

Collaboration and Resources for Encouraging and Supporting Transformations
in Education (CREST-Ed)

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Competitive Preference Priority 1. Promoting STEM Education

Institutional collaboration to ensure that students in the COE who intend to teach STEM courses have access to courses that build appropriate content knowledge. The College of Education has a longstanding collaborative partnership with the College of Arts and Sciences. The recruitment pool for potential math and science teachers starts with students who are enrolled in programs housed in the College of Arts and Science or through the Bachelor of Science of Education (BSE) program in the College of Education. Students in both programs benefit from content offered through Arts and Sciences. This provides a basis for strong content knowledge for all teacher candidates to be highly qualified. Undergraduate course accessibility has been addressed through several initiatives, including a previous NSF grant, Partnership for Reform in Science and Mathematics (PRISM); current NSF Noyce Grants; a NASA Climate Change Education grant; and Studio Physics course delivery, design, and collaborative teaching of classes with faculty from Education and Arts and Sciences. The robust and positive partnership between the College of Arts and Sciences and the COE will ensure that STEM and other preservice teachers receive high quality preparation in content areas.

Increasing the opportunity for high quality preparation of, or professional development for, teachers and other educators of STEM. CREST-Ed participants will receive funds designated to specifically support STEM professional development for teachers at the school level. All teachers, interns, and residents will participate in the professional development opportunities designed by the teachers in consultation with GSU STEM faculty. Using the PDS Framework, offerings include: hands-on Project Based Learning (PBL), Co-teaching, and deeper math content. One example is the MILE (Mathematics Interactive Learning Environment) classroom developed by the Department of Mathematics and Statistics.

GSU is one of a growing number of universities integrating a new approach to teaching introductory college courses. The approach, called “roadmap to redesign” or R2R, replaces lectures with student-centered tutorials and uses a variety of learning resources such as an interactive software package that encourages active student learning.

As part of the plan to improve instruction in lower division courses at GSU, the Department of Mathematics and Statistics redesigned two courses that prepare students for the calculus sequence, College Algebra and Precalculus. The goal is to change the learning paradigm from "tell me" to "involve me" using a 50-50 mix of two pedagogies whereby a student is with an instructor 50% of the class time and in a classroom laboratory environment the other 50%. The learning environment is student-centered and not instructor-led. This type of instruction will be beneficial to both inservice and preservice teachers as it serves as an opportunity to deepen content knowledge as well as an example of innovative practice in delivering math instruction.

Increasing the number of individuals from underrepresented groups into STEM.

GSU is the state’s largest producer of teachers who are members of underrepresented populations. GSU has also been designated as a minority-serving institution by the federal government. Of the 32,000 students enrolled in the university, 38% are African American, 40% are White, 13% are Asian, and 8% are Hispanic. CREST-Ed will work to increase the number of individuals from underrepresented groups in STEM fields of study through collaborative initiatives that target students at the high school, prebaccalaureate, and graduate levels. At the high school level, programs such as the Academy for Future Teachers will continue to be implemented to support potential teacher candidates or professionals in STEM areas. AFT attracts a large number of students from underrepresented groups, approximately 90%. At the undergraduate and graduate levels, the NOYCE program targets underrepresented students.

Hands on and inquiry based STEM experiences for prospective teachers. Preservice teachers will participate in hands-on, inquiry-based STEM experiences through initiatives like the Project-based Learning resource with the National Commission on Teaching and America's Future and the MILE classroom.

Early and multiple field-based instructional experiences to provide exposure to a variety of teaching and learning environments and coordinated and aligned with teacher preparation curriculum. Clinical practice experiences and instructional foci across all of our teacher preparation coursework are structured intentionally to provide early and multiple field-based instructional experiences for prospective teachers that are structured to provide exposure to a variety of teaching and learning environments. These experiences vary significantly based on the population of candidates each program is designed to serve. The clinical practice and coursework are tailored and crafted with the context and experience of the candidates we serve. Our four-year Bachelor of Science in Education (BSE) undergraduate program is a large program focused on preparing high quality P-5 teachers who are reflective and prepared to teach in diverse settings. Over 350 teacher candidates are placed in 170 geographically and culturally diverse elementary schools across grade levels each semester. During the last 2 years of their degree program, teacher candidates participate in university coursework two full days per week and clinical experiences in elementary schools two full days per week (1200 hours across 2 years). Teacher candidates participate in a 2-week "opening school experience" to gain experience setting up a classroom and beginning the year. Additional programs of study that use this format include an undergraduate Birth through Five (B-5) program, an Urban Accelerated Certification and Masters (UACM) program, and Master of Arts in Teaching (MAT) program.

Competitive Preference Priority 2. Implementing Internationally Benchmarked College-and-Career-Ready Academic Standards

As a Race to the Top state, we are committed to developing standardized curricula that are aligned with the P-12 Common Core Standards. These efforts will be implemented within our teacher preparation programs (e.g., edTPA) as well as programs that impact secondary students as they matriculate towards post-secondary school options. CREST-Ed will support several initiatives within the COE and with our partner schools that promote Career Readiness with secondary students in the partnership, including Academy of Future Teachers and Early College. These programs work to provide support to students in STEM areas as they move towards their college experiences.

AFT is designed for bright, talented, and diverse high school students considering a career teaching math or science in an urban environment or a math or science career track. In AFT, students collaborate with outstanding public school teachers and with university faculty developing teaching and tutoring skills, participating in field trips, and building an appreciation for the value of professional and academic preparation. During this rigorous and intense 3-week summer experience, math and science concepts are reinforced as participants practice presentation skills which they demonstrate as they teach fellow students.

Since its inception, the number of students in the program has remained near capacity with 461 students completing the program, including 104 who returned for a second year to further their skills. Annual program evaluations, conference presentations, and publications have formally documented the effects of the AFT program and are the sources of the following data and findings. Of all students, 83% report likely going into a STEM field (AFT, 2012). In considering a field of study including or other than education, 45% said they were interested in a

science field and 32% were interested in a career in mathematics (Puvirajah, Martin-Hansen, & Verma, 2012).

Early College is a program that was developed through partnership between Atlanta Public Schools and Georgia State University and focuses on Carver High School and Booker T. Washington High School. This program blends high school and college in a rigorous, yet supportive environment. The Early College Program compresses the time that it takes for students to earn a high school diploma and to complete the first 2 years of college. This initiative is especially beneficial to youth from underserved and low-income communities as it allows students to experience the social and academic structures of college with lowered long-term expenses. Outcomes of this program include higher self-efficacy among students, higher levels of overall academic achievement, and attendance rates that exceed that of the school district.

Since Spring of 2007, GSU has served over 500 Early College students at the rate of approximately 130 students per semester. Eighty-seven percent of the students in the Spring 2013 cohort enrolled in a two or four year institution of higher education for the 2013-2014 academic term and received \$10 million in scholarships.

The Early College and AFT programs provide the structures necessary to help students develop the skills for college and career readiness. In order to support the readiness skills of high school students throughout the state, CREST-Ed will support our rural and HBCU partners (Columbus State University and Albany State University, respectively) in replicating the AFT initiative on their campuses.

Of the two models, the AFT model will use teacher residents (GSU and CSU) and student teachers (ASU) to serve as the co-teachers and leaders for these three-week experiences. This

will further their opportunity to practice teaching high-need students and deepening their knowledge of the content in their area of study.

PROJECT SIGNIFICANCE

The need for high quality teachers in shortage areas is widely noted as persistent and on-going (Brownell, Sindelar, Kiely, & Danielson, 2010). The areas of math, science, special education, and ESOL continue to lack personnel who can supply this demand, throughout the nation and particularly in Georgia (allEducationSchools, 2014; U.S. Department of Education, 2014). Thus, the primary goal of our proposed initiative, **Collaboration and Resources for Encouraging and Supporting Transformations in Education** (CREST-Ed), is to increase the number of highly qualified teachers who are committed to high-need schools. Project activities present an exceptional approach to the absolute priorities and both competitive preference priorities established for this competition: (a) enhancing prebaccalaureate teacher preparation programs; (b) enhancing postbaccalaureate teacher preparation programs through residencies; (c) promoting Science, Technology, Engineering and Mathematics (STEM) education; and (d) supporting the implementation of internationally benchmarked, college and career readiness academic standards. A comprehensive induction and mentor program, enhanced professional development school partnerships, and collaborative development of parent engagement strategies will complement these initiatives.

CREST-Ed Partners include five urban school district partners, the National Commission on Teaching and America's Future (NCTAF), Albany State University (a rural, Historically Black College [ASU]), and Columbus State University (a rural institution [CSU]). Twenty-three rural schools districts will partner with our rural universities (19 with CSU and 4 with ASU).

The CREST-Ed project is a data-driven initiative that will offer resources to address the needs of our partners and learners by preparing high-quality, new teachers and bolstering the existing workforce through targeted professional development.

Needs Assessment. To prepare for the TQP grant competition, we met with partners from our 2009-2014 TQP program, NET-Q. Participants included university leaders (Associate Dean for Partnerships, research-evaluation leaders, department chairs, coaches in residence and participants from previous TQP grant); P-12 district leaders, (i.e., superintendents or their designees); and leaders from curriculum, research/planning, and professional learning. From these meetings, we were able to identify new and continuing areas of need in which the partners wanted to garner support for professional development and teacher preparation. Those areas included: STEM teacher residencies, special education (co-teaching and inclusion), English Language Learners, induction (including Cross Career Learning Communities [CCLCs] and other new teacher mentoring and support initiatives), teacher and family capacity building, and advanced credentialing support.

Building Capacity. Based on the information gathered from our partners, we have designed several elements of this project to contribute to capacity building, including targeted placements of teacher residencies, district sponsored residency programs, professional development, and social network evaluation. This process will contribute new educators to communities in which they have familiarity with the cultural and local assets. Districts have expressed an interest in implementing their own residency models using individuals who are trained within their systems.

Another area in which local capacity building can occur is through the professional development structure that will be facilitated by GSU and school district faculty. This process

will allow for training that builds local expertise so that professionals are able to redeliver content and to support each other in implementing high quality, evidence-based practices.

Social Network Evaluation provides insight into how the community works together to use resources in ways that strengthen support. Using these processes, the overall feasibility and sustainability of the project will be enhanced.

System Improvement. Teaching residency programs align with new requirements that are outlined by the Georgia Professional Standards Commission and the Georgia Department of Education (GaDOE) that will require all teacher candidates to participate in an opening and closing school experience. This new requirement creates an opportunity to situate a well-designed teacher residency into the regular teacher preparation and induction process in Georgia. With CREST-Ed, we will be able to demonstrate the efficacy of the teaching residency model, potentially leading to a statewide reform of teacher preparation practices and standards.

High-need Fields. The STEM achievement gaps in Georgia remain significant and highlight an urgent need for highly qualified math and science teachers. As few as 12% of new teachers are certified for secondary-level STEM areas, yet almost half (49%) of the 2013 middle and secondary teaching vacancies are STEM positions. Troubling percentages of math (14%) and science (15%) teachers in Georgia are teaching without full certification in their content area. According to the GAPSC, STEM areas will need 2,247 teachers. In 2013, the projected number of teachers who would complete programs in STEM areas was 1,209. The impact of these shortages is especially magnified in rural areas.

Student performance in the STEM areas demonstrates room for improvement as well. For example, 29% of 8th grade mathematics students in Georgia scored at or above the proficient level in mathematics on the 2013 National Assessment of Educational Progress (NAEP), lagging

far behind the national average of 34%. In high-poverty schools, the 8th-grade NAEP math tests show an average of 23 points lower for Georgia. On the high school End of Course Test (EOCT), 63% of Georgia students did not satisfy the algebra standards; algebra is a gateway course for advanced mathematics. In addition, 79% of African American students and 71% of Hispanic students scored below the national standard. These data indicate that immediate and focused attention must be provided in the preparation of teachers in STEM areas.

The CREST-Ed project also will address teacher preparation in special education, specifically science and math instruction for students with exceptionalities. Highly Qualified (Hi-Q) data from the GAPSC show a need for increasing the number of Hi-Q special education teachers locally and nationally. Of particular concern are the following CREST-Ed school systems, where the percentages are the percent of Hi-Q special education teachers: Clayton (82.6%), DeKalb (82.9%), Fulton (76.4%), Dougherty (50.0%), and Mitchell (83.5%).

