

Investing in Innovation

Application for Funding

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Creating a Corridor of Innovation:

Changing the Equations for Student Success

In Rural, High Need High Schools

NARRATIVE

KnowledgeWorks Foundation

in partnership with Colleton and Scott's Branch High Schools

August 2, 2011

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COMPETITIVE PRIORITY 7 - Innovations that Support College Access and Success

Increasing preparedness for and expectations related to college An important tenet of the New Tech Network (NTN) model is to create college experiences for students while in high school to help students prepare for, enter and graduate from two- or four-year colleges. At least 50% of students at the two project schools will earn a minimum of 12 hours of college credit while at New Tech. This will be accomplished through some combination of dual enrollment/dual credit courses, advanced placement courses, and online courses. Dual access has long been supported by the SC Department of Education, and community colleges in each project area will support this goal (Appendix G).

Help students understand issues of affordability and college and financial aid application processes; provide support from peers and knowledgeable adults The two project schools will put in place a college mentoring program. Local professionals will volunteer as mentors, participate in an orientation, and will meet quarterly with their mentees to encourage post-secondary aspiration and knowledge. To assist with the complexities of college application processes each of the two project schools will participate in the SC Commission on Higher Education's College Week, a week-long onsite staffed lab providing one-on-one assistance.

COMPETITIVE PRIORITY 10 - Technology

Technology improves teacher effectiveness A primary aspect of the NTN model is ubiquitous access to and use of technology among staff and students to improve student achievement, learning and collaboration; improve instruction; enhance teacher effectiveness and professional development; and foster the further development and system-wide sharing of high-quality digital materials. Traditional teaching and learning time is transformed to larger blocks of time dedicated to rigorous project based learning (PBL). A collaborative online learning

management system, Echo™ and a one-to-one computer to student ratio provide a foundation for integrating technology and instruction. NTN provides teachers and administrators extensive professional development to maximize the use of technology in the learning environment.

Technology improves student achievement through one-to-one computing and web-based learning management platform Students will use cutting edge technology every day in every classroom to enhance their learning within a collaborative team environment that mirrors the work place, making research, organization, and communication more efficient and students more active, self-directed, and the managers of their learning time. Students will use Echo™ to access the daily agenda, interact with peers, projects and activities at the school and network level in moderated interest groups; and to get accurate information about their performance.

Technology fosters development and sharing of learning materials Echo™ will support teacher development through the proliferation and sharing of PBL units and the sharing of PBL units across a local and national NT school network provision of a time-efficient professional learning community platform to share best practices and to communicate 24/7. Echo™ will maximize instructional time by facilitating curriculum development, student and teacher collaboration, and real-time assessment of academic content and 21st century skills. Echo™ integrates with the Google Apps collaborative platform at a level not seen in any other educational software platform. Echo™ is available 24/7 so the school community, including parents, can access its online resources anytime and anywhere, with almost any popular browser.

A. NEED FOR THE PROJECT

(A(1) The proposed project is exceptional in its potential to create a model addressing the particular challenges of high needs rural students with a highly replicable and seamless integration of standards-driven content, Science, Technology, Engineering and Mathematics

(STEM)-infused cross-curriculum project-based learning, and pervasive and continual use of technology.

There is a compelling need to establish a national model that address the particular challenges of high needs, low performing high school students in economically underdeveloped and largely rural communities in ways that improve STEM skills and prepares students for success in college and in the technically-driven 21st century workplace. The proposed project addresses those particular challenges in two high schools in South Carolina, specifically along the I-95 “Corridor of Shame” and seeks to create an exportable and sustainable turnaround model that is relevant in similar settings throughout the state, region, and nation. **It is a whole-school reform initiative that is written to address Absolute Priority 5: Improving Achievement and High School Graduation Rates (within Rural Local Education Agencies).**

In a bold and innovative approach to these challenges, the proposed project will convert each of the two high-needs project schools (Colleton County High School and Scott’s Branch High School) each of whom is chosen from the RLIS-eligible list and meets the I3 rural school definitions (Appendix J) into standards-and project-based learning (PBL)-driven New Tech High Schools (NTHS) with a strong STEM focus, collaborative online learning system, relevant and regular interaction with regional employers, and a college going culture. Fused with a one-to-one computer ratio and online collaborative learning platform, these 21st century high schools will maximize student success and opportunity through the acquisition of core knowledge and 21st century skills, and will increase student’s postsecondary aspirations and success.

Absolute Priority 5 (Rural) is supported by Absolute Priority 2: Promoting Science, Technology, Engineering and Mathematics (STEM) Education. The project also addresses Competitive Priority 7: Innovations That Support College Access and Success, and Competitive

Priority 10: Technology. It is a strong and integrated response to the Secretary's aim to explore and develop a *broad range* of new, evidence-based innovations to improving achievement.

The proposed project is also exceptional in its strong response to the entirety of the competition's general selection criteria, as detailed in this document.

(A)(2)(i) The nature and magnitude of specific gaps and weaknesses have been identified in the project schools and area.

