUALITY OF MANAGEMENT PLAN

1. Key responsibilities, objectives, timeline, and metrics: Our *ACCESS* management plan includes an Advisory Council, Management Team, Project Director, and staff to support the project as described in Table 5; resumes and job descriptions are provided in Appendix F.

Table 5. Overview of Key Personnel Responsibilities
Project Director (100% effort): Phillip Brown, Director of Secondary Education/CTE, will serve as the *ACCESS* Project Director, providing program oversight, leadership, and fiscal accountability; his qualifications are detailed in Section 4 below (page 20) and his resume.
Project Advisor (10% effort, in-kind): Dr. Jeff James, Assistant Superintendent of Learning, will serve as the *ACCESS* Project Advisor, providing strategic direction as the *ACCESS* Advisory Council chair and a Management Team member. He currently supervises curriculum and instruction, data management, technology integration, and state and federal initiatives.
Management Team: Our Management Team will be led by the Project Director, meeting monthly to provide ongoing guidance on implementation of key strategies and project evaluation. Key members include: Assistant Superintendent of Learning (Project Advisor); Chief Accountability and Quality Officer; Director of Technology; Director of Curriculum Support; Director of Secondary Education/CTE; Director of Elementary Education/AIG; Director of Exceptional Children; and Director of Community and Business Partnerships.
Instructional Technology Specialists (ITS) (100% effort): Four *ACCESS* ITS will be hired (one for each middle and high school). We will leverage Title 1 funding to hire three ITS for our six elementary schools (each serving two schools). ***Qualifications****:* Valid NC teaching certificate; minimum three years of experience in technology integration and curriculum design; master's degree preferred. ***Responsibilities***: Coach teachers on technology integration; work with teachers to develop curriculum and lesson plans; collaborate with Library Media Specialists on use of instructional technology; design PD aligned with needs of the district, schools, and teachers; coordinate virtual PLCs and blended PD; lead Media and Technology Advisory Committee; assist with expanding distance learning; and support evaluation.
Technology Technicians (100% effort): We will hire two Technology Technicians through *ACCESS* (serving our middle and high schools). ITS and Library Media Specialists at our elementary schools will also serve in the Technician role to provide technical support. ***Qualifications***: Degree or certificate from a two-year college or technical school (bachelor's degree preferred); minimum of two years of experience in related position; experience in school setting preferred. ***Responsibilities***: Provide support with the installation and upgrade of technology-related equipment; diagnose and repair computers and equipment; provide technical support to staff, teachers, and students on use of equipment; and maintain technology.
Library Media Specialists (LMS) (in-kind): Each school has a Library Media Specialist who will collaborate with the ITS on the use of instructional technology resources; provide additional support to teachers and staff on curriculum development and technology integration; provide leadership on the Media and Technology Advisory Committee; and provide support to develop, implement, and update the school's instructional technology plan.
External Evaluator - The Evaluation Group (TEG): TEG will conduct our independent project evaluation and has experience conducting large-scale evaluations with districts in the Southeast, including five i3-funded initiatives. Section D, below, and Appendix F provides full qualifications for TEG.

♦*Management Plan Timeline:* As Table 6 shows, our management plan timeline is carefully aligned with key program milestones and objectives.