Furthermore, special education constitutes the second largest shortage area of teachers in Georgia with, for example, 43.2% of elementary special education instructors not fully certified (GAPSC, 2009). Additionally, the GADOE is implementing a mandate that more students be placed in inclusive settings (i.e., the general education classroom). Thus, general education teachers must have knowledge, skills, and strategies to accommodate diverse students' needs. Almost every teacher, special education certified or not, will encounter students with special needs in any given academic year.

Additionally, Georgia has one of the fastest growing non-English-speaking populations in the nation and is vastly underprepared to meet the needs of these students (Maxwell, 2009). According to the 2010-2011 State Report Card, 67,499 students were enrolled in ESOL programs compared to an enrollment of 48,419 students in 2005-2006 (Governor's Office of

Student Achievement, 2014). Like many states, Georgia faces a shortage of teachers specializing in English as a Second Language and currently is experiencing a “teacher gap” (Honawar, 2009). About one in six ESOL students in Georgia are not served by ESOL teachers (GPSC, 2009); evidence suggests that this need will at least double in the next 5 years (Honawar, 2009; Manzo, 2009). The majority of these teachers will be needed in the metro-Atlanta area. The CREST-Ed program will support the development of preservice and inservice teachers to meet the apparent needs among learners in the areas of STEM, ELL, and Special Education.

Project Design

Theoretical Background. The CREST-Ed project design is grounded in research which strongly suggests that the residency model has a significant impact on the quality of new teachers entering the field (Urban Teacher Residency United, 2014). Also pre-bacc and post-bacc reform around extended field experience and hands-on experiential activities in STEM university classes has been shown to increase the number of underrepresented students entering STEM fields (Drake, Moran, Sachs, Angelov, & Wheeler, 2011). The theory of change (see Logic Model, p.11) which CREST-Ed is using is that STEM, Special Education, and ELL teachers can best improve their teaching skills through on-going, sustained collaboration within a specialized professional learning community (i.e., Cross Career Learning Community) embedded in the schools (Hargreaves & Fullen, 2013). All elements of the project design have been strategically chosen to enhance teacher preparation at the P-12 and university levels. The most current and up-to-date research and theory to practice has been used as the framework for CREST-Ed. The theory of change is presented in the Logic Model below.

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Program: CREST-Ed Project Logic Model

Situation: The CREST-Ed project offers a pre-baccalaureate program, a teacher residency program, enhanced STEM projects and learning applications, TIP/AAR student achievement projects, CCLC membership for residents, beginning, and veteran teachers, and induction/retention strategies and practices for the partnership LEAs. The overall goal of the CREST-Ed project is to improve the preparation and daily application of teaching and learning by transforming the educational process at the university and partner districts to have a STEM focus using inquiry learning.

Inputs	Activities	Outputs	Participation	Outcomes -- Impact		
				Short-Term	Medium-Term	Long-Term
<p>University Partners Georgia State Albany State Columbus State</p> <p>Partner LEAs <i>Urban</i> Atlanta Public Schools DeKalb County Schools Fulton County Schools Clayton County Schools Gwinnett County Schools</p> <p><i>Rural</i> Mitchell County Schools Dougherty County Schools Calhoun County Schools Terrell County Schools</p> <p>National Commission on Teaching and America's Future (NCTAF)</p>	<p>Pre-Baccalaureate Teacher Preparation Programs</p> <p>Teacher Residency Masters Programs</p> <p>STEM focused Professional Development(i.e. NCTAF STEM Learning Studios)</p> <p>TIP/AAR Student Achievement Projects Supporting Internationally Benchmarked Educational Standards (CCPS)</p> <p>Academy of Future Teachers Projects</p> <p>CCLC Groups</p> <p>Social Network Breakfast</p>	<p>The Pre-Baccalaureate Program will place more than 50 pre-service and student teachers per year in partnership LEAs.</p> <p>Following a rigorous acceptance process, 20 Residents will be placed in STEM and Special Education classrooms in the partnership LEAs.</p> <p>300 to 500 Math and Science teachers in partnership schools will be offered STEM focused professional development</p> <p>90% of the Residents will participate in a TIP group and conduct an AAR project with the assigned class.</p> <p>50 students will be accepted for AFT at GSU, ASU and CSU will initiate AFT projects accepting up to 30 students in each program.</p> <p>Up to 10 CCLC leaders will receive training and up to 100 new members from partnership LEAs will participate</p> <p>40 to 50 participants per participating school</p>	<p>Program Completers 85% Hired by Partner LEA 50%</p> <p>Program Completers 90% Hired by Partner LEA 80%</p> <p>Introduce STEM educational pedagogy in partnership schools</p> <p>Provide a framework for evidence-based teaching supporting internationally benchmarked educational standards (CCPS)</p> <p>Introduce STEM training to K-12 Secondary Students in both Urban and Rural Partners.</p> <p>Increase probability of teacher retention, extend induction to two or more years as needed, strengthen teacher pedagogy, and collaboration skills.</p> <p>Facilitate connections between community, school, parents, and partnership</p>	<p>Retained by LEA 70%</p> <p>Retained by LEA 80%</p> <p>Enhance STEM educational pedagogy in partnership schools</p> <p>Support integration of AAR results supporting internationally benchmarked educational standards (CCPS)</p> <p>Enhance STEM training for K-12 Secondary Students in both Urban and Rural Partners.</p> <p>Increase probability of teacher retention, extend induction to two or more years as needed, strengthen teacher pedagogy, and collaboration skills</p> <p>Enhance connections between community, school, parents, and partnership</p>	<p>Retained by LEA 70%</p> <p>Retained by LEA 80%</p> <p>Extend STEM educational pedagogy beyond the partnership schools</p> <p>Replicate research and evidence-based learning for schools that supports internationally benchmarked educational standards (CCPS)</p> <p>Extend STEM training to K-12 Students beyond the partnership LEAs</p> <p>Increase probability of teacher retention, extend induction to two or more years as needed, strengthen teacher pedagogy, and collaboration skills</p> <p>Maintain and encourage new connections between community, school, parents, and partnership</p>	

Assumptions: The number of partners may increase or change within the grant period. Any LEA must meet TQP eligibility guidelines to be considered.

External Factors: Georgia has adopted the Common Core Performance Standards (CCPS) which are internationally benchmarked educational standards. This project will help to implement, and integrate these educational standards.

The framework for the theory of change for CREST-Ed involves three core developmental steps at all P-12 and university levels.

1. *Deepening Knowledge.* Engagement in math and science will help to provide rich experiences for students in the STEM area. Research has shown that experiential educational activities provide for deeper more sustained learning for students. CREST-Ed Teachers will receive a strong foundation in project-based learning and the theory and pedagogy that support it.
2. *Changing Values.* Through pre and post bacc reform, use of the residency model in science and math classes, use of STEM project based activities, ongoing teacher professional development and continuous improvement of instructional practice, residents, and in-service teachers will increase their knowledge of the inclusion of experiential STEM activities.
3. *Developing Skills.* CREST-Ed will provide professional development activities focused on STEM teaching skills, ESOL practices, and Special Education for pre- and post-bacc teachers. Acquisition of these skills will strengthen the quality of the teachers being trained to work in high needs schools. Participation in CCLC professional learning communities will further build the resident teacher's skills while providing a renewal opportunity for veteran teachers.

CREST-Ed's theory of change posits that long-term and sustained teacher learning within collaborative partnerships will develop knowledge of experiential, project based learning in STEM classrooms. These activities coupled with CCLC professional learning communities, ESOL and Special Education pedagogy will enhance teacher practices and increase academic achievement.

Program Strength. The CREST-Ed project will impact both pre- and post-bacc programs through several reforms which will produce teachers for urban and rural settings. In the pre-bacc preparation program housed in the Early Childhood Education (ECE) department, CREST-Ed will support reform in a fifth-year, initial certification program that recruits paraprofessionals currently serving in classrooms (*Absolute Priority 1*). Through this program, structures will be developed to coach candidates across two academic years as they work with children and earn their teaching certification and degree. Program foci will include integrating technology, language and literacy instruction, pedagogy for teaching students with disabilities, and co-teaching. Content within these courses will align with state and national Early Childhood standards. Through connections with the districts and with principals, we hope to create capacity and diversification of the teaching force in the community by recruiting, supporting, and certifying paraprofessionals who are culturally and linguistically more representative of the learners in their schools. We intend to recruit paraprofessionals who are embedded in the refugee community and can support other teachers, families, and students by acting as cultural navigators and translators. Further, we can subsidize their educational endeavors, provide additional structures of support for their pedagogy, and promote sustainability in the community.

The hallmark component of the CREST-Ed project is the teacher residency (*Absolute Priority 2*). Residencies will allow preservice teacher candidates to develop as teachers over the course of a year in a supportive and collaborative cohort. Throughout the full academic year, residents progress through rigorous, research-based, and fully accredited master's level coursework to enrich their learning. They also benefit from the complementary levels of mentoring and instruction and fully engage with content. Retention data from the previous teacher residency program supported through a TQP (2009) indicates that the GSU model

integrates a quality, intensity, and duration that produces well-prepared teachers who remain in the field. The three cohorts of students completing the program through the NET-Q program have retention rates of 89%, 88%, and 91%, respectively, 3-years after graduation. The fourth cohort of students completing their teacher preparation programs in the current academic term has an employment rate of 100%.

Teacher Residency. The CREST-Ed Teacher Residency program will expand on the NET-Q residency model, combining reputable, data-driven post-bacc programs that will improve teacher recruitment to help alleviate the teacher shortages in high-need subject areas (ie., math, science, special education, and ESOL) and schools. We will recruit additional applicants to our field-based programs from relevant occupations, former military personnel, and under-represented populations who will teach in urban and rural settings. The proposed CREST-Ed Teacher Residency framework integrates co-teaching and a strong cohort structure based on the foundation of school-based CCLCs. The residency program culminates in initial teaching certification and a master's degree.

Collaborative cohort structure. The CREST-Ed Teacher Residency cohort structure enables residents to learn through collaboration (Kesner, Collier, & Meyers, 2003) and co-teaching (Bryant-Davis, Dieker, Pearl, Kirkpatrick, 2012; Graziano & Navarrete, 2012) with highly qualified, experienced mentor teachers. One goal is to establish multiple placements at the same school or school cluster (elementary, middle, and high schools) so collaboration is ongoing and facilitated by physical proximity. However, the needs of each school will determine the specific number of placements. Systematic cohort collaboration will occur via professional learning communities. Cross Career Learning Communities are school-based, small, learning communities dedicated to the collaborative analysis of teaching, learning, and assessment

practices in the service of increased student achievement. They also provide support for the successful induction and retention of new teachers (Hunt, 2009). Through the framework of CCLC, residents and mentors work together to reflect on their own practice, their students' work, and their beliefs about teaching and learning as a mechanism to develop professionally and to use their human and material resources effectively. Residents and CREST-Ed faculty will be supported in developing these professional learning communities by nationally recognized facilitators during initial 2-day training and throughout the course of the residency experience. The collaborative cohort structure of CREST-Ed is focused on research-driven methodology, formative assessment, problem-based instruction, and evaluation. Through the cohort structure, the residents have opportunities to share their successes, concerns, and questions with peers, program graduates, and mentor teachers.

Residency design. The CREST-Ed Teacher Residency provides effective preservice preparation through innovative and comprehensive structures. Each residency program is grounded in research and requires content and pedagogical courses that infuse Special Education, ELL strategies, technology, and literacy across the content areas. Key components of the CREST-Ed Teacher Residency are strong cohort structures, highly qualified mentors, year-long teaching apprenticeships, and comprehensive induction. Each GSU cohort will have 15 CREST-Ed teacher residents who will be allocated based on partnership school and system hiring needs and objectives. The residency will begin with two required methodology courses during the first summer semester and continue through the first 3 semesters of the program when residents complete required methodology and apprenticeship credit hours. Residents will benefit from the cohort structure of the programs and through digital communication and collaboration, which

will continue through induction. The Columbus State University (CSU) implementation will include 5 residents following the same structure.