Low Achievement, Attainment, Aspirations and Opportunity in Project Area and in State

Though SC has met some success in narrowing the achievement gap that persistently places it near the bottom of many national indicators, the state's overall achievement remains low. Depending on the formula used, SC's high school graduation rate ranks between 41st and 47th in the nation, with approximately 20,000 children dropping out of the state's high schools each year. The percentage of college-educated people is 39th nationally, and the state ranked 40th in median household income in 2010 (U.S Census). A 2005 study by researchers at the University of SC notes that increasing the number of South Carolinians with a bachelor's degree from the current 23% to 30% would increase personal income in the state by \$6.9 billion annually, add \$7.8 to the annual gross state product, and create 44,514 new permanent jobs (SC CHE, 2008).

SC's Rural Students: Highest Need Students, Lowest Performing Schools and Lowest Performing Economies: Many of SC's rural communities are disproportionately minority and poor and suffer disproportionately from the state's low educational attainment. Only five states in the nation have a higher percentage of rural minority students and a higher rate of rural student poverty than does SC, and just over half of the state's rural students graduate from high school, the lowest rate in the nation. In a 2009 study from the Rural School and Community Trust ranking states on the basis of 25 indicators associated with rural students success, SC ranked 5th

in the nation in critical needs within rural districts (Johnson & Strange, 2009).

Achievement in critical content areas among SC's minority students lags the nation substantially. 2009 8th grade NAEP scores (NAEP is done every two years) show that 30% of all SC's students scored proficient or above in math, compared to 33% nationally, and 23% in science, compared to 29% nationally. However, this achievement gap widens substantially when SC's minority students are compared to SC's white students. Among the state's 8th grade students, 43% of white students scored proficient or above in math, but just 12% of African American students did. Furthermore, 35% of SC's white students scored proficient or above in science, but just 6% of African American students did (Appendix J).

SC's I-95 Corridor Many such disproportionately low attaining, low income, economically underdeveloped rural communities are clustered along SC's I-95 corridor, part of a belt of similarly challenged counties that extends from southeast Texas to southern Virginia (Appendix J) and home to eight of SC's poorest counties (Census, 2010). The corridor has received national attention for the disrepair of its public education system through the "Corridor of Shame" documentary and is home to *Briggs v. Elliott*, one of the cases consolidated by the Supreme Court into *Brown v. Board of Education*. The residents of the I-95 Corridor, with their high level of illiteracy and lack of technical and other 21st century skills, have not fared well in changing employment markets. Even as the lack of a skilled workforce creates a disincentive for new investment by business and industry, low skill jobs in agriculture and manufacturing continue to decline. Unemployment is high and per capita income low. These cyclical educational, social and economic impacts have created a perfect storm of persistent failure for these rural communities.

The superintendent for one of the project schools describes the current situation: "A lot of our kids don't expect to get good jobs. They see nothing to reach for. The unemployment rate in

the county is 14.6%, but it's probably 25% among young African American adults. We've got a Piggly Wiggly, a Dollar Store, a post office, and a few places to get gas. That's it. These kids need to see a brass ring." Such a "brass ring" of visible opportunity is the recent location of aircraft manufacturer Boeing Company in nearby North Charleston. Located 70 miles from one project school and 30 miles from the other, Boeing is expected to directly create about 4000 jobs in the area and stimulate additional job growth through future location of supplier manufacturing and aerospace-related facilities. However, Jim McNerney, president and CEO of Boeing, said recently that he sees a shrinking pool of workers proficient in the problem-solving skills of the STEM fields and an impending skills shortage that will grow significantly worse over the next five to 15 years. Though SC possesses a robust two- and four-year college system which actively works to align to specific workforce needs, only students prepared for success in college and high technology workplaces will be positioned to access new opportunities.

(A)(2)(ii) and (A)(3) The project addresses identified gaps and weaknesses and is likely to generate desired positive outcome and impacts.

Vision and Strategy: In a strong response to these challenges, a partnership comprising a consortium of two of the I-95 Corridor's Rural Low Income Schools (RLIS)-eligible low performing high schools in economically underperforming communities (Appendix J), the nonprofit KnowledgeWorks (KW) and its nonprofit subsidiary, New Tech Network (NTN), together with the Richard W. Riley Institute at Furman University (Riley Institute) proposes to transform each of the two high schools into a STEM-focused New Tech High School (NTHS)/New Tech Training Site. The ultimate projected outcome is described below, followed by related component (intermediate) outcomes. In each case, the likelihood of positive impact is presented through information from national literature and previous NTN implementations.

Ultimate Outcome: The proposed project's overall projected outcome is that the NTHSs will dramatically improve education achievement and attainment while raising expectations and opportunities among low-performing rural students along the I-95 corridor. The number and proportion of students prepared for postsecondary study and careers in STEM fields will increase considerably to spark a "Corridor of Innovation" in the existing "Corridor of Shame."

Success is likely: Stanford University's Linda Darling-Hammond termed NTN a model that "breaks the conventional links between race, poverty, and academic failure." (Friedlaender, Darling-Hammond, et al, 2007). Rockman, et al., tracked Napa NTHS's alumni's postsecondary experience and report that 89% of the responding alumni attended a two-year or four-year institution or professional or technical institute and 40% were majoring in STEM fields or working in STEM professions (Rockman, et al., 2006). Support from both the national literature and NTN data for the proposed project's specific approach and outcomes is detailed below.