Table 6: *ACCESS* Management Plan and Timeline				
	Milestones	**Timeline**	**Responsibility**	**Objectives**
Ongoing	Management Team (MT) guides/monitors implementation for continuous improvement	Monthly	PD, MT	1.1-3.3
	Media and Technology Advisory Committee supports school-level implementation	Monthly	MTAC, ITS	1.1-1.3;1.7
	Begin virtual PLCs/blended PD to support tech integration and engagement (*by 8/15*)	Monthly	ITS, Teachers	2.2;3.2
	Advisory Council (AC) supports implementation, dissemination, and sustainability	Quarterly	PD, PA, AC	1.1-3.3
	Evaluator conducts ongoing data collection/assessment, provides reports and guidance	Quarterly	Eval.	1.1-3.3
	Provide coaching and classroom support on tech integration/blended learning (*by 8/15*)	Ongoing	ITS, LMS	1.1;1.7;2.3
	Technology Technicians (TT) set-up/troubleshoot/repair equipment as needed	Ongoing	TT	1.1;1.2;2.1
	Advertise free/low-cost Internet service availability across schools and county (*by 3/15*)	Ongoing	PD, ITS	1.2;3.1
1st Quarter	Hire Instructional Technology Specialists (ITS) and Technology Technicians (TT)	3/15	PD, MT	1.1-3.3
	Collect baseline data, create surveys, and solidify comparison schools for QED study	3/15	Eval., PD	1.1-3.3
	Solidify PD for curricular redesign integrating technology, virtual PLCs, blended PD	3/15	PD, ITS, MT	2.1-2.3;3.2
	Research, complete bidding process, and select vendor for student devices	3/15	PD, ITS, MT	1.1-3.3
	Review and revise policies/procedures for student usage of devices at school/home	3/15	PD, ITS, MT	1.2;3.1
	Complete planning/assessment to support expansion/enhancement of LMS	3/15	PD, MT	1.1-3.3
2nd Quarter	Conduct PD on Home Base, LMS, and online, data-driven PDSA process in all schools	5/15	ITS, LMS	2.1-2.3;3.1
	Purchase and set up student devices to support 1:1 student to device ratio districtwide	6/15	PD, ITS, TT	1.1-3.3
	Install wireless infrastructure in schools to provide required density for 1:1 initiative	6/15	PD, MT, TT	1.1-3.3
	Install wireless infrastructure on MCS busses to support learning anytime, anywhere	6/15	PD, MT, TT	1.3;3.1
	Complete installation of “hot-spots” throughout county via partner commitments	6/15	PD, Partners	1.1-3.3
	Purchase Home Base digital content to support student learning and teacher PD	6/15	PD, ITS, MT	1.1-3.3
	Expand access to rigorous college courses via university partners and 1:1 initiative	6/15	PD, MT	1.3
	Attend technology and blended learning conferences to support curriculum redesign	6/15	PD, MT	1.1;1.7;2.1
3rd-4th Qtr.	Complete content development to redesign instructional practices/tech integration	8-12/15	ITS, LMS, Teach.	1.1-3.3
	Use a broad range of tech-based learning strategies to support diverse student needs	8-12/15	ITS, LMS, Teach.	1.1-3.3
	Conduct PD on instructional redesign/technology integration, blended learning	8/15	ITS, MT, LMS	2.1-3.3
	Enroll students in additional distance learning courses via the LMS and college partners	8/15	ITS, LMS, Teach.	1.2;1.3
	Train and provide every student with a device to support anytime, anywhere learning	9/15	ITS, LMS, Teach.	1.2-1.6
	Complete DOE annual report, document model/successes for Replication Guide	12/15	PD, MT, Eval.	1.1-3.3
Years 2 and 3: Implementation of key strategies continues per Year 1 management plan, with adjustment to project as needed based on ongoing evaluation feedback. By the end of Year 2 we will complete our Replication Guide and begin state/national dissemination.				

2. Commitment of key partners and evidence of broad support: MCS has a strong record of community engagement and will work with 34 community-based partners who will support *ACCESS* through in-kind and financial contributions totaling $592,755 ($549,555 committed, $43,200 pending) (see Appendices C and G). An overview of our partners' commitments, stratified by level, is provided in Table 7.