Coursework will support and complement the residents' teaching and experiential learning. The content focus of the teacher residency program will include middle and secondary level math, science, ESOL, early childhood education, and/or special education. Several courses will offer site-based instruction, co-instruction by P-12 educators, and co-instruction with special education faculty. Residents will benefit from authentic learning with educators who are experienced in content area instruction and special education. Courses will emphasize pedagogical approaches that are grounded in research, embedded with ELL strategies, and supported by inquiry and formative assessment. All Teacher Residents will complete inquiry projects and edTPA requirements during the year-long clinical experience. Also, their teaching proficiency will be evaluated using the Teacher Keys Effectiveness System (GaDOE, 2013).

The CREST-Ed Teacher Residency is also designed for residents to return to campus weekly (Wednesdays) for specialized seminars based on the CCLC framework. This model was implemented with teacher residents in the previous TQP grant (2009). TQP faculty identified a need for professional development that supported collaboration and communities of learning. As such, this initiative was translated from a practice primarily used with in-service teachers to one that was implemented with preservice teacher residents to support their development. This model will continue to be used within the CREST-Ed project. We will continue to integrate this practice and to use this structure to support the completion of edTPA certification requirements.

Selection of teacher residents. Recruiting individuals from underrepresented populations to teach in high need partnership schools, rural communities and teacher shortage areas will be emphasized. Recruitment will focus on mid-career professionals from other occupations, former

military personnel, and recent college graduates with a record of academic distinction. Partner districts will assist with recruitment through their various communities and communication resources.

All candidates who meet GSU's College of Education and departmental admissions criteria are invited to take part in the CREST-Ed Teacher Residency interview process. Applicants must have a minimum 3.0 undergraduate grade point average. Strong content knowledge or record of accomplishment in the field or subject area to be taught are required (as documented by an undergraduate degree in an associated content area or equivalent experience). Strong verbal and written communication skills are required and may be demonstrated by performance on appropriate tests (e.g., GACE, GRE) and interviews. Official college and university transcripts will be evaluated to determine whether each applicant satisfies content area requirements for admission. Applicants must also submit (a) two letters of recommendation, including one academic or professional letter; (b) a resume; and (c) other requirements that may be specified by the faculty. Applicants must provide a writing sample on a topic related to teaching in a high-need school, which will be scored based on content and clarity. University faculty members from the College of Education, P-12 representatives and CREST-Ed faculty will interview Teacher Residency applicants. Admission decisions will be communicated by early May, and required coursework will begin in June, with an option to attend May semester elective classes.

Terms and conditions. The resident salary shall be a living wage stipend of [REDACTED] (urban) or [REDACTED] (rural) for a period of one year. The application for salary will satisfy the federal grant and university/state requirements as follows: (a) The applicant must provide proof of U.S. citizenship or be a permanent resident; (b) The applicant must agree to serve as a full-

time teacher for a minimum of 3 academic years immediately after successfully completing the 1-year teaching residency program; (c) The teaching resident must fulfill the teaching requirement in a high-needs school and teach a subject or area that is designated as high need by the partnership and submit verification of his or her teaching and the preceding requirements with the district; (d) Each year of service, the teaching resident must provide the partnership an official certificate (verified by the LEA's chief employment administrative officer for service at the beginning and/or completion of each year or partial year of service); (e) The certification and graduation components of the programs must meet or exceed the requirement of being highly qualified teachers and the service obligation will not begin until residents become fully certified teachers; and (f) The applicant must comply with the requirements set by the partnership if the applicant is unable or unwilling to complete the service obligation. Should a teaching resident not meet his or her service obligation, the interest rate that applies to repayment of all scholarship support will be "the prevailing rate [established by the U.S. Treasury] at the time a repayment schedule is established." Coordinated induction efforts will be put into place for both residents and teacher education graduates following the successful completion of their preparation programs.

High quality mentor recruitment and training. CREST-Ed Teacher Residents will be supported by highly qualified mentors who will be rigorously selected and trained. A mentor coordinator will collaborate with partnership schools to facilitate this process. The CREST-Ed Teacher Residency mentor training will include reviewing the needs and development of residents, examining cases, problem-solving, responding, and exploring ways to develop collegial relationships with constructive feedback.

The mentoring model that will be used in the CREST-Ed initiative will start with a systematic selection process, an ongoing needs assessment, and year-long professional development seminars. In the selection process, each mentor will be required to (a) hold a valid, renewable teaching certificate; (b) have at least 3 years of successful experience in his or her subject area; (c) have a solid content knowledge of the current curriculum and related assessment measures; (d) demonstrate outstanding instructional skills and technology use; (e) model effective interpersonal and communication skills with colleagues and families; (f) demonstrate effective classroom management practices in inclusive settings; and (g) collect and use data for instructional decision-making. Upon identifying potential mentors who meet these criteria, we will guide them through a needs assessments that will illuminate areas that they feel could contribute to their growth and will demonstrate their capacity to participate in activities related to the project and commit the necessary time and resources to honing their own skills and to mentoring a preservice teacher. Mentors will receive a stipend of [REDACTED] and release time.

As with the resident professional development sequence, the foundation of the mentor series will be rooted in the practices of CCLC such that mentors will have an opportunity to reflect on their previous and current practices in order to identify and share the skill set that has contributed to their success as effective teachers. Additionally, this model of professional development will allow for a structured format for exploring new topics that will lead to further professional growth in areas of content and in mentoring. The content that will support these monthly meetings will include the modules from the website www.mentormodules.com, developed for the previous TQP project.

Mentors will meet monthly at a local school site. CREST-Ed faculty, district/state affiliates, or recognized leaders with relevant expertise in the field will facilitate these sessions.

Sample session topics are edTPA, instruction using evidence-based practices (EBPs), inclusive practices with an emphasis on universal design for learning (UDL) differentiated instruction, and models of co-teaching.

Evaluation of the mentor professional development series will be two-fold. First, mentors will provide feedback that will include review and reflection on program efficacy, recommendations, implications for program scale-up, and sustainability. Second, to promote reflection and continued professional goal setting, mentors will develop individual growth goals and benchmarks that can be supported by CREST-Ed faculty into future academic terms. The ongoing needs assessment will include a mutual determination of need in which the mentors state the gaps in their professional development that will help them be more successful in their mentorship and in their delivery of instruction.

Data-based mentor-resident pairings. CREST-Ed is taking an innovative and data-driven approach to our Mentor-Resident dyads by investigating the degree of match using the Myers-Briggs Type Indicator-Form M (MBTI, 1998). The MBTI is one of the most widely used psychological tests today (Gardner & Martinko, 1996; Offerman & Spiros, 2001) in several areas, including academic advising, career counseling (Johnson, Johnson, Murphy, Weiss, & Zimmerman, 1998), and leadership development (Kiel, Rimmer, Williams, & Doyle, 1996). Through this process, both the teacher resident and mentor will complete the MBTI prior to the start of placement. Ideally, partnerships would be made based on these data. Data will be analyzed at the end of the residency to determine if the success of the experience was predictable through outcomes on the MBTI measure. This practice may establish a more data-based procedure for pairing preservice teachers and mentors.

Residents' impact on student achievement. Since receiving the PDS² grant from the U.S. Department of Education in 2004 and the NET-Q grant from the U.S. Department of Education in 2009, GSU administrators and faculty have been working with the research directors, teachers, principals, and other personnel of four school systems involved in the partnership to develop the Teacher-Intern-Professor (TIP) model. TIP members work together through co-planning, data collection, and co-instruction to address the student needs identified in their classroom. Teaching interns are given the opportunity to work both with their classroom teacher and university professor to help strengthen their teaching experiences. Anchor Action Research will be integrated into TIP in the current project and is further discussed in the evaluation section (p. 42).

Additionally, teacher residents will serve as the teachers for the Academy for Future Teachers (AFT) program implemented at GSU and in programs germinating in rural partner schools. In previous AFT implementations, teachers from the partner schools have served in the role of content specialists. Residents will work as either teachers or research assistants. This experience will give teacher residents the opportunity to continue implementing STEM-related, evidence-based practices with diverse student populations. Teacher Residents will have the opportunity to assist in analyzing data related to student achievement and program validity.

Collaboration to Maximize Effectiveness. PDS partnerships between schools and universities can take many shapes. Aligned with the goal of the professional development schools (Bohan & Many, 2011; Holmes Group, 1986), we intend to continue to support and build capacity in our partner schools through facilitation of meaningful, generative, and contextually situated learning opportunities. Evaluations of high-quality PDSs indicate that the partnership should include (a) intern and field-based course experiences for prospective teachers, (b) collaborative induction for beginning teachers, (c) professional development for experienced,

practicing teachers, (d) ongoing opportunities for improved P-12 student learning, and (e) school-based inquiry for student equity and achievement (Dangel et al., 2009; U.S. Department of Education, 2009). Having worked with PDSs for the past 10 years, the GSU team has found that university involvement in the schools has helped professors to bridge the research to practice gap and to integrate work with P-12 students as part of courses through field-based, clinical opportunities (Dangel et al., 2009). The PDS² grant has also shown positive effects on student learning and teacher retention (U.S. Department of Education, 2009).

CREST-Ed will bolster existing PDS partnerships by (1) supporting professional development in STEM areas, (2) supporting induction initiatives between the COE and partner districts, providing an annual Teacher Transformation Institute, and (3) tailoring services to provide on-going support for practicing teachers. While the focus of these initiatives may take a number of forms (depending upon the articulated need of the school leaders and community stakeholders), all of these initiatives will focus on supporting the development of teachers on behalf of the holistic development and support of learners.

Professional development in STEM. NCTAF will provide resources for the future teachers in the GSU residency program by providing tools and protocols NCTAF has developed to implement and assess the Next Generation Science Standards. NCTAF is uniquely qualified to provide support to the GSU residency programs. Their 5-year demonstration project, known as STEM Learning Studios, created project-based learning environments in which 4-6 teachers within the same school work in interdisciplinary, cross-curricular teams to develop and implement projects that align to their current STEM curriculum and standards. With support from the Carnegie Corporation, NCTAF is building a Schools Organized for Success Toolkit, which will feature the tools developed and tested during the implementation of the STEM

Learning Studios as well as case studies about the teams and teachers who worked in the Studios over the years. The toolkit will include agendas, discussion protocols, curriculum maps, tools to facilitate discussions among teachers about the Next Generation Science Standards, and teacher-written case studies about implementing project-based learning within their professional learning communities.

Over the course of CREST-Ed, NCTAF will work with GSU to provide resources from the toolkit and professional development materials and guidance, including the deployment of an online mini course in year 1 for all of the residents around the use of new technologies in STEM teaching. NCTAF will also test tools from the Schools Organized for Success Toolkit with the teacher residents in years 1 and 3 and develop case studies for dissemination in years 2 and 4 about the use of these tools in preparing the next generation of STEM teachers. In year 3, we will develop an online tutorial focused on use of the toolkit resources. Year 5 support will be focused on delivery of the tools as adapted for the student teachers as well as dissemination of these tools and case studies to a national audience through the NCTAF Commission. The use of technology to support teacher learning will increase the sustainability of the project beyond the 5 year funding period.

Induction initiatives. A common and frequent need expressed by candidates, graduates, and faculty across programs is the need for a more comprehensive and intentional induction plan, which can offer meaningful, generative, and context-/need- specific support to teachers in our community, whether they have graduated recently from one of our programs or decades ago in another state. CREST-Ed's induction plan will support teacher candidates for 2 years beyond graduation. During their final residency year, candidates will work with a district coordinator, who will support them as they complete the edTPA evaluation process, participate in CCLCs,

and establish effective learning environments upon successfully securing professional teaching assignments. These supports will be available to all candidates who are placed in high-needs partnership schools. GSU will support these global efforts through the Professional Education Faculty (PEF) structure, a collaborative body that represents all teacher preparation programs within the university. Formalized induction processes will include monthly gatherings, both face-to-face and virtual, that will address topics, such as selecting and implementing evidence-based practices, working with diverse student populations, collaborating with colleagues effectively, and developing sustainable resources for student achievement.