Component Outcome 1: Through standards-driven PBL and an integrated online learning system, students in the two project schools will see dramatic improvements in a spectrum of metrics related to achievement and attainment. Project-based learning will integrate content across curriculum and inculcate such critical skills as analytical and critical thinking, problem-solving, and collaboration. Project schools will be supported by an online learning management system and a one-to-one computer ratio to create a vibrant learning network to connect students, teachers, and parents to each other and to NTN national network (for more on technology platform, see Competitive Priority 10 – Technology).

Success is Likely: National Research Supports Project Based Learning: A three-year longitudinal study (Boaler, 1998) found that students in PBL classroom environments did significantly better on mathematics testing than did those in lecture/discussion environments. In

2010, Kanter and Konstantopoulos reported that PBL science curricula improves science achievement among minority students and that usage of inquiry-based science learning activities by teachers correlated with improvement of students' attitudes about science. Thomas's (2000) meta-analysis of research on PBL notes that studies point to relationships between PBL and improved student achievement, quality of learning, and grasp of 21st century skills.

NTN Data NTN schools have successfully improved student achievement and attendance, increased graduation rates and post-secondary enrollment, and narrowed achievement gaps.

Improving Student Achievement: Most NTN schools saw significant gains in student achievement. Across the North Carolina (NC) implementations, student achievement grew by as much as 48.8% and achievement gaps narrowed. At NC's Warren New Tech, student proficiency in Algebra II increased to 98%. Similar improvement is evident in Texas (TX) and Indiana (IN). In all cases, higher model fidelity translated to improved student achievement.

Increasing Attendance and Reducing Dropout Rates: NTN schools display high rates of attendance, low dropout, and suspension rates. In 2010-2011, NTN schools had an average attendance rate of 91% and an average dropout rate of less than 1% across NTN's 62 schools. Most NTN schools had a 2010-11 suspension rate below 2% (Appendix J).

Increasing Graduation Rates: The six most mature NTN high schools in California provide a good sample for NTN graduation rates. Across these sites the 2007-08 graduation rate was between 69% and 100%. Four of the six surpassed the graduation rates of their comparison schools and their districts. In two of the four schools, the NTN graduation rate was 30% or more above the districts' rate. The highest fidelity, most mature California schools, Napa and Sacramento, had graduation rates of 98% and 99% respectively (Appendix J).

Component Outcome 2: Students will be prepared for 21st century workplaces through

STEM-focused PBL and the development of critical 21st century skills. A standards-driven STEM-infused curriculum will provide students with rigorous and engaging STEM coursework. Intensive NTN coaching over a five-year period will support effective STEM-infused PBL, assist schools and teachers to develop robust curriculum, integrate content areas across the curriculum, and assess authentic outcomes to result in a pedagogy that inculcates the problem-solving skills and creativity required in STEM fields (Appendix J).

Success is Likely: The National Research Council highlighted Manor NTHS as a high school that embodies the elements of a successful STEM school. NTN was also cited as a best practice in STEM by Carnegie Corporation. Boaler (1998) found that students learning in a PBL environment gained 21st century skills and reported greater real world relevancy in their work. Capon and Kuhn (2004) found that PBL led to a greater retention of knowledge.

NTN STEM School Subject-Area Achievement Though IN data have not yet been released, both NC and TX STEM schools annually outperform comparison schools and often rank among the top performing STEM schools in their states. In 2009-2010, the majority of them also outperformed comparison schools in English/Language Arts; in 10th grade ELA, 89% did so. The NC and TX schools outperformed comparison sites in Algebra I (69%) and 11th grade math (80%). 60-75% of them surpassed comparison schools across most science subject areas (Appendix J).

Component Outcome 3: Aspiration, expectations and opportunities for future employment will be increased among project school students through improved achievement and attainment; increased support for college access and success; and personal contact with business and industry. The project schools will create college experiences for students while in high school to help students prepare for, enter and graduate

from two- or four-year colleges (see Competitive Priority 7 – Innovation that Support College Access and Success). Students will earn at least 12 college credits while at NT. A robust outreach plan will create STEM-related business and community partnerships that allow outside assessment of projects by STEM professionals. Project schools will work with economic development organizations to address local and regional economic development opportunities by building college and career pathways.

Success is likely: *College Access and Success*, Kaniuka & Vickers (2010) found that nationally, early college high school environments support the academic success of disadvantaged and underrepresented students and narrowed achievement gaps. These critical factors are embedded in NTN's approach,

NTN Outcomes: 94% of respondents to a recent NTN study indicated having attended college or a training program after high school. Most (84%) enrolled immediately after graduation. During the 2010-2011 school year, across NTN schools, the percent of students enrolled in college classes at each grade level were: 9% (245) of 9th graders; 13% (345) of 10th graders; 26% (488) of 11th graders; and 31% (325) of 12th graders (Appendix J).

Community Outreach Experience: NTN schools and local contractor the Riley Institute have considerable experience forming collaborations with business and community leaders (Appendix J) to ensure relevant, real-world assessment of projects, assistance with development of curriculum and extracurricular activities, and internships to help create STEM-capable graduates.

Component Outcome 4: Impacts on rural schools in the I-95 corridor related to achievement, attainment, 21st century skills, and aspirations, expectations, and opportunities for employment will be magnified throughout the corridor and state.