Table 7. Overview of Key *ACCESS* Partners and Resources
State-Level: MCS will work with the NC Department of Public Instruction on integration of the Home Base system to enhance teaching and learning resources, expand virtual professional development opportunities for teachers, share best practices, and disseminate the Tech Culture Implementation and Replication Guide statewide.
District-Level: MCS will coordinate and manage all partnerships, and align district resources to support *ACCESS* strategies, including in-kind staff time to support our Management Team and Advisory Council; leveraging Title 1 funds to support three Instructional Technology Specialists for our elementary schools; and in-kind time for Special Ed Specialists to provide guided instruction on MCS special education busses daily. MCS will also partner with Anson and Bladen County Schools in NC to provide comparison schools for our impact studies.
Local Government Support: ♦MCS will work with five county municipalities (Biscoe, Candor, Mount Gilead, Star, and Troy) to install wireless "hot-spots" in local buildings and facility space to host student study halls and parent training workshops. ♦The Montgomery County Library has a facility in each of the five municipalities in the county, providing public computers, meeting space, and a variety of programs. The library will support *ACCESS* through existing "hot-spots" and facility space to support study halls and parent programs.
Institutions of Higher Education: ♦MCS will partner with several private and public universities and community colleges to support teacher PD (both in-person and via streaming technology) and provide access to advanced and college-level courses for students, including Guilford Technical, Randolph, Sandhills, Stanly, and Montgomery Community Colleges; Appalachian State, Gardner-Webb, Wingate, and University of North Carolina at Pembroke.
Businesses: MCS has secured commitments from 15 business partners: ♦Montgomery County Chamber of Commerce and Economic Development Corporation will provide a wireless "hot-spot", assist us with linkages to community partners and businesses, offer technical expertise, and support marketing efforts. ♦Installation of new wireless "hot-spots" to provide free Wi-Fi access points for students and families throughout the county, Internet air cards for pregnant and parenting teens, installation of wireless Internet access on busses traveling long distances with students, facility space for project activities, and food for teacher and parent meetings (funded by Bojangles of Troy, Capel Rugs Mill Outlet, Eldorado Outpost, Friendly Chevrolet Buick, Jordan Lumber & Supply, Randolph Electrical Membership Corporation, Troy Lumber Company, UNILIN, Wright Foods, First Bank of Troy, and Montgomery Motors). ♦CenturyLink will provide discounted Internet access ($9.95/month) for MCS students and families. ♦The Montgomery Herald will provide free advertising to promote discounted Internet access for students and families and i3 activities.
Nonprofits: The Montgomery Community College Fund will provide up to $20,000 per year for the purchase of student books and MCS move to a digital environment.

3. Procedures for ensuring feedback and continuous improvement: *ACCESS* incorporates several strategies and data-based monitoring to support continuous improvement of the project. ♦*Advisory Council*: Meeting quarterly, the Advisory Council, led by our Project Advisor, will provide operation oversight. The Council will include all Management Team members, Instructional Technology Specialists, Technology Technicians, Library Media Specialists, our evaluation team, community partners, principals, and teacher and parent representatives. The Council will provide guidance on program strategies; link school staff to community resources; review evaluation reports; provide the Management Team with operational guidance to address program challenges; guide the creation of a sustainability plan; and disseminate program information to other stakeholders. ♦*Management Team*: The Management Team, led by our Project Director, will meet monthly to review the status of project strategies, assess technology infrastructure and needs, review and confirm partner commitments, allocate resources, review metrics provided via Home Base (i.e., usage and assessment data), and develop and monitor an implementation plan to ensure the project is on target. The Team will conduct an intermittent review of our logic model (Appendix D) to avoid project drift, ensure activities are on course to meet intended outcomes, maintain program integrity (Knowlton & Phillips, 2013), and report progress to stakeholders. ♦*Media and Technology Advisory Committee (MTAC)*: Each school's MTAC, led by the Instructional Technology Specialist, will provide school-level implementation guidance and oversight, including regular review and assessment of technology infrastructure needs; regular review and update of the school instructional technology plan; guidance on professional development strategies to meet technology needs; and assistance with *ACCESS* program evaluation. ♦*Ongoing Evaluation and Feedback*: Using an external evaluator will provide an unbiased assessment of our program and allow for continuous feedback and improvement. As described in Table 3, our objectives have clearly defined benchmarks that will be used to periodically assess our progress. Reviewing our progress toward meeting these benchmarks regularly as we implement the program will equip us to identify our successes and

areas in which we need to improve implementation. Our evaluator will use multiple performance metrics and measures to monitor the program, including standardized assessments, behavioral indicators, teacher quality and performance data, key informant interviews, educator and student surveys, educator and student focus groups, and classroom observations. Results from these assessments will help to identify barriers/facilitators to implementation; suggestions for overcoming barriers/promoting facilitators; and recommendations for improving key components of the program. Our evaluator will provide periodic feedback to each school and will triangulate the data to provide a synthesis of programwide implementation data to the district using interim and end-of-year reports, survey briefs, snapshots, and in-person briefings.