Faculty who participate in facilitating this process will include 50/50 district coordinators, who work half time with the university and half-time with the school districts. They will work with local school administrators to identify veteran teachers who can support the GSU teacher candidates as they enter into their first 2 years of teaching. The workload credit will be factored into the position of the 50/50 coordinator permitting that these responsibilities can be carried out successfully with the current group and towards creating a sustainable structure beyond the CREST-Ed initiative. Establishing this robust network of teacher leaders will support our candidates as they develop professional capital (Hargreaves & Fullen, 2013). Additionally, this process will allow our candidates to develop skills that will make them successful within the state's new tiered certification system, in which teacher leadership is an essential skill to matriculate towards more advanced certification levels.

Teacher Transformation Institute. As part of the CREST-Ed grant, each summer GSU will host an annual 1-day Teacher Transformation Institute for all faculty, graduate students, practicing teachers and leaders, and prospective teachers involved in the partnership. This institute will be conducted using a professional conference format and provide opportunities to

share innovative strategies and initiatives to preservice, inservice, district level administrators, and university faculty through the partnership. Under the NET-Q grant, this symposium has been widely attended and eagerly awaited each year. On average, over 100 participants gathered to participate in this experience through the previous TQP grant activities. Overall, participants have rated sessions as having a high “contribution to my knowledge on the topic.” Sessions have included topics such as effective use of social media for learning, instructional classroom management, co-teaching, and ethics.

Tailored Menu of Services. To ensure that the partners are serving each other well, participating districts and GSU have co-created a menu of options for PDSs. The menu will be used by districts to select initiatives that will best meet the needs of the stakeholders in the PDS schools. The menu items will include Cross Career Learning Communities (CCLC), Bullying Education, Project-based Learning, Wellness and Whole Child Initiative, and Practitioner Learning Communities. A description of these initiatives can be found in Appendix H.

Sustainability. Resources to operate the project beyond the length of the grant will come from GSU, the participating school districts, and their respective communities. Letters of support from respective groups are available in Appendix E.

Georgia State University. University contributions include the institutionalization of the extended field experience and a quasi-residential model as part of the pre- and post-bacc reform. This change is underway in order to meet the updated Georgia Standards for teacher preparation programs. In addition, we are seeking support from local and national foundations such as The Arthur Vinings Davis Foundation, Integral New Schools Atlanta Foundation, and Synovia Bank Foundation in order to continue the residency model in its full form.

School Districts. Meetings have been held with Human Resources Directors from the three districts participating in the residency component, and they have expressed an interest on the part of their respective districts to explore the repurposing of funds to continue the residency model beyond the grant funding cycle. For example, one district collaboratively implemented a pilot residency model using Georgia Race to the Top Funds, which have since been depleted. There is great potential in the hybridization of the residency model to meet the individual and unique needs of each district.

Community. Because of the importance of community support, the Social Network component, which is a unique feature of CREST-Ed, will be used to identify local businesses and organizations that may be interested in supporting the continuation of the residency program. These groups will be invited to participate in meetings about project activities well in advance of the end of the project so they can see how their financial and other contributions could help maintain a strong teaching force in participating schools.

Table 1. Multiyear Financial and Operating Model (Sustainability)

Lead Source	Activity (Years 6-10)	Outcome
Georgia State	Continue residency model with university	A cadre of well-qualified
University	support. This will be achieved through student tuition and/or TEACH grants.	teachers trained in the residency model.
School System(s)	Each year, an additional school system will commit to extending support of teacher residencies through repurposing of funds.	Five school systems' having institutionalized teacher residencies.
Community Sponsors	Each year, two additional community sponsors (e.g., businesses, organizations)	Ten community sponsors for teacher residencies.

will commit to supporting a designated number of residents annually.

CREST-Ed Partners include five urban school system partners, four rural school system partners, Albany State University, Columbus State University, and the National Commission on Teaching and America's Future. The GSU College of Education has established and sustained successful and productive partnerships for many of these partners for more than 10 years. These ongoing relationships are a testament to the mutually beneficial work that is completed in an effort to support best practices in teaching and learning. The letters of support in Appendix E reflect the depth and breadth of the commitment to the CREST-Ed project by our partners.

CREST-Ed will scale-up partnership efforts by integrating Social Network Analysis. Social networks are one way for teachers and others to collaborate, and collaboration along with working in groups is a direction supported by research. Recent research suggests that relationships and collegial support are central for the retention, increased professionalism, and depth of engagement of educators (Little, 2002, 2003; Moore Johnson, 2005). The stronger the professional network, the more likely educators—at all levels—are to stay in the profession, feel a greater sense of efficacy, and engage in deeper levels of conversation around teaching and learning (Little, 2003). Thus, the building and supporting professional relationships and networks is a critical way to sustain the work of teaching and learning and ultimately of change.

In terms of communication patterns, CREST-Ed provides the following unique contributions: (a) describing social networks in PDSs and (b) investigating the effect of an organizational meeting for a social network in a school on the subsequent development of the social network in that school. The research questions addressed are the following: (1) To what

extent do social network measures vary across PDS schools in contrast to CS schools; (2) To what extent can a social network organizational meeting improve the network as measured by the networks' diameters, clusterings, and centralizations; (3) To what extent are social networks based on web-based communications in comparison to more traditional methods (e.g., face-to-face, memos, etc.); (4) To what extent do PDS networks become stable and consistent as measured by transitivity; (5) To what extent, if any, do social networks using web-based communications have greater density over a 5-year period? The primary intervention regarding social networks in the CREST-Ed Grant is a meeting in a school with the key actors. If this intervention is successful for enhancing networks, it becomes a feasible and realistic intervention which is sustainable after the CREST-Ed Grant ends.

School Network Meeting. For the social network program objectives, the unit of analysis is the school with its community and university partner(s). To encourage and support developing social networks in selected schools, there will be a school network breakfast meeting during the fall semester supported by the school, community partners, and CREST-Ed funding. Typically, this meeting will occur on a teacher work day. Invited to this breakfast will be the target group or key actors in the PDS involved in the school network. These actors, who are listed on the Social Network Instrument in Appendix H, include the following: resident(s), mentor teacher(s), university professor(s), CCLC coordinator(s) for the school, school system area leader from the district, 50/50 district coordinator from the CREST-Ed program, school principal, school assistant principal(s), lead counselor plus other counselors as appropriate, K-12 school department chairpersons in the selected school, teachers who sponsor clubs, parents (a sample of at least 10 homeroom parents), and community and business partners.

The meeting has five purposes: (a) to introduce key actor groups to each other, (b) to provide information about social networks, (c) to present an overview of the CREST-Ed program, (d) to discuss an issue selected by the school actors (e.g., school administration, teachers, parents, business and community partners) as a focus for action that year, and (e) to obtain research information needed for conducting the network analysis following IRB procedures. In particular, this meeting provides members of this school community an opportunity to build on their existing network by introducing and making contact information available for the school personal, the community and business partners, the parents, and the university personal.

Overall, the design of CREST-Ed will help further support changes in the GSU College of Education and within our partnerships to improve teacher preparation in Georgia. Within the College of Education, these changes include establishing structures for teacher preparation through year-long residencies, professional learning communities for completing certification requirements (i.e., edTPA), and alternative recruitment pathways to support linguistically diverse students and communities. These efforts will improve teacher retention in partner schools, bolster induction efforts, and create diversification in the teacher pool to meet the cultural needs of the communities. Ultimately, these efforts will contribute to positive academic outcomes for Georgia's P-12 students.

Management Plan

Project activities will begin in October of 2014. In the tables below, the following abbreviations are used to identify which priorities are addressed by program activities: AP1 (Absolute Priority 1), AP2 (Absolute Priority 2), CPP1 (Competitive Preference Priority 1), and CPP2 (Competitive Preference Priority 2).

Table 2. Preplanning Period (Spring-Summer 2014)

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Convened COE TQP Steering Committee. All Priorities	<ul style="list-style-type: none"> • Clarify new proposal requirements and differences • Determine COE and partners' implications for change Coordinate partnership meetings • Launch grant writing teams/champions 	Current Collaborative Committee members	Day Patterson
Host Luncheon meeting with area P-12 Partners, College of Education Administration, and current Grant Advisory Committee. All Priorities	<ul style="list-style-type: none"> • Review Lessons Learned from NET-Q • Gain interest and input for next steps • Determine commitment to continue in next phase of partnership 	P-12 School Partners COE Administration Advisory Committee	Gwen Benson Day Patterson
Conduct and host Needs Assessment and Partnership Planning Luncheon; (Partners' Key Designees, College of Education, COE Research leaders). All Priorities	<ul style="list-style-type: none"> • Review TQP Proposal and district needs 	P-12 partners, university faculty/administrators	Gwen Benson Day Patterson
Conduct Annual Summer NET-Q Institute. All Priorities	<ul style="list-style-type: none"> • Share knowledge regarding NET-Q outcomes • Discussion and review needs assessment and plans for CREST-Ed 	P-12 partners, university faculty/administrators, higher ed partners	Day Patterson

Table 3. Year 1 Implementation (Fall 2014). Key Project Milestones: 1) Establish, organize and meet with all committees and councils, 2) Recruitment activities for Teacher Resident Positions, 3) Select implementation and control schools, and 4) Continue Pre- and Post-Bacc reforms

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Select members for all CREST-Ed councils and working committees: CREST-Ed Leadership Consortium, Advisory Council(s), design teams, research-evaluation team, university liaison committee. All Priorities	<ul style="list-style-type: none"> • Each partner will have at least one member on the Leadership Consortium • All other committees and teams will include appropriate representation from P-12 and university faculty/staff 	P-12 partners, higher ed faculty, NCTAF, technology partner, community partners	Gwen Benson Terry Magaro
Schedule and host meeting with CREST-Ed councils and working committees: Leadership Consortium, Advisory Councils (including representation from all members of the partnership), design teams, research-evaluation team, university liaison committee. All Priorities	<ul style="list-style-type: none"> • Refinement of grant implementation plan 	P-12 partners, higher ed faculty, NCTAF, technology partners, community partners	Gwen Benson Terry Magaro
Recruit teacher residents both urban and rural. AP2	<ul style="list-style-type: none"> • Residency announcement developed and disseminated for recruitment of applicants 	P-12 partners, higher ed faculty, recruitment & scholarship committee	Terry Magaro Joe Feinberg Day Patterson Terry Fisher
Select target schools and control schools from participating high needs districts. AP1, AP 2, CPP2 Meet with research directors and human resources directors regarding project implementation. All Priorities	<ul style="list-style-type: none"> • School applications submitted to the partnership and agreed upon by the partnership • Input from school districts on project implementation and evaluation design gathered 	P-12 partners, Design team, research committee P-12 research directors, human resources directors, project evaluation team	Bill Curlette Terry Magaro Bill Curlette Gwen Benson Susan Ogletree Robert Hendrick Terry Magaro
Host CREST-Ed Drive-In Conference to update district/school needs and research interests. All Priorities	<ul style="list-style-type: none"> • Accurate and updated needs assessment generated, including research interests 	P-12 partners, higher ed faculty	Gwen Benson Terry Magaro All Co-PIs

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Have P-12 PDS Schools identify selected menu choices. All Priorities	<ul style="list-style-type: none"> Selected Menu Items will be determined 	P-12 partners, higher ed faculty	Terry Magaro 50/50 Liaisons
Continue Pre-Bac Reform activities/Post-Bac Reform activities. AP1, AP2	<ul style="list-style-type: none"> Year 1 reform activities reviewed for implementation 	P-12 partners, higher ed faculty/-administration	Terry Fisher Joe Feinberg Margo Alexander Terry Magaro
Identify new teachers at PDS schools for induction activities and CCLC participation. AP1, AP2	<ul style="list-style-type: none"> List of new teachers in PDS Schools and partner districts compiled for initial contact 	P-12 partners, higher ed administrator	Induction Committee Terry Magaro
Meet with University faculty liaisons to discuss implementation of selected menu items. AP1, AP2	<ul style="list-style-type: none"> Needs of districts shared with Faculty Liaisons 	P-12 content supervisors, higher ed content specialists	Terry Magaro Joe Feinberg Terry Fisher Day Patterson
Recruit 50/50 personnel. AP1, AP2	<ul style="list-style-type: none"> Personnel recruited for Spring, 2015 positions 	P-12 partners, higher education faculty/-administrators	Gwen Benson Terry Magaro Joe Feinberg Day Patterson Terry Fisher
Meet with higher ed rural partners to plan summer AFT program. CPP1, CPP2	<ul style="list-style-type: none"> Initial Plans determined for summer AFT 	P-12 partners, higher education faculty/-administrators	Gwen Benson Terry Magaro
Collect baseline academic and network data for urban and rural areas	<ul style="list-style-type: none"> Baseline and network data analyzed 	Design team and research committee	Bill Curlette Robert Hendrick Susan Ogletree
Meet with Community Partners to plan collaborative breakfast with school partners. AP1, AP2	<ul style="list-style-type: none"> Initial Plans determined for Spring breakfast with school partners 	P-12 partners, higher ed faculty Community partners	William Curlette Robert Hendrick Susan Ogletree Gwen Benson Terry Magaro

Table 4. Year 1 Implementation (Spring 2015). Key Project Milestones: 1) Select Residents and mentor teachers for Year 1 Cohort; 2) Collect baseline data on student learning.