Model Building: Information and data from the project schools will join that of two other

NTN STEM schools set in high-minority, low performing rural communities and of other NTHS sites (some in rural settings, some in high poverty/minority settings, some in low-performing settings) to expand previously available data to help create an effective, sustainable national turnaround model for high-minority, low performing, economically disadvantaged rural areas. Additionally, “training sites” will be created at each of project high schools, designed to incubate and spread innovative, student-centered, PBL practices across the region.

Success is likely: NTN’s powerful model’s well-proven national success supports the likelihood of its success in high minority, low performing rural settings. Of the 62 NTN high schools across 16 states, about 25% are located in rural communities and 75% in urban or suburban settings. Preliminary analyses of achievement results demonstrate patterns of high achievement across NTN rural schools. Across tested subjects, NTN rural schools outperformed comparison schools by a rate of 83% in ELA subject tests and a rate of 77% across Math subject tests. Among rural schools, the two sites most analogous to those of the proposed project are two rural, STEM-focused NTN schools in NC: Anson New Tech High School and Warren New Tech High School. Both schools report that 100% of seniors who started the year graduated in 2011 and 100% of Anson’s and 93% of Warren’s graduating seniors were accepted into college. Warren’s pre-intervention dropout rate was 17%; Anson’s was 3%.

Rural Economic Development: NTN recently conducted a mixed methods study into the impact of the NTN model on rural schools. Preliminary analyses of economic development results show patterns of amplified economic impact on students, schools, and communities across rural NTN schools. Early results show that high fidelity NTN schools sparked community and business connections by partnering with economic development coordinators and chambers

of commerce to co-design, co-implement, and co-assess authentic, challenging PBL experiences with their NTN schools and create internship opportunities for students.

B. QUALITY OF THE PROJECT DESIGN

(B)(1)(a) and (B)(1)(b): The proposed project design is high-quality, with an explicit strategy and clear goals and actions that are aligned with its priorities and will achieve the desired outcomes. The project's vision and desired outcomes are stated above, in (A)(3). The project's goals and actions, stated below, are directly related to the outcomes stated in (A)(3), and directly address this proposal's Absolute Priority 5 (Rural); the supporting Absolute Priority 2 (STEM); and Competitive Priorities 7 and 10 (College Access; Technology). They include one primary goal and its related achievement/attainment goals, and three supporting goals with action items that are aligned with the primary goal (Logic Model, Appendix J).

Goal 1: To turn around the two rural, persistently low-performing project high schools by transforming them into project based learning, STEM New Tech High Schools.

Action Item 1.1 Increase student achievement/growth as measured by state assessments (with 94% of students meeting state standards).

Action Item 1.2 Decrease the dropout rate (to 10% lower than the national average).

Action Item 1.3 Increase the graduation rate (to 10% higher than the national average).

Action Item 1.4 Close academic achievement gaps associated with ethnicity and free/reduced meal eligibility (by at least 50%).

Action Item 1.5 Increase the percent of graduates enrolling in college or other post-secondary institutions (to 10% higher than the national average).

Action Item 1.6 Increase to at least 50% the number of students graduating with minimum 12 hours college credit.

Action Item 1.7 Increase by at least 50% (over baseline data established during first three years of the project) the percent of students who (a) enroll in post-secondary institutions and (b) state their intent to pursue STEM related careers.

Goal 2: To work intensively with teachers, instructional leaders, and district technology staff to implement NTHS in the project school district, to develop shared professional development opportunities within and across the project schools, and to expand practice across the region.

Action Item 2.1 Conduct an initial three and a half year comprehensive planning and training cycle for teachers, school administrators, and district administrators including comprehensive teacher professional development on PBL, technology and STEM content integration.

Action Item 2.2 Create and implement a course sequence and integration to support greater acquisition of STEM content and skills for all students including the development of interdisciplinary courses and external partnerships.

Action Item 2.3 Create a one-to-one computer ratio for all students in the high school environment and provide them with access to the internet and the NTN online learning system

Action Item 2.4 Conduct ongoing, job-embedded professional development for all teachers in the NTHS focused on curriculum and the integration of instruction and technology.

Action Item 2.5 Assign a school development coach to each high school campus to provide ongoing support for teacher growth, professional development, and model implementation.

Action Item 2.6 Provide state-based networking and professional development opportunities.

Action Item 2.7 Create NTN Training Sites at each project school to work with educators within the region to teach them project-based, STEM-infused learning practices and incubate them within the I-95 corridor region.

Goal 3: To develop a Regional Support Plan team, to create and sustain partnerships with business and industry to support each NTHS, and to leverage those partnerships to:

Action Item 3.1 Develop and undertake a five-year outreach plan and leverage the Riley Institute's existing relationships to build a solid base of support.

Action Item 3.2 Assist in the acquisition of technology, facility modifications, and other costs of implementation through private matches.

Action Item 3.3 Develop opportunities for internships for students to help them gain an understanding of the workplace and its culture, expectation, and necessary skills.

Action Item 3.4 Partner with content area teachers on real world projects and problems to add greater rigor and relevance to students learning.