4. Experience of Project Director: Our Project Director (100% FTE), Phillip Brown, holds a Master of School Administration and is an Ed.D. candidate at Wingate University. He has over 10 years of experience as an educator, including federal program management, serving as a Coordinator of Instructional Technology, Distance Education, and E-Learning; curriculum development; and instructional coaching in science and literacy. As Director of Secondary Education/CTE at MCS, Mr. Brown provides instructional leadership districtwide as a member of the MCS Curriculum Team, leads a team of 165 teachers and staff in our four middle and high schools, and regularly compiles and analyzes data to monitor all program components. He manages $1.5 million in federal Perkins funds to support Career and Technical Education (CTE) at MCS, which includes program development, implementation, evaluation, and modification of all CTE programs; securing approval for CTE programs at the district and state level; ensuring curricular compliance with institutional, state, and federal guidelines; developing effective and responsive programs to meet economic and workforce needs; administering all CTE assessments; and writing and carrying out the CTE Strategic Plan. As Director over Secondary Education, Mr. Brown provides leadership in the development, implementation, and administration of curriculum and instruction and technology integration across the district's four middle and high schools (serving 2,259 students); oversees building management, the master

schedule, and secondary school budget; directs the establishment of evaluation and professional development experiences for secondary administrators, staff, and teachers; coordinates the Career and College Promise articulations with partner universities and community colleges; assists with the collection and analysis of data to improve secondary programs and academic achievement; and assists with securing partners to support secondary education needs. Mr. Brown's multi-faceted management experience over Secondary Education and CTE at MCS—which requires curriculum and technology integration leadership; coordination of budget, staffing, and partner resources across multiple schools; and federal and state program oversight—has positioned him with the skills and expertise to successfully direct *ACCESS*.

D. QUALITY OF PROJECT EVALUATION

1. The clarity and importance of key questions, and the appropriateness of the methods: We will address two key confirmatory evaluation questions: 1) What is the impact of ACCESS on math and reading achievement for schools serving students in grades 3-8 after two program years; and 2) What is the impact of ACCESS on the SAT participation rate and SAT scores for a grade 9 cohort of students that received two years of programming? Accordingly, we propose two impact evaluations: a short interrupted time series design with comparison schools (C-SITS) at the elementary and middle schools and a quasi-experimental design (QED) with a grade 9 cohort at the high schools. Our comprehensive evaluation provides a deep assessment of effects by looking for impacts at both the school-level and the student level. Outcomes will be measured using recognized assessments with proven reliability and validity, as seen in Table 8.

Table 8. Impact Analysis by Study and Year (= confirmatory analysis)**

Impact Analysis	Year 1 (Spring 2015)	Year 2 2015-16	Year 3 2016-17
Study 1: C-SITS with elementary and middle schools	Start up and implementation	One year effect on EOG tests (reading, math) in grades 3-8	**Two year effect on EOG reading and math scores, pooled across grades 3-8
Study 2: QED with grade 9 cohort	Start up and implementation	One year effect on EOC tests (English II, Biology) in grade 10	**Two year effect on SAT scores and SAT participation rate in grade 11