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Meet with faculty who will work with Fall Residents. AP2	Faculty identified for fall residents	Higher education administrators and faculty	Gwen Benson Terry Magaro Joe Feinberg Terry Fisher Day Patterson Margo Alexander

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Place undergraduate residents in selected schools. AP1	Fall placements completed	P-12 partners, higher education faculty/administrators	Terry Fisher Terry Magaro
Complete interview and selection of residents. AP1, AP2	Residents selected for all teacher residencies	P-12 partners, higher education faculty	Joe Feinberg Terry Fisher Day Patterson Terry Magaro
Complete selection of mentor teachers and school placements for residents. AP2	List of school sites and mentor teachers for fall placements completed	P-12 partners, higher education faculty/administrators	Joe Feinberg Terry Fisher Day Patterson Terry Magaro
Continue Pre-Bacc Reform activities. AP1	Implementation of Pre-bacc reforms in progress	PEF advisory committee, higher ed faculty/administrators	Terry Fisher
Collect baseline data on student learning. All Priorities	Baseline data collected for evaluation model	P-12 research directors, higher ed research committee	Bill Curlette Robert Hendrick Susan Ogletree
Complete plans for Summer AFT activity. CPP1, CPP2	AFT plans are completed and recruitment begins	Rural Higher Ed Partners and P-12 partners	Gwen Benson Terry Magaro
Plan summer CCLC Facilitator Training. AP1, AP2, CPP1	Sites, dates, and locations selected for Summer trainings	Induction committee, P-12 partners/-administrators	Susan Taylor Connie Parrish Terry Magaro

Table 5. Year 1 Implementation (Summer 2015). Key Project Milestones: 1) Host Teacher Transformation Institute; 2) Facilitate mentor training for host teachers of residents.

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Review and Revise School Partner Menu	Menu that meets the current needs of Partner Schools	P-12 Partners, Higher ed. faculty	Terry Marago 50/50 Site Coordinators Content Specialists
Host Teacher Transformation Institute with all partners to update and refine project implementation framework and provide in-depth professional development training. All Priorities	Partners will be aware of all past activities and upcoming implementation activities for Year 2 of the project; professional development training is provided	ALL	Gwen Benson Terry Magaro

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Facilitate mentor training for host teachers for residents. AP1, AP2	Mentors will receive training and meet residents prior to arrival of Fall placement in schools	P-12 partners, higher ed faculty	Terry Magaro Day Patterson Joe Feinberg Terry Fisher
Facilitate CCLC Training. AP1, AP2	CCLC training will begin for metro districts and rural districts	P-12 partners, higher ed faculty	Susan Taylor Connie Parrish
Identify placements (instructional teacher or research) TR-AFT for summer Assistantship positions with AFT. AP2, CPP1, CPP2	TR-AFT are notified of selection and prepare for summer session.	P-12 partners, higher ed faculty	Gwen Benson Terry Magaro
Performance feedback and continuous improvement reviews	Adjustments in project implementation	P-12 Partners, Higher Ed Faculty	Gwen Benson Terry Magaro Bill Curlette Robert Hendrick Susan Ogletree

Table 6. Years 2-5 (Fall-Spring, 2015-16, 2016-17, 2017-18, 2018-19). Key Project Milestones: 1) Recruitment and placement of teacher residents; 2) Implementation of CCLC induction model; 3) Continue implementation of pre- and post-bacc reform; 4) Collect data on student learning, participant satisfaction and needed changes.

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Begin professional development activities to meet identified school needs from menu items. All Priorities	Professional development activities will be offered for local school partners	P-12 partners, higher ed faculty	Terry Magaro Content Specialists 50/50 site coordinators
Co-host school network breakfast at school sites	Implementation of social network research	P-12 Partners, Higher Ed Faculty Community Partners	Bill Curlette Robert Hendrick Susan Ogletree Gwen Benson Terry Magaro
Placement of GSU residents at selected school sites. AP1	PDS Model continued	P-12 Partners, higher ed faculty	Terry Fisher Joe Feinberg Day Patterson
Recruitment and placement of Teacher Residents at selected sites. AP2	Residency Model implemented	P-12 partners, higher ed faculty, Recruitment and scholarship committee	Joe Feinberg Terry Fisher Day Patterson

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Work with NCTAF to begin teacher residency learning technology training. AP2	Teacher residents are trained in instructional technology	P-12 partners, higher ed faculty, teacher residents, host teachers & Induction Committee	Terry Magaro Joe Feinberg Day Patterson
Identify placements (instructional teacher or research) TR-AFT for summer Assistantship positions with AFT. AP2, CPP1, CPP2	TR-AFT are notified of selection and prepare for summer session.	P-12 partners, higher ed faculty	Gwen Benson Terry Magaro
Coordinate Training for Mentor teachers. AP1, AP2	Mentors are prepared for fall placements	P-12 partners, higher ed faculty	Terry Fisher Joe Feinberg Day Patterson
Implementation of CCLC Induction model is continued. AP1, AP2	CCLC Training scaled up for all districts urban and rural	P-12 partners, higher ed faculty/administrators & Induction Committee	Susan Taylor Connie Parrish
Implementation of ongoing professional development for higher ed faculty and P-12 faculty. CPP1	Higher education faculty receive professional development to update their knowledge and skills	Higher education faculty/administrators	Gwen Benson Terry Magaro Terry Fisher Joe Feinberg
Continue implementation of Pre-bac and Post-bac reform efforts. AP1	Reform efforts completed in Year 2	Higher ed faculty/administrators, PEF Advisory Committee	Terry Fisher Joe Feinberg Day Patterson
Collect data on student learning, participant satisfaction, needed changes, teacher retention. All Priorities	Data provided for evaluation of student learning and teacher retention	P-12 research directors, evaluation and research committee	Bill Curlette Robert Hendrick Susan Ogletree
Meet with Rural Higher Ed Partners to plan Summer AFT activity. CPP1, CPP2	Plans developed for summer AFT activity	P-12 Partners and Higher Ed Faculty	Terry Magaro
Design Team Monthly Meetings. All Priorities	Design Team will remain updated on all project activities and make changes as necessary	Member of the Design Team	Gwen Benson Terry Magaro

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Advisory Council quarterly meetings. All Priorities	Advisory Council will remain updated on all project activities and provide feedback as necessary	Advisory Council members	Gwen Benson Terry Magaro

Table 7. Years 2-5 (Summer, 2016, 2017, 2018, 2019). Key project milestones: 1) Facilitate mentor training; 2) perform data analysis; 3) host Teacher Transformation Institute

<i>Project Activity</i>	<i>Outcomes</i>	<i>Key Participants</i>	<i>Responsibility</i>
Facilitate Mentor Training. AP1, AP2	Mentors will receive training and meet residents prior to arrival of Fall placement in schools	P-12 partners, higher ed faculty	Terry Magaro Terry Fisher Joe Feinberg Day Patterson
Perform Data Analysis. All Priorities	Data analysis will provide indicators of project effectiveness and/or modifications	Evaluation and research committee	Bill Curlette Robert Hendrick Susan Ogletree
Offer Summer Partnership Institutes. All Priorities	All partners will have opportunity to learn from each other regarding project priorities	P-12 partners, administrators, higher ed faculty	Terry Magaro Terry Fisher Joe Feinberg Day Patterson
Implement CCLC facilitator training and support. AP1, AP2, CPP1	CCLC Training and refresher trainings will be offered for participating school districts	P-12 partners, higher ed faculty, CCLC trained facilitators	Susan Taylor Connie Parrish
Provide TR-AFT with assistantship for Instructional Teacher or Researcher position. CPP1	TR-AFT will receive summer assistantships in advanced degree programs and work with implementation of AFT	P-12 partners, higher ed faculty, recruitment scholarship committee	Terry Magaro
Performance feedback and continuous improvement reviews	Adjustments in project implementation	P-12 Partners, Higher Ed Faculty	Gwen Benson Terry Magaro Bill Curlette Robert Hendrick Susan Ogletree

Key Personnel

Dr. Gwen Benson (.2 FTE), principal investigator (PI), is the Associate Dean for School, Community, and Residential Partnerships in the GSU College of Education. She has taught in urban schools and has served as a public school administrator.

Dr. William L. Curlette (2 FTE), co-PI, has overseen and conducted the evaluation of many similar projects. He is a faculty member and Chair of the GSU Department of Educational Policy Studies.

Dr. Joseph Feinberg (.125 AY; .10 SU), co-PI, is an associate professor in the GSU Department of Middle and Secondary Education. During the past 4 years, he has served as site coordinator in a PDS high school.

Dr. DaShaunda Patterson (.125 AY; .10 SU), co-PI, is a clinical assistant professor in the GSU Department of Educational Psychology and Special Education. Dr. Patterson has served as the project director for the NET-Q grant.

Dr. Teresa R. Fisher (.125 AY; .10 SU), co-PI, is a clinical assistant professor coordinating the Early Childhood Education Master of Arts in Teaching, a role in which she has worked collaboratively to create, initiate, research, and improve the partnership between her department, Teach For America, and district partners.

Dr. Susan Ogletree (.2 FTE), co-PI, is Director of the Educational Research Bureau in the GSU College of Education. She has worked on research and evaluation on the Net-Q grant.

Dr. Margo Alexander (.125 AY; .10 SU), co-investigator, is the Math Education Courses Coordinator in the GSU Department of Mathematics and Statistics.

Performance Feedback and Continuous Improvement. Each summer, the partners will meet as part of professional development training to review the evaluation outcomes from the previous year or years and use that data to plan implementation of CREST-Ed for the coming academic year. Additionally, the TIP action research projects will provide immediate feedback to the TIP team as well as the partnership as a whole as results get disseminated among the partners. The principal investigators will closely monitor achievement of the programs

milestones, working to provide additional support when partners may be experiencing difficulty achieving their goals. Between the summers, partnering organizations will communicate through quarterly advisory committees, emails, and conference calls, and social network meetings. Further, all P-12 partners are currently represented on the College of Education P-12 Advisory Committee.

Project Evaluation

The evaluation plan has been integrated into the programmatic activities so as to be an integral part of this project. The evaluation plan has been designed to be thorough, feasible, and appropriate to the goals, objectives, and outcomes of the project. The plan uses objective performance measures that are directly related to the intended outcomes. We have chosen to use Stufflebeam's (2000) CIPP Model of Program Evaluation as the overall approach to the evaluation, supplemented by aspects of Patton's (2000) utilization-focused evaluation, a logic model (McLaughlin & Jordan, 2004), Guskey's (1999) Five Levels of Professional Development Evaluation, and Curlette's (2014) social network analysis. The CIPP model organizes program evaluation using four elements: context evaluation, input evaluation, process (formative) and product evaluation (summative). Within the context of the CIPP model, the evaluation team will use a mixed-methods approach, allowing us to meet multiple purposes and avoid trade-offs which we would otherwise be forced to decide upon, such as residential versus external validity.