Action Item 3.5 Collaborate with economic development organizations and chambers of commerce to gain input into promising job sectors and align learning objectives with them within the context of standards-based learning.

Goal 4: To partner with institutions of higher education within the project region to provide access to college credit-bearing courses for all NTHS students and to provide college experiences to increase college access and success.

Action Item 4.1 Establish a system for students to earn a minimum of 12 hours of college credit while they attend the NTHS.

Action Item 4.2 Provide a link to higher education to expose students to the environment and rigors of a college campus. Assist students to understand the processes of applying for college, financial aid, and other culture bridges for first generation students to increase access and college success.

(B)(2) Estimate of the cost of the proposed project and costs to bring to scale

The costs of this project are \$4641 per student during the five years of the grant. These are one-time costs, as it is fully anticipated that after the process is complete, each project school will be a self-sustaining, high-performing NTHS. Estimated per-student expenditures are reported in the table here for both the proposed and expanded scope.

	Proposed Scope	Expanded Scope		
Number of students	640	100,000	250,000	500,000
Estimated program costs per student				
Start-up	\$899	\$810	\$729	\$656
Operating	\$3509	\$3342	\$3008	\$2707
Indirect	\$233	\$208	\$187	\$168
Total program cost	\$4641	\$4360	\$3924	\$3531

The costs of the project are currently based on the experience of serving 640 students through the NTN model in SC. As the base of implementation expands through regionalized growth in the state and region, it is anticipated that efficiencies will be developed that lead to decreased costs as the project continues to scale. The start-up costs include the subgrants to participating school districts that directly support items like release time for teacher leaders, professional development, and other activities that take place outside the day covered within the teacher contract. It is unlikely that these costs will reduce significantly as the program moves to a larger scale; however, operating costs and indirect costs will be reduced as the program seeks out additional efficiencies in implementation, regionalization of services, and reduction in on-site coaching support and travel, economies of scale associated with the implementation of the state based trainings and increased use of online tools to support remote employees and reduce overhead.

(B)(3) Costs are reasonable: Costs for the project are reasonable not only in relation to the project's proposed objectives and design, but are built upon the refined processes (both implementation and financial modeling) established by NTN in 62 school implementations across the country.

(B)(4) The project's purposes, activities, and benefits will be integrated into the ongoing work of the partners at the end of the Development grant; sustainability is ensured. Complete and enduring transformation of the project schools is built in through sustainability at multiple levels, including ongoing resources and stakeholder support for specific aspects of the model and systemic changes that ensure long term sustainability of facilities, technology infrastructure, instructional leadership, teaching staff, and teaching and learning methodology.

Board chairs and superintendants are committed to leveraging the national, state and local investment in project and technology infrastructure by working to align policy and funding in support of the NTN model. The **SC Department of Education (SCDE)** has long supported early college access and **project-area community colleges** are committed to helping meet college access goals. **Key colleges of education throughout the state**, including those at Furman University, College of Charleston, and Winthrop University, are committed to help build a growing corps of teachers proficient in such NTN model mainstays as team teaching and PBL (Appendix G). **The Riley Institute** will cultivate ongoing stakeholder support. **Broad stakeholder support** is evidenced in part by letters of support from former US Secretary of Education and two-term SC governor Richard W. Riley; the presidents of the local technical colleges with which the high schools would work, chambers and economic development organizations in each of the two project counties; and from numerous professional associations for educators across the state (Appendix G). **The inherent structure of the NTN model is self-**

sustaining through creation of systemic structural changes in facility and technology infrastructure, building instructional leadership in the teaching staff, and adhering to a comprehensive program design and teaching and learning methodology (Appendix J). **At the individual school level** it is anticipated that by the end of the five-year period, each school will have demonstrated its ability to sustain the instructional and assessment practice and that district commitment, alignment of resources and instructional leadership will be in place to ensure the fidelity of the model. Each project school's success will have gained sufficient community support so that its future existence of each and every NTN school is assured, regardless of leadership changes in district superintendent offices.

C. QUALITY OF PROJECT EVALUATION

(C)(1) and(C)(2): Methods provide high quality data, performance feedback, permit periodic assessment, and provide sufficient information to facilitate further development and replication The project evaluation is designed to meet the three review selection criteria specified in the Federal Register announcement and the quasi-experimental review criteria specified in the What Works Clearinghouse. The evaluation will be multi-faceted, using multiple methods to answer evaluation questions and test research hypotheses. Outcome questions will be explored through collection of student achievement and program implementation data, staff, teacher, and student interviews, surveys, and focus groups. Process questions will be addressed to ensure the project is being implemented with fidelity.

High Quality Implementation Data, Performance Feedback, Progress Assessment The process component of the evaluation will look closely at how the program is implemented throughout the five years of the program. Results will be provided in monthly, quarterly and

annual reports and will provide project management with information to periodically assess progress toward intended outcomes and to make program adjustments and enhancements.

Information for Further Development, Replication, Testing The evaluation is also structured to facilitate further program development, testing, and replication. Statistically significant information on the extent to which student achievement is affected by the program, in addition to information on how to effectively implement the program and the degree to which components of the program produce impact, will provide data to those seeking to further develop or replicate the program or programs with common elements.