♦*Impact Study 1:* We will use a C-SITS design to assess the impact of *ACCESS* on math and reading achievement for students in grades 3-8 after two program years. The C-SITS design is suited to assessing impacts of whole-school initiatives (Bloom, 1999; Bloom, 2003; Kemple et al., 2005; Quint et al., 2005) implemented districtwide and has been shown to produce unbiased estimates of program effects (Somers et al., 2013) by comparing the change over time in schools that have adopted an intervention with corresponding schools not adopting the intervention. We will compare our eight *ACCESS* elementary and middle schools with similar comparison schools within other rural NC districts, matched at a ratio of 1:5 (48 schools in total). Propensity score matching using radial matching without replacement will be used to ensure *ACCESS* schools and comparison schools are equated on key characteristics, including percent eligible for free- and reduced-price lunch, percent of minority students, AYP status, pupil-teacher ratio, and enrollment. Most importantly, we will use school-level mean standard scores from multiple years of pre-intervention data (2008-13) on NC EOG tests in reading and math to establish ***baseline equivalence on the outcomes measure at pre-test***. Including all NC schools serving grades 3-8 in rural districts ensures a large pool of candidates for selection. Data from the grade-level cohorts will be pooled to increase statistical power and compared at the end of 2016-17 after the program has been in effect for two full years. Selection bias is controlled through school-level matching. ♦*Impact Study 2*: We will use an individual-level longitudinal quasi-experimental single-cohort design to assess the effects of *ACCESS* on SAT scores and SAT participation rates in a grade 9 cohort of students who have received two years of exposure to *ACCESS*. Beginning in 2015-16, we will match all grade 9 students enrolled in our two high schools, East Montgomery (EMHS) and West Montgomery (WMHS), with similar grade 9 students from high schools in Bladen County (East Bladen (EBHS) and West Bladen (WBHS)) and Arden County (Arden (AHS)). All comparison high schools closely match our *ACCESS* high schools on key covariates, including enrollment, value-added growth expectations, percentage of students passing EOC tests, ability to meet Annual Measurable Objectives (AMO), and ***SAT participation***

rates and scores at baseline, as shown in Table 9. We will use 1:1 propensity score matching using nearest neighbor matches without replacement to match students using the following key variables: eligible for free- and reduced-price lunch, limited English proficiency, minority status, gender, and average scaled score on grade 8 reading and math EOG tests. Selection bias is controlled through student-level matching. The large pool of grade 9 comparison students (617) increases the likelihood of constructing a valid, well-matched comparison group.

Table 9. School Characteristics of *ACCESS* and Comparison High Schools (2012-13)

High School	Grade 9 Students	Met Valued Added-Growth	% Passing EOC Tests	Met All AMO	% Taking SAT	Average SAT Score
EMHS (*ACCESS*)	171	Yes	34	No	54	818
WMHS (*ACCESS*)	191	Yes	25	No	40	911
EBHS (Comparison)	221	Yes	20	No	49	857
WBHS (Comparison)	203	Yes	29	No	39	874
AHS (Comparison)	193	Yes	14	No	49	807
Source: NCDPI, 2012-13						

2. Evaluation includes clear and credible analysis plan: Both studies will use hierarchical linear modeling (HLM) to account for clustering. The Benjamini-Hochberg correction (Thissen et al., 2002) will be used to adjust when making multiple comparisons; multiple imputation and dummy variable adjustment will be used to address missing outcome and covariate data, respectively (Puma et al., 2009). The treatment-control contrast in both studies will be assessed by surveying the technology directors at comparison schools to determine the ratio of learning devices to pupils, and the extent of technology use, integration, and accessibility throughout the school. The Minimal Detectable Effect Size (MDES) for Study 1 and Study 2 is .30 and .20, respectively, as outlined in Table 10.