We emphasize the fifth level of Guskey's approach, which links student achievement outcomes to particular CREST-Ed interventions as well as to characteristics of residents and mentor teachers. It is through these approaches built into the project and through dissemination of evaluation results to the Leadership and Coordinating Councils that evaluation results will be used for program improvement. In particular, the linking of resident characteristics to student

achievement can help improve the selection of students to enter teacher preparation programs and preparation of teachers.

CIPP Model. Each of the four evaluations in the CIPP model is briefly described below.

Context evaluation is concerned with clarifying the purpose of the evaluation effort and identifying the needs of teachers and other stakeholders which will be monitored on a yearly basis throughout the project. *Input evaluation* will examine the resources available to the project such as effective practices, equipment, facilities, financial support, and organizational support which directly relates to level 3 (Organizational Support and Change) of Guskey's Evaluation Model. *Process evaluation* (formative evaluation) will be used to monitor the extent to which the instructional modules are implemented and to document the process by which they were effective. Results of the process evaluation will be used to improve the implementation of grant activities.

Product Evaluation (summative evaluation) will be conducted at the end of the program to determine its effectiveness. The focus of the product evaluation is to measure attainment of milestones on timelines, benchmarks, and yearly growth in expected outputs or outcomes.

Utilization-Focused Evaluation. Two aspects of the utilization-focused evaluation approach of Patton will also help guide the evaluation of the CREST-Ed project. First, an overall logic model (see p. 11) has been developed to link the interventions with the outcomes to clarify the relationships of entities to each other in the project. A unique feature of this logic model is the organization of the entities involved by the four evaluation areas of the CIPP model. Second, Patton emphasizes discussing in detail at the planning stage the types of output or outcome result data which would be available for a particular evaluation design to judge the merit of a program with the decision makers regarding the use of the data before the evaluation is conducted. As

discussed in the needs section at the beginning of this proposal, input from the stakeholders has been obtained from a variety of sources including published research on educational needs in Georgia; written surveys of certified personnel and interviews and discussions with leadership in partner LEAs.

Guskey's Approach. The data sources for the evaluation will be aligned with the five levels of professional development evaluation presented by Guskey. These levels are the following: (1) participants' reactions to the experience, (2) participants' learning from the experience, (3) organizational support and change, (4) participants use of new knowledge and skills, and (5) results in terms of student learning outcomes. Across the objectives in this project, Guskey's levels are covered through data sources such as interviews with key actors in the process, focus groups, classroom observations, written surveys of faculty and students, and linking results of teacher training and teacher characteristics to student outcomes through experimental or quasi-experimental evaluation designs.

Quantitative Evaluation Plan. Following are three strong features of the quantitative evaluation: (a) the use of comparison schools and/or classrooms to evaluate student achievement between CREST-Ed schools and schools without CREST-Ed programs, (b) use of Teacher-Resident-Professor groups for resident teaching experiences and to help assess student achievement, and (c) linking the resident and teacher characteristics and instructional approach to student achievement.

CREST-Ed schools will be matched with comparison schools in the same school system. Proportion of students eligible for the National School Lunch Program, previous year's academic achievement, and membership in race/ethnic groups will be measured using Rosenbaum's (2002) methodology. For each CREST-Ed school in the urban school systems, there will be one

comparison school (CS); however, in the rural systems where school matches are unavailable, comparison classrooms will be used for investigating the TIP model.

Each of the urban school systems will have three CREST-Ed schools. A typical configuration is an elementary, middle, and high school that are part of a feeder pattern. This provides 18 urban CREST-Ed schools and 18 matched comparison schools for the Baccalaureate program. Further, the resident program has three urban and two rural school districts. Thus, the CREST-Ed resident program has 12 schools and 12 matched comparison schools.

The following research question will be addressed: Is there a mean (or centroid) performance difference on the Criterion-Referenced Competency Test (CRCT; state-wide standardized achievement tests) between the CREST-Ed schools and the comparison schools? Evaluation of indicators of project success, will be made using statistical analyses (e.g., ANOVA, MANOVA, SEM, Hierarchical Linear Modeling when appropriate) between student achievement in CREST-Ed schools and comparison schools. Alpha levels of .05 and effect sizes will be used to determine statistical significance for all variables

TIP groups and their evaluations. Up to 15 minigrants (approximately \$500 per grant) will be available for TIP groups to conduct Anchor Action Research (AAR). An AAR team includes university faculty, residents, and mentor teachers who conduct site-based research focused on increasing academic achievement at the classroom level.

In the previous grant, NET-Q, a meta-analysis using a random-effects, pre-/post-control model was used to examine instructional differences between NET-Q AAR and comparison classes. The results show that Cohen's *d* effect size between groups is .456 in favor of NET-Q AAR, which is slightly larger than the effect size indicated by meta-syntheses of educational interventions. The goal was to demonstrate that residency teacher preparation using NET-Q

AAR produces beginning teachers as effective as, or slightly more effective, than teachers in comparison classrooms in facilitating student achievement. *The key, we believe, is focusing on a more limited and manageable unit or area of instruction and then facilitating the dissemination and implementation of a successful instructional intervention.*

Anchor Action Research is “anchored” through commonalities among the studies in methodology and student academic achievement as outcome variables. A mixed-method design including both (a) a quasi-experimental design and (b) a qualitative analysis of the classroom context are included. These requirements for supported research, create a commonality, or anchor, across the research projects. Final evaluation reports are required from each funded TIP Group, followed by written feedback from an evaluation team member.

Student achievement data will be gathered in STEM classrooms and will include grades, scores on standardized tests, and Georgia Student Growth Model (GSGM) percentiles. In order to link student achievement to resident and mentor teacher personality characteristics, data will be gathered using interviews.

Methods. When the Director of Research and Internal Evaluation asked school research directors and school principals what results they would like to see from the CREST-Ed program, many said improved student achievement on the Georgia Criterion-Referenced Competency Tests (CRCTs). There will be 50 TIP Groups, and each of these TIP groups will be asked to monitor academic achievement data of their currently enrolled students. Through coursework in the CREST-Ed programs, residents and mentor teachers will be trained (or retrained) on interpretation of CRCT scores and especially subtest scores (domain scores). Each TIP Group will be asked to identify the weakest domain score for each student, as these are the areas in which students would benefit from more instruction. Data analyses will be conducted to assess

whether changes in the identified domain scores increase more in the CREST-Ed groups than in the comparison groups. Importantly, residents and resident characteristics, mentor characteristics, teacher preparation program characteristics, and student achievement on CRCT can all be linked using this approach.

Instrumentation. Described below are existing instruments to be used in the evaluation and a description of rubric scoring for constructed response exercises.

1. *Georgia Teacher Keys Effectiveness System (TKES).* The TKES, a state approved teacher assessment rubric, will be used to evaluate teacher effectiveness.
2. *The Teacher Efficacy Scale.* The Teacher Efficacy Scale (Woolfolk & Hoy, 1990), one of the most researched efficacy instruments, measures self-efficacy related to ability to bring about positive student change and beliefs about students learning capability regardless of home environment, motivation and other factors).
3. *Surveys on Teacher Use of Technology.* Griffin and Christensen's (1999) *Concerns-Based Adoption Model (CBAM) Levels of Use of an Innovation* will be used to assess use of technology. In addition, two other technology instruments will be employed (see TQP Indicator 4.7.1). Finally, a survey will be developed in conjunction with the Instructional Technology section in the College of Education at GSU to help assess universal design issues and data analyses using technology as it relates to instructional practices. In a later section in this proposal, two new applications for hand-held devices are proposed to improve instructional practices including data analyses in Anchor Action Research.

Qualitative Evaluation Plan. Qualitative research focuses on the accurate description, construction, and contextual factors concerning a situation, event, or lived experience. CREST-

Ed will use Guba and Lincoln's (1989) *Fourth Generation Evaluation* model to inform this component of the evaluation plan. Central to this approach is the realization that myriad human, political, social, cultural, and contextual elements are intertwined and, as such, require an effective epistemic orientation to negotiate and describe accurately the multiple evaluands involved in the CREST-Ed partnership. The constructivist paradigm undergirding the *Fourth Generation Evaluation* model allows for the empowerment and enfranchisement of evaluation stakeholders while providing a definitive, mutually constructed and negotiated action-oriented plan for process improvement and utilization.

The following will constitute the major qualitative data sources for CREST-Ed:

Interviews and Focus Groups with Stakeholders. An interview and associated protocol guide will be used to inform the conduct of structured and semi-structured interviews to capture stakeholder perceptions of the CREST-Ed partnership. These interviews will last between 45 and 60 minutes and will be held in a private, convenient location for the stakeholder. Interviews will center on but will not be limited to such aspects as perceived impact of the CREST-Ed partnership, treatment acceptability of the CREST-Ed partnership, and dosage issues. Focus group size will include 6 or more participants per group (Morgan, 1997). As qualitative research generally follows an emergent paradigm, additional modifications to the interview protocol and/or guide will be informed by the addition of relevant data gathered from observations and other focus group/interviews conducted with CREST-Ed stakeholders.

Observations of CREST-Ed Classrooms. Observations of teachers, residents, and students within the CREST-Ed classrooms will be conducted on a regular basis by qualitative research staff associated with CREST-Ed. As with the structured and semi-structured interviews,

an observation protocol and/or rubric will be developed to capture classroom pedagogical and ecological factors related to the goals of the CREST-Ed partnership.

Observer Memoing/Notetaking. As *Fourth Generation Evaluation* is based on shared, mutually constructed and negotiated meanings, the qualitative research staff will memo and take personal notes capturing evaluands' lived experience as filtered through the eyes of the evaluator

Analysis. Raw qualitative data will be thematically reduced and coded. In some instances, concept maps will be developed. Where pertinent, data analysis will be linked to current educational policy as is consistent with evaluation methods outlined in Patton (2001) and Weiss (1993).

Bayesian Concepts in Qualitative Research. Although not a major focus of the CREST-Ed evaluation and research efforts, we propose to develop new methodology for mixed-methods research as a byproduct of the evaluation work in this grant. The new methodology effort will bring some closure to work that the Director of Research and Internal Evaluation has been conducting to use Bayesian statistics for conducting mixed-methods research. In particular, the research agenda is to develop further a mixed-methods approach which combines Bayesian statistics (Press, 2003) with qualitative research (Creswell, 1998, 2003) in the context of teacher quality evaluation. Previously, mixed-methods research was almost always a combination of classical statistics with qualitative research (Tashakkori & Teddlie, 1998). The idea of using Bayesian statistics in qualitative research has been suggested at times in the literature (e.g., Buckley, 2004). Some of the teacher efficacy data in this grant from the CREST-Ed schools will be analyzed using this new mixed methodology. These statistical methods represent an innovative outcome of this project.

School Network Research Design with Randomization. The first year of CREST-Ed will serve as a baseline year for describing the social networks, so there will be no school network meetings. The following four years, schools will participate in the meetings as shown in Table 8. By Years 4 and 5, compared with the baseline year, the extent to which PDS networks develop over five years with the support of social network meetings should be evident.

Table 8. School Network Research Design

Year 1	Year 2	Year 3	Year 4	Year 5
9 PDSs – No school network meetings	5 randomly selected PDSs have school network meetings		All PDSs have school network meetings	
	4 randomly deselected PDSs do not have school network meetings			
9 CSs – No school network meetings				

Note. PDSs = Professional Development Schools and CSs = Comparison Schools

The research team has had extensive experience with survey research and can easily adapt an existing survey research website currently hosted at Georgia State University to make available the Social Network Instrument in an electronic format to each of the actors for their responses in both the nine PDSs and nine CSs. Previous experience with Resident surveys of certified educational personnel show that giving schools a financial incentive for attaining a 75% response rate often results in higher overall response rates. Qualitative interviews will be used to help further understand the social networks.

The format of the data for social network analysis is typically a matrix which shows the relationships between the actors. The scaling of responses in the Social Network Instrument allows for creating dichotomous responses in addition to frequency or strength of the

communication. The eight measures employed in CREST-Ed for describing the social networks (Carolan, 2014) are the following: (1) Size of the matrix (i.e., number of rows or number of columns), (2) Density (number of ties in matrix of dichotomous responses as a proportion of the total number of possible ties), (3) Reciprocity (proportion of actors selecting each other with the highest possible value being 1.0), (4) Transitivity (relationships between triads of actors which can indicate the degree of stability and consistency of the network), (5) Diameter (the number of steps in the longest path connecting two actors which can indicate how resources are transferred), (6) Distance (mean path length between all pairs of actors), (7) Clustering (areas of dense connections between actors), and (8) Centralization (high centralization occurs when a small number of actors are the focus of many relations indicating how resources are distributed across the network and also a high concentration of power and control).

Comparisons of the social networks will be conducted using the descriptive measures presented above and the Quadratic Assignment Procedure of Hubert (1987) and Krackhardt (1987). This procedure is essentially a resampling approach using Monte Carlo methods which provides Pearson correlation coefficients to compare different social networks (e.g., networks in Year 1 with those in Year 2) with statistical significance testing of the correlation coefficients. Comparison of social networks for PDSs provides a basis for better understanding these networks, an understanding which could result in improving the distribution of resources within the networks, especially by examining the networks' diameters, clusterings, and centralizations. Also, the stability and consistency of the PDS and CS networks can be measured by transitivity.

Evaluation Summary

CREST-Ed will make a significant contribution to education by presenting a large scale multisite intervention and evaluation of a teacher quality partnership effort with an extensive

evaluation plan which includes matched comparison schools. Beyond addressing the two competitive priorities, some new developmental work is proposed to be accomplished along the way: the use of Bayesian techniques for development of new methodology for mixed methods studies and supporting nationwide distribution, for real time teacher evaluation and to teach and support action research analysis at the classroom level. Finally, our major contribution will be to improve teacher preparation leading to higher quality educational opportunities for all children.

Performance Objectives

The performance objectives and their data sources, indicators, targets, timeline, and responsible party are listed in the following order: Section 1: GPRA Objectives, Section 2: TQP Objectives, and Section 3: CREST-Ed Program Objectives. For each objective, and its associated activities, an indicator (performance measure) has been specified so that the CREST-Ed will be accountable for the expenditure of grant funds. Each objective is listed only once in the proposal but would be reported on twice in a funded grant so that separate data would be available for Absolute Priority One and Absolute Priority Two. In all instances IRB regulations will be followed.

Section 1: GPRA Objectives. *GRPA Indicator 1.1: Graduation - Percentage of Program Completers from pre-Baccalaureate Program who "attain all necessary licensure/certification assessments and attain bachelor's degree within six years."*

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	1.1A Change for CREST-Ed group from previous year	3% increase each year in percentage or 80% of program completers' meeting requirements	Sept. 1 st for previous academic year	Curlette

The plan for pre-Baccalaureate program meets these requirements as discussed previously. Careful monitoring of students in the pre-Baccalaureate by faculty advisors will help meet this objective.

GPRA Indicator 1.2: Graduation Percentage of CREST-Ed Program Completers from Residency Program who "attain all necessary licensure/certification assessments and master's degree within two years."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	Percentage of CREST-Ed program completers	3% increase each year in percentage or 80% of program completers' meeting requirements	Sept. 1 st for previous academic year	Curlette

The plan for residency program meets these requirements as discussed previously. Careful monitoring of students in the resident program by faculty advisors will help meet this objective.

GPRA Indicator 2: Employment Retention for Teachers Entering Teaching through the CREST-Ed Program - "The percentage of beginning teachers who are retained in teaching in the partner high-need LEA or ECE program three years after initial employment."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of beginning teachers educated through CREST-Ed who are retained in <u>partner</u> high-need LEA 3 years after initial employment	80% of beginning teachers are retained in a partner high-need LEA	% provided each year starting after year 3 of grant, Sept. 1 st for previous academic year	Curlette

The IDs of Baccalaureate program completers within 6 years are matched with list of teachers having licensure by GPS to obtain total number of program completers having licensure are divided by the total number of program completers that year.

GPRA Indicator 3 - Improved Scores - Percentage of CREST-Ed Completers who have passing scores on GACE (teacher certification test in Georgia) over baseline year (2013-2014 school year).

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
GACE licensure scores from Georgia Professional Standards Commission	% of CREST-Ed completers whose GACE scores are passing compared to the % of non-CREST-Ed graduates passing the GACE in the baseline year.	Year 1—Increase in % of completers passing GACE to 2% over baseline year. Years 2-5—additional 3% over baseline year or achieving a 95% pass rate.	Sept. 15 for report	Curlette

In Georgia, the certification examination (GACE) has changed from being administered through ES to ETS beginning spring 2014. Scaled scores for the instruments are not comparable; therefore, the passing rate of the completers will be examined for this performance indicator. Once the transition to a new certification examination is established, the increase in scaled score may be a valid method to assess this GPRA indicator.

GPRA Indicator 4 – Student Learning as shown by CREST-Ed using the Georgia Student Growth Model. The percentage of residents that influence participating students to show typical or high growth in math or science learning as shown by the Georgia Student Growth Model (GSGM).

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
GSGM percentiles from Georgia Department of Education	% of CREST-Ed Residents who influence student learning growth in math or science at a typical to high percentile.	80% of measured Residents will have 60% or more students showing typical to high learning growth in math or science.	Sept. 15 th for report	Curlette

The GSGM measures the academic growth of students using a statewide peer comparison group and is able to measure the student learning relative to the peer group. This learning growth is reported using percentiles, which indicate the student learning relative to the specific peer group and subject. According to the GSGM rubric, 35% to 65% is typical learning growth and 66% to 100% is high learning growth.

GPRA Indicator 4.1 - Efficiency Measure for Employment Retention Using CREST-Ed Beginning Teachers versus Comparison School Beginning Teachers - "The cost of a successful outcome where success is defined as retention in the partner high-need LEA or ECE program three years after initial employment" as contrasted to the cost of teacher retention in the comparison schools.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Retention data from Georgia Professional Standards Commission for each beginning teacher from CREST-Ed program in partnership and each beginning teacher in comparison schools. Cost of hiring and retaining a teacher each year for 3 years.	Efficiency Cost for Teacher Retention (as defined below)	Efficiencies greater than 1.1, which indicate that CREST-Ed is more efficient in terms of saving money	Oct. 1 for previous academic year	Curlette

For reporting purposes, so that data collected by the Department will be on the same scale, financial cost will be considered to be the utility function. The financial costs involved in hiring and retaining a teacher (beyond a benchmark salary provided by the system) for each year of the three years in each school system will be requested and tabulated for each year of the grant from administrators in each school system. In statistics, expected loss (which is a cost) is obtained by multiplying the cost of a loss by the probability of the loss. To obtain an efficiency measure, the first step is to obtain the expected loss table given below to express the expected costs of a teacher leaving.

	Teachers Stay	Teachers Leave -Expected Loss in Dollars
CREST-Ed Beginning Teachers	No loss	Mean Dollar loss per CREST-Ed beginning teacher who leaves (Cost to system depends on year teacher left) times the probability that a CREST-Ed teacher leaves (calculated by year)
Comparison	No loss	Mean Dollar loss per CS beginning teacher who leaves (Cost to

School Beginning Teachers		system depends on year teacher left) times the probability that a Beginning Teacher leaves (calculated by year)
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The cost of teacher retention for one, two, and three years can be obtained from school administrators. The efficiency measure reported will be the following ratio:

Efficiency Cost for Teacher Retention = (the expected mean loss for the comparison schools) ÷ (the expected mean loss for the CREST-Ed schools).

GPRA Indicator 5.1 - Short-Term Performance Measure 1: Persistence - Percentage of CREST-Ed program participants who "did not graduate in the previous reporting period, and who persisted in the postsecondary program in the current reporting period."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Reports from college departments regarding status of CREST-Ed program participants	% = 100 times (no. of CREST-Ed participants not graduating in previous year but expected to graduate according to program plan) ÷ (no. of CREST-Ed participants in programs)	Less than 10% do not graduate on- time according to CREST-Ed program plan	Aug. 15 for previous academic year	Benson

GPRA Indicator 5.2 - Short-Term Performance Measure 2: Employment Retention - Percentage of CREST-Ed "beginning teachers who are retained in teaching in the partner high-need LEA or ECE program one year after initial employment."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of CREST-Ed beginning teachers retained after one year	90%	Nov. 15 for preceding academic year	Curlette

Section 2: HEA Section 204(a) Indicators (Designated as TQP Indicators). TQP

Indicator 1 - Achievement for all CREST-Ed prospective and new teachers, as measured by the eligible partnership.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Faculty and Administrator Ratings of CREST-Ed Prospective and New Teachers	Teacher Assessment on Performance Standards (TAPS). Instrument has 10 performance measures: Professional Knowledge, Instructional Planning, Instructional Strategies, Differentiated Instruction, Assessment Strategies, Assessment Uses, Positive Learning Environment, Academically Challenging Environment, Professionalism, and Communication	Resident’s assessment mean will exceed 3.5 on a 4-point scale.	Oct. 15 for previous academic year	Benson

As part of the Race to the Top Initiative (RT3), Georgia, in collaboration with RT3 Districts, educational partners, and the Evaluation Task Force Committee, developed a new effectiveness system for teacher evaluation and professional growth. The new Teacher Keys Effectiveness System consists of multiple components, including the Teacher Assessment on Performance Standards (TAPS), Surveys of Instructional Practice, and measures of Student Growth and Academic Achievement. The overarching goal of TKES is to support continuous growth and development of each teacher.

TQP Indicator 2.1 - Teacher retention in the first three years of CREST-Ed teachers' careers.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia	% of CREST-	80%	Dec. 15	Curlette

Professional Standards Commission	Ed teachers retained after 3 years in partnership		after 3 academic years	
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TQP Indicator 2.2 - Teacher retention in the second year of CREST-Ed teachers' careers.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of CREST-Ed teachers retained after 2nd year	85%	Dec. 15 after 2 academic years	Curlette

TQP Indicator 3 - "Improvement in the pass rates for initial State certification or licensure of teachers" from CREST-Ed Grant.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
GACE licensure scores from Georgia Professional Standards Commission	% of CREST-Ed Completers whose GACE scores are passing compared to the % of non-CREST-Ed graduates passing the GACE in the baseline year.	Year 1—Increase in % of completers passing GACE to 2% over baseline year. Years 2-5—additional 3% over baseline year or achieving a 95% pass rate.	September 15 th for report	Curlette

TQP Indicator 4.1 "The percentage of highly qualified teachers hired by the high-need local educational agency participating in the eligible partnership."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of highly qualified teachers hired in CREST-Ed partnership	Increase of 2% per year or achieving 98%.	Oct. 15 for preceding academic year	Curlette

	schools			
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This TQP Indicator indicates an overall effect on employment of highly qualified teachers in CREST-Ed schools due to involvement in the CREST-Ed program.

TQP Indicator 4.2 "The percentage of highly qualified teachers hired by the high-need local educational agency who are members of underrepresented groups."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of highly qualified teachers hired in partnership schools from underrepresented groups each year of hiring	Increase of 5% across schools in CREST-Ed partnership each year for hires from underrepresented groups or achieve 65% of underrepresented groups hired.	Oct. 15 for preceding academic year	Curlette

This TQP Indicator indicates an overall effect on employment of highly qualified teachers who are members of underrepresented groups in CREST-Ed schools due to involvement in the CREST-Ed program.