Quasi-Experimental Design Overview: A quasi-experimental, pretest-post test design with equating will be used to test the research hypotheses. Results of the 8th grade administration of PASS (Palmetto Assessment of State Standards), the State's academic performance measure, will be used to establish pre-intervention achievement levels and will serve as one of the matching criteria. End of Course Tests (EOCT) will be used to determine differences in the performance levels of students in both treatment and control groups. This design, using closely matched control groups and pretest (PASS in 8th grade) with multiple post tests (EOCTs in 9th-12th grade), is illustrated below:

NR O1 X O2 X O3 X O4

NR O1 O2 O3 O4

(O1= PASS Scores and matching criteria; O2-4=EOCTs)

Multi-Site Treatment/Control Group Descriptions: Approximately 640 students from two high schools will participate. A ninth grade cohort will be added at the beginning of each year. Efforts to reduce threats to validity will be made through careful matching of treatment and control groups prior to intervention; use of same age cohorts to minimize the effect of

maturation; use of multiple measures; implementation plan to assure treatment fidelity; intervention contamination managed by limiting exposure to treatment and possible contamination due to outside influences monitored through teacher and administrator interviews at control schools. Selection and matching criteria are described below:

Treatment group A: All students at Scott's Branch High School (N~240) will receive the treatment by the beginning of the fourth year.

Control group A: Corresponding groups of students in a high school matched with Scott's Branch High School will comprise the control group (see School Matching Criteria, next page).

Treatment group B: This group will ultimately include 400 students enrolled in Colleton County High School (N~1600). During the first year, approximately 100 students enrolled in ninth grade will be a part of the treatment group with an additional 100 ninth graders added each year after. A two-step selection process will be used to establish the treatment group. At the beginning of the year, all ninth graders, parents, and guardians will be invited to attend a orientation session. Students will be given one week to indicate their interest in participating. From among these volunteers, a lottery will determine those who will be invited to participate. The orientation and lottery process will be repeated each year of the project.

Control group B1: This group will ultimately comprise 400 students enrolled in a high school matched with Colleton County High School. The control group students will be identified using a stratified random selection process.

Control groups B2 and B3: These groups will be established within Colleton County High School. Group B2 will be those who participated in the lottery but were not selected to participate. Group B3 will consist of Colleton County High School students who did not indicate a desire to participate. Control group B3 will be selected using characteristics of the students in

treatment group B. The rationale for including the internal control groups as part of the study is to answer questions that members of the greater Colleton community may have about the local impact of the program. Equivalent concerns related to the internal control groups will be documented to ensure that data are appropriately interpreted and reported.

School Matching Criteria: The following criteria will be used to match treatment and control schools: grade structure (grades served on the school campus); enrollment; graduation rate (as determined by SC DOE); dropout rate (as determined by SC DOE); progression and retention from 9th through 12th grades; number of students eligible for free and reduced lunches; racial/ethnic composition of student body; Absolute Index Rating (determined by SC DOE); percent enrolling in post-secondary education; community data; percent of adults completing high school; percent of adults with college degrees; family median income; unemployment rate.

Research Questions and Data Collection Methods: Data relating to evaluation questions 1 through 6 will be collected for the treatment and control groups. The qualitative data obtained through questions 7 and 8 will be collected for the treatment groups, and used to triangulate quantitative data, address design implementation fidelity, and provide descriptive information about the value of the program.

Evaluation Questions	Data Collection
Outcome Questions: 1. Are students meeting assessment standards as determined by state EOCT?	Compilation of EOCT data/annually
2. What is the dropout rate? How do dropout rates compare with national averages?	Compilation of dropout data/annually

<p>3. Starting with year 4, what is the graduation rate? How do these rates compare with national averages?</p>	<p>Compilation of graduation data/annually</p>
<p>4. Starting with program year four, what percent of graduating students (who participated in the treatment groups) enrolled in post-secondary institutions? How do enrollment rates compare with national averages?</p>	<p>Compilation of enrollment confirmation data/annually; Interviews with graduating students/annually</p>
<p>5. Are achievement gaps for the following sub-groups decreasing? If yes, what is the percentage of decrease?</p> <ul style="list-style-type: none"> -African American, Hispanic (Latino), and White -Students eligible for free/reduced meals 	<p>Compilation of EOCT data/annually; Compilation of demographic data/annually</p>
<p>6. How many college credits are being acquired by treatment group students? Starting with program year four, how many students are graduating with 12 or more hours of college credit?</p>	<p>Compilation of extant data/each semester (credits) and end of year (graduating students)</p>
<p>7. What are the perspectives about the intervention activities in which students are participating? What are the perspectives about the value and impact of the program? How do students perceive the impact that the program may have on their careers? How is the program impacting school attendance and behavior?</p>	<p>Compilation of survey data/ each semester; Compilation of focus groups data/ throughout year (at least 10% of students); Compilation of extant data (attendance and behavior) each grading period</p>

<p>Process Question:</p> <p>8. Is the program plan being implemented with fidelity to the proposed design? If not, what modifications have been made? What was the decision making process used to determine the modifications? Is the program plan, as modified, being implemented with fidelity? Do teachers and administrators have ownership in and value the project?</p> <p><i>Note:</i> The New Tech design includes rubrics to determine if implementation is going as planned (School Success Rubric, Yearly Benchmarks, Intervention Plan, Appendix J). The validity of the rubric results will be checked with data compiled by methods indicated in the next column.</p>	<p>Interviews with project staff/quarterly; Interviews with participating teachers and administrators/ one-ninth of teachers and all administrators each month; Observation of training activities/as activities occur; Observation of classroom activities/ one-ninth of teachers each month; Compilation of extant data/monthly</p>
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Research Hypotheses: Hypotheses (null) will be tested at the end of each project year:

H1: The NTN program will have no affect on achievement of high school students as measured by end of course tests, progression to graduation, and accumulation of college credit.