Table 10. Summary of Evaluation Plan Parameters by Study

Parameters	Study 1: C-SITS	Study 2: QED
School Level	Elementary and Middle (grades 3-8)	High (grade 9 cohort)
Unit of Analysis	School	Student
Sample Size	48 schools (8 *ACCESS*, 40 comparison, no expected attrition)	600 students (300 *ACCESS*, 300 comparison, 15% attrition)

Confirmatory Outcome(s)	NC EOG test scores in reading and math pooled across grades 3-8	SAT scores and SAT participation rates
Exploratory Outcome(s)	NC EOG test scores in reading and math examined separately by grades	NC EOC tests in English II and Biology
PSM Covariates	*Baseline equivalence on outcome variable:* 2009-13 mean and trend in reading and math scores, grades 3-8; *School-level covariates*: % FR/L eligible, % minority, enrollment, AYP status, student-pupil ratio	*Baseline equivalence on outcome variable:* grade 8 reading and math achievement *Individual-level covariates*: FR/L eligibility, gender, minority status, LEP
Statistical Analysis	Confirmatory: Three-level HLM model with repeated observations over years (level-1) nested within grades (level-2), and multiple grades nested in schools (level-3); Exploratory: Two-level HLM with repeated observations over time (level-1), nested in schools (level-2)	Confirmatory and exploratory: Two-level HLM (students nested in schools)
MDES*	.30	.20
**Each MDES assumes a Type 1 error rate of .05 at a power of 80%. For the full power analysis, including additional discretionary parameters used in calculations, see Appendix I.*		

3. Evaluation plan articulates key components and measurable threshold: Our key components are depicted in the logic model (Appendix D) with the underlying theory that training teachers to implement adoptive and personalized technology-enabled instruction will significantly increase student engagement and lead to higher achievement in math, reading, and on the SAT. Implementation data from multiple sources (i.e., proven student and teacher surveys from the National Educational Technology Standards – Teacher (NETS-T) assessment package, educator logs, final products, MCS administrative records, and data from the NC Education Value-Added Assessment System (EVASS), supplemented with classroom observations, interviews, and focus groups) will be used to triangulate the results and synthesize information to the district. Annual thresholds that define adequate implementation and the methods for assessing the implementation of each for our three key components are shown in Table 11.

Table 11. *ACCESS* Key Components, Data Sources, and Measureable Thresholds		
Key Component 1 - High quality teaching and learning resources: # or % of…	Primary Method	Annual Threshold
1. Students with 1:1 devices	Admin. Records	90%

2. Students eligible for free- or reduced-price lunch whose family signs up to receive discounted home Internet service	NETs Survey	500
3. Students and teachers with favorable reactions to tech-based learning	NETs Survey	80%
4. Number of new Wi-Fi "hot-spots" operating annually	Admin. Records	8
5. High-quality Implementation and Replication Guide (end of Year 3)	Product	100%
Key Component 2 - Effective teacher reach: # or % of …		
1. Teachers participating in virtual PLCs and blended PD once per month	Logs and Admin. Records	75%
2. Teachers utilizing on-site Technology Specialists four times per month	Logs and Interviews	80%
3. Number of new distance learning course offerings per year	Admin. Records	6
4. Classes being taught by a highly effective teacher	NC EVASS	75%
5. Curriculum courses redesigned to incorporate technology each year	Interviews and Products	4
6. Students use of technology with adaptive content once per week	NETS-T Survey	80%
Key Component 3 - Real-time assessment data: # or % of…		
1. Student/teacher dyads reviewing on-line assessment data once every six weeks	Survey	80%
2. Educators reporting increased communication and collaboration	Survey	90%
3. Students accessing test data at least once per week	Web-counter	75%

4. Sufficient resources to carry out the project evaluation effectively: The Evaluation Group (TEG) will serve as our independent evaluator. TEG has over 25 years of experience conducting large-scale evaluations within the Southeast, including five i3-funded initiatives. This highly-trained team will include two lead evaluators, a data analyst, and a data manager. Both lead evaluators, Dr. Pelt and Dr. Askew, have a combined 32 years of evaluation and research experience, including serving on the evaluation team for an i3-funded development grant focused on K-12 STEM education (see Appendix F). Our comprehensive evaluation of *ACCESS* will provide a deep assessment of the effects of the program by measuring impacts at both school and student level, to enable the creation of a sustainable and replicable model to improve teacher efficacy and student achievement through implementation of a tech culture within rural schools and communities.