TQP Indicator 4.3 "The percentage of highly qualified teachers hired by the high-need local educational agency who teach high-need academic subject areas (such as reading, mathematics, science, and foreign language, including less commonly taught languages and critical foreign languages)."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of instructional units in high need-academic subjects taught by a	Increase of 3% each year of highly qualified teachers in high-need acad. subjects or 98% of	Oct. 15 for preceding academic year	Curlette

	highly qualified teacher in that subject	subjects are taught by highly qualified teachers		
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TQP Indicator 4.4 "The percentage of highly qualified teachers hired by the high-need local educational agency who teach in high-need areas (including special education, language instruction educational programs for limited English proficient students, and early childhood education)."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of instructional units in high need-academic areas	Increase of 3% each year of highly qualified teachers in high-need acad. areas or 98% of areas are taught by highly qualified teachers	Oct. 15 for preceding academic year	Curlette

TQP Indicator 4.5.1 "The percentage of highly qualified teachers hired by the high-need local educational agency who teach in high-need elementary schools."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional Standards Commission	% of highly qualified teachers employed in CREST-Ed schools	3% increase each year starting with baseline year or 98% are taught by highly qualified teachers	Oct. 15 for preceding academic year	Curlette

TQP Indicator 4.5.2 "The percentage of highly qualified teachers hired by the high-need local educational agency who teach in high-need secondary schools."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Georgia Professional	Percentage of highly qualified	3% increase each year starting with	Oct. 15 for preceding	Curlette

Standards Commission	teachers employed in CREST-Ed schools	baseline year or 98% are taught by highly qualified teachers	academic year	
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TQP Indicator 4.6 - "The percentage of early childhood education program classes in the geographic area served by the eligible partnership taught by early childhood educators who are highly competent."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Internet survey of teachers & administrators in geographic area to identify early childhood education program classes taught and their teachers.	% of classes taught by highly competent childhood educators	3% increase each year after the second year of grant or 98% are taught by highly competent childhood educators	Aug. 1 for preceding academic year	Curlette

The geographic area will be defined as the school systems in the partnership. Highly qualified faculty teaching in early childhood education program classes will be compared to all faculty teaching in early childhood education program classes in the geographic area in order to obtain a percentage.

TQP Indicator 4.7.1 - "The percentage of teachers trained to integrate technology effectively into curricula and instruction, including technology consistent with the principles of universal design for learning."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Internet Survey of Teachers in CREST-Ed schools and comparison schools	% of CREST-Ed teachers at or above level 3 on CBAM	Increase of 3% per year or 95% of teachers surveyed are at or above level 3	Aug. 1 for preceding academic year	Curlette
Interviews and data from 2 computer usage surveys	% of non-CREST-Ed teachers at or above level 3 on CBAM	Increase of 1.5% per year (half of CREST-Ed teacher increase) or 95% of teachers surveyed are at or above level 3		
	Extent to which themes show technology integration	Qualitative Report		

TQP Indicator 4.7.2 "The percentage of teachers trained to use technology effectively to collect, manage, and analyze data to improve teaching and learning for the purpose of improving student academic achievement."

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Internet Survey of Teachers in CREST-Ed schools and comparison schools	% of CREST-Ed teachers above level 3 on CBAM	Increase of 3% per year or 95% of teachers surveyed exceed level 3	Aug. 1 for preceding academic year	Curlette
Qualitative Research with TIP Group members	Percentage of non-CREST-Ed teachers above level 3 on CBAM	Increase of 1.5% per year (half of CREST-Ed teacher increase) or 95% of teachers surveyed exceed level 3		
	Extent to which themes show technology integration			

Section 3: CREST-Ed Program Objectives. The following objectives are unique to the CREST-Ed Program. CREST-Ed performance objectives with indicators and targets for performance provide data to indicate whether objectives are being met; hence, providing program accountability. Furthermore, these results support formative evaluation and provide observable data to indicate the degree of overall success of the CREST-Ed project at a particular time during the project's implementation.

Some of the performance objectives are concerned with describing if the activity actually occurred and other objectives are concerned with the effectiveness or quality of the activity. Taken together this information contributes to assessing the worth of the CREST-Ed Program.

The following numbering system was created to help with organization of the results for the CREST-Ed Program Level Objectives. In this numbering system there are 3 levels separated by two periods.

The first number indicates the particular priority which is being addressed. The possible first numbers are the following:

- 1 = Pre- Baccalaureate Preparation of Teachers (Absolute Priority 1)
- 2 = Establishment of Effective Teaching Residency Programs (Absolute Priority 2)
- 3 = Promoting Science, Technology, Engineering, and Mathematics (STEM) Education
(Competitive Preference Priority 1)
- 4 = Implementing Internationally Benchmarked, College and Career-Ready Elementary and Secondary Academic Standards (Competitive Preference Priority 2)
- 5 = Data collected is not specific to any particular program but usually is across more than one CREST-Ed program

The second number indicates the group(s) which from which data are obtained. The possible numbers for the second level are the following:

1 = teachers , interns, university students , or mentors focus

2 = K-12 student focus

3 = other groups (e.g., administrators, community members)

The third number is represents a unique sequential number within after the first and second levels so that a particular performance objective can be easily referenced.

The abbreviation “Pr” used in the tables below stands for “Program” Objectives which are unique to the CREST-Ed Program. The abbreviation “CP” Priority used in the tables below stands for “Competitive Preference” Priority.

Pr 1.1.1 Pre-Baccalaureate Program (Absolute Priority 1): Number of University Students Enrolled.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
University Professor in charge of CREST-Ed Pre-Baccalaureate Program	No. of students enrolled each year	At least 50 university students per	Sept. 1 each year and Feb. 1 each year for reports of enrollment to Director of Research and Internal Evaluation	Hendrick

Pr 1.1.2 Pre- Baccalaureate Program (Absolute Priority 1): Number of University Students Enrolled from Underrepresented Populations

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
University Professor in	No. of students enrolled each	Of the students to be admitted each	Sept. 1 each year and Feb. 1 each	Hendrick

charge of CREST-Ed Pre-Baccalaureate Program	year from under-represented populations	year, at least 50% of the university students are from underrepresented populations	year for reports of under-represented population enrollment to Director of Research and Internal Evaluation	
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Pr 1.1.3 Pre- Baccalaureate Program (Absolute Priority 1): Achievement for all CREST-Ed Interns as measured by their portfolios.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
EdTPA data which has portfolios of Interns	Rubric for portfolio evaluation	Rubric of at least “Meets Expectation” for 80% of students	June 1 each year for report on portfolio evaluation	Hendrick

Pr 1.2.4 Pre- Baccalaureate Program (Absolute Priority 1): Achievement for all CREST-Ed Interns as measured by a sample of their students’ portfolios.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
EdTPA data has de-identified work samples of K-12 students taught by CREST-Ed Intern	Rubric for portfolio evaluation	Rubric of at least “Meets Expectation” for 80% of K-12 students’ work	June 1 each year for report on portfolio evaluation	Hendrick

Pr 1.1.5 Pre- Baccalaureate Program (Absolute Priority 1): Instructional effectiveness of Pre-Baccalaureate Program based on qualitative research.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Interviews with key actors (interns, professors, administrators, mentors) and	Qualitative Report	Qualitative Report	Report available by Aug. 1 st each year	Ogletree

artifacts (course materials, etc.)				
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Focus questions to guide the qualitative report on the CREST-Ed program will include questions regarding the STEM focus of the program and the extent of support for the Common Core Performance Standards.

Pr 2.1.1 Residency Program (Absolute Priority 2): Number of University Students

Enrolled.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
University Professor in charge of CREST-Ed Residency Program	No. of students enrolled each year	20 university students as stated in proposal per year	Sept. 1 each year & Feb. 1 each year for reports of enrollment to Director of Research and Internal Evaluation	Feinberg

Pr 2.1.2 Residency Program (Absolute Priority 2): Number of University Students

Enrolled from Underrepresented Populations.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
University Professor in charge of CREST-Ed Residency Program	No. of students actually enrolled each year from underrepresented populations	Of the 20 students to be admitted each year, at least 50% are university students from underrepresented populations	Sept. 1 each year and Feb. 1 each year for reports of underrepresented population enrollment to Director of Research and Internal Evaluation	Feinberg

Pr 2.1.3 Residency Program (Absolute Priority 2): Achievement for all CREST-Ed

Interns as measured by their portfolios.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
EdTPA data Management which has portfolios of Residents	Rubric for portfolio evaluation	Rubric of at least “Meets Expectation” for 80% of students	June 1 each year for report on portfolio evaluation	Hendrick

Pr 2.2.4 Residency Program (Absolute Priority 2): Achievement for CREST-Ed Interns in

Middle-Secondary Programs (Mathematics and Science) and Special Education Programs as measured by a sample of their students’ portfolios.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Sample of Student portfolios	Rubric for portfolio evaluation	Rubric of at least “Meets Expectation” for 80% of K-12 students’ work	June 1 each year for report on portfolio evaluation	Hendrick

Although for instructional purposes, professors give individual students feedback on their portfolios, for the purpose of CREST-Ed program evaluation, a random sample of 12 students’ portfolios will be evaluated for the report.

Pr 2.1.5 Residency Program (Absolute Priority 2): Instructional effectiveness of Pre-Baccalaureate Program based on qualitative research.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Interviews with key actors (interns, professors, administrators, mentors) and artifacts (course materials, etc.)	Qualitative Report	Qualitative Report	Report available by Aug. 1 each year	Ogletree

Focus questions to guide the qualitative report on the CREST-Ed program will include questions regarding the STEM focus of the program and the extent of support for the Common Core Performance Standards.

Pr 3.1.1 Promoting Science, Technology, Engineering, and Mathematics (STEM) Education (Competitive Preference Priority 1).

Partnership schools will receive funds earmarked for STEM professional development for each year of the project. This STEM professional development will be presented by qualified personnel affiliated with the CREST-Ed grant or contracted by the Partnership LEA.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
STEM professional development that focuses on Inquiry Learning in Math and Science	No. of teachers who participate in STEM professional development	300 Teachers as recorded by attendance rosters for the STEM professional development	Reported by June 30 by District Coordinator to Director of Research and Internal Evaluation	Curlette

Pr 3.2.1 Promoting Science, Technology, Engineering, and Mathematics (STEM) Education (Competitive Preference Priority 1).

To indicate that the STEM Professional Development had an influence on student performance, Math and Science Criterion-Referenced Competency Tests (CRCT) Student achievement in CREST-Ed classrooms compared with matched comparison classrooms are collected.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
CRCT Test Scores of CREST-Ed classes and matched control	CRCT standardized mean difference effect sizes for CREST-	Standardized mean difference effect size of .2 in favor of the	Schools receive CRCT data in mid-summer. Obtaining data	Curlette

school classes along with teacher participation in STEM professional development	Ed math and science classrooms with comparison classrooms	CREST-Ed classrooms	and conducting data analyses will be completed by Nov. 30 each year	
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As previously described, the major thrust of the evaluation design was creating matched comparison schools and linking student achievement to teacher and intern characteristics.

Classes at the same grade level in comparison schools will be selected in order to compare CRCT student achievement of a class taught by a CREST-Ed intern or resident placement to comparison classes in the matched comparison school.

Pr 4.2.1 Implementing Internationally Benchmarked, College and Career-Ready Elementary and Secondary Academic Standards (Competitive Preference Priority 2): TIP Group student achievement using teacher-made tests in CREST-Ed.

Residents implement the Internationally Benchmarked Georgia Common Core Performance Standards within the CREST-Ed classroom. During AAR, the Resident will prepare an instructional unit using inquiry learning in Math or Science. The instructional unit will have a pre- and post-test that will also be administered to a matched comparison class. The mean gain of the CREST-Ed class and Comparison Class will be analyzed using Cohen’s *d* mean difference effect size.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Pre-and Post-Test scores of CREST-Ed classes and matched control school classes of instructional unit addressing internationally benchmarked educational standards.	CRCT standardized mean difference effect sizes for CREST-Ed classrooms with comparison classrooms	Standardized mean difference effect size of .2 in favor of the CREST-Ed classrooms	Resident typically teaches the unit in the spring; Obtaining data and conducting data analyses will be com-	Curlette

			pleted by Sept. 1 each year	
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As previously described, the major thrust of the evaluation design was creating matched comparison schools and linking student achievement to teacher and intern characteristics. TIP Group student achievement uses pretest and posttest teacher made tests in TIP classrooms. Thus, this approach uses *multiple measures of student achievement* because students are not only evaluated on CRCT multiple choice tests but teacher-made tests which typically will contain other item formats such as constructed response.

Pr 5.1.2 – Across more than one CREST-Ed Program (CP Priorities 1 and 2): Research report is produced for new methodology for a mixed method research design paradigm (describing data