H2: The NTN program will have no affect on gaps in achievement for racial/ethnic groups [e.g. African-American, Hispanic (Latino), and White students or SES (free or reduced meals).

Data Analysis: Descriptive statistics will be calculated for observations and measures at the pre-test and post-test stages. The independent means T test will be used to test for differences in EOCT between treatment and control groups at the confidence interval of 95%. Effect size (r value) and standard error will be calculated. In the event that assumptions related to normal

distribution are not met, nonparametric statistics will be used. Logistic regression will be used to predict the impact of the program on the two (nominal) achievement variables, high school completion and accumulation of college credit. Odds ratio will be used to estimate effect size. A confidence interval of 95% will be established. Assumptions of linearity will be tested. Differences in means for EOC Tests for race/ethnicity and SES will be calculated using ANOVA. Assumptions for normal distribution will be tested.

(C)(3) Sufficient Resources, Responding to Cross-Project Evaluation Requests, and Reporting: The Evaluation Center at the University of West Georgia will serve as the independent evaluator (see section (D)(2)). The proposed evaluation budget is sufficient to implement the plan as proposed. The independent evaluator will respond to all requests regarding cross-project evaluation activities as requested by the U.S. Department of Education or its cross-site evaluation contractor. The evaluation team will provide monthly, quarterly and annual reports to the Project Director. The reports will summarize findings and make recommendation and will include the interview and observation protocols used. The lead evaluator will be available as a resource person for management team meetings. The management team will be responsible for reviewing all evaluation reports. The reports will be used to determine if program modification need to be made. If program modifications are made, the evaluation plan will be appropriately revisited.

Additional NTN evaluation/assessment: Though not part of the independent evaluator's protocol, NTN's rubrics, benchmarks, evaluations, and intervention strategies provide insight into the strength and depth of the program's STEM implementation (Appendix J).

D. QUALITY OF THE MANAGEMENT PLAN AND PERSONNEL

(D)(1) The management plan will achieve project objectives, including those related to scalability and sustainability, on time and within budget.

The Management Plan Will Ensure Objectives Are Achieved: The management plan is based on the NTN process, refined through its national and statewide implementations. The Project Director, in conjunction with NTN staff, will monitor project implementation and fiscal responsibility through the 2011-2012 Timeline of Activities outlined below:

Action Item	Involved Parties	Timeline	Responsible Party
Hire and assign project staff	KW and Riley Institute	12/2011	KW and Riley Institute Senior Staff
Conduct study tours of existing New Tech High schools	Teachers, Administrators, community members, parents, students	1/2012 - 2/2012	Facilitated by Project Director and NTN (NTN) Cultivation staff
Implement an emerging trends in education workshop	District Teachers and staff	2/2012	KW Staff
District designates Principal for the New Tech School	Superintendent and School Board	2/2012	Facilitated by Project Director and submitted to NTN School Development Staff
School team develops and submits final Master Plan for implementation	District Team	2/2012	In consultation with NTN School Development Staff and Project Director
NTN Site Visit to review Master Plan, facilities, technology plan, staffing, etc.	District Team, District Technology and facility staff	2/2012	NTN School Development Staff and Project Director
Assign School Development Coach to Schools	NTN	2/2012	NTN staff
Principal attends NTN Principal Residency	Principal	3/2012	Training facilitated by NTN School Development Staff
Teachers hired/assigned and attend a Shadowing Experience at a NTN	District, Principal, and Teachers	4/2012	Training facilitated by NTN School Development Staff

designated high school, NTN coach assigned			
Local NTHS staff attend New Schools Training Conference	Teachers and Principal	6/2012	Training conducted by NTN School Development Staff and NTN coaching staff
Local curriculum development for all Staff	Teachers and Principal	8/2012	Facilitated by Principal and NTN Coach and executed by teaching teams
New Tech High School Opens	Teachers and Principal	8/2012	District staff, teachers, and principal

Ongoing Services and Events as Part of Management Plan: NTN Coaches will provide personalized support to teachers, principals, and district leaders to ensure high fidelity implementation of the NTN model. NTN Coaches will provide ongoing technical support in topics such as PBL, school culture, intervention for struggling students, community and business partnerships, and other topics to support school development. Over the run of the grant, the NTN Coach will transfer capacity for instructional support and development to key teachers and leaders at the school. State and national networking and training opportunities will be provided including both regional and national training conferences.

The Management Plan will ensure achievement of the tasks related to the sustainability and scalability of the proposed project: KW and its subsidiary NTN are uniquely positioned to further develop and implement the New Tech model in SC. By project's end, final evaluation results and other findings associated with the proposed implementation of the NTN model will expand previously available data, provide further evidence of the model's effectiveness, and will be translated into refinements of the NTN model to create an effective, proven turnaround model for greatest impact in many similar low performing, economically disadvantaged rural areas in the state, region and nation. In the fifth year of the project, project schools will develop training sites designed to incubate and spread innovative, student-centered, PBL practices across the

region. The Riley Institute will work to build additional connections in the state and region. Expansion throughout the corridor and state will be facilitated by NTN's deep experience working with statewide intermediaries and networks in IN, NC and Michigan (MI).

The well developed NTN support infrastructure facilitates implementation with fidelity in diverse settings, and with far greater ease than other whole school transformation models. Successful expansion in IN, MI, NC, and TX indicates that the resources and expertise required to implement the project with fidelity within a state or region are available and indicates that school leaders and administrators find relative ease in implementation. The feasibility of replicating the NTN model nationally has been demonstrated in multiple settings as indicated in Section A, and the existence of sufficient resources and expertise to continue to do so is addressed in Section (B), Section (C) and Section (D)(2).

Opportunities Throughout the Region: Opportunities for replication will be increased by the presence of many high minority, economically disadvantaged rural schools in the I-95 corridor, SC, and the region in which the NTN rural turnaround model could be deployed. The project's emphasis on addressing aspirations, expectations and future opportunities enhances the model's scalability. Information about the model will be broadly disseminated.

(D)(2) The project director and key project personnel are qualified and experienced and possess deep experience managing projects of this size and scope The proposed project will impact two schools and approximately 640 students over the grant period. The size of the national New Tech network of 62 schools speaks to the ability of the KW and NTN management team to successfully implement projects of significant scale while producing effective results for students and teachers. KW is an education operating foundation, based in Cincinnati, Ohio, which serves as a vehicle to improve public education and increase educational opportunity. KW

has been in existence for 11 years and has significant expertise as a grantor and a grantee, serving as an aggregator of capital in Ohio with organizations such as the Bill & Melinda Gates Foundation and the U.S. DOE. KW has leveraged over \$100 million for its work. Part of the KW strategy is funding and supporting school development subsidiaries like NTN. NTN currently manages a national network of schools serving more than 8,500 students. NTN, as a subsidiary, has received and implemented significant grant-funded projects from the Bill & Melinda Gates Foundation, Carnegie Corporation, and the Hewlett Foundation. NTN has built the management and school development team, technology infrastructure, and expertise to manage a national network of 62 New Tech high schools and to add new schools in 2012. KW assists in this area through funding, lending executives, and providing operational support.

Applicant has experience in rural settings: About 25% of NTN's 62 high schools across 16 states are in rural settings. Two are in settings that combine the characteristics of the proposed project's setting (low achievement, high minority, and high poverty economically disadvantaged communities). Other settings are various combinations of those characteristics. For more about the success of NTN's rural models to date, see (A)(2)(ii) and (A3), component outcome four.

An exceptional team has been assembled to implement, manage and evaluate the proposed project: **Courtenay Williams** will serve as the project director. She has 16 years of experience in education as a classroom teacher, school administrator, college admissions counselor and director of policy-related projects, and directs the Riley Institute's statewide research project.

New Tech Network The NTN staff most focused on the planning, implementation, and ongoing development of the project schools follow. **Tim Presiado** is the Senior Director of New School Development. Tim's primary focus is to help cultivate and support new schools in the planning and implementation of the New Tech model. **Kristin Cuilla, Ph.D.** is the Director of New

School Development. In her role she focuses on cultivating and supporting new schools and developing strategic partnerships and in fostering effective district and intermediary relationships. **Kevin Gant** is a Senior School Development Coach for NTN with a specialty in STEM and will play a critical role with each of the project schools. He develops on-going professional development with schools and coaches teachers and leads the NTN STEM implementations. *The Superintendent's Team*, comprising **Rose Wilder, Ph.D.**, of Clarendon 1 and **Leila Williams, Ed.S.**, of Colleton 1, will add their respective local foci and counsel to the project management team. *The Riley Institute* The Riley Institute and its staff will play a critical role in coordinating and convening the project schools and staffs, and will execute the Regional Support plan to build and sustain support at the local and state level. **Don Gordon, Ph.D.** is Executive Director of the Riley Institute at Furman University. He has more than 40 years experience in education. Don will manage the Riley Institute's work with NTN and help build the state NT network. **Terry Peterson, Ph.D.** is a senior fellow at the Riley Institute. He is former Chief Education Counsel of the U. S. Department of Education and has deep roots in the I-95 corridor's education community. **Jacki Martin** is associate director of the Riley Institute. She has 18 years of experience of program management around community development issues and education in the government, nonprofit, and for profit sectors. She will assist in the management of the Riley Institute's work with NTN. *Evaluation Team* **Roy Forbes, Ph.D.** will lead the evaluation team. He is director of the Evaluation Center at the University of West Georgia. He has directed rural and urban education centers and was founding director of SERVE (the southeast's regional education research and development laboratory) and director of the National Assessment of Educational Progress.

Additional staff resumes and bios for personnel that will assist and coordinate in the implementation of this project are in Appendix F.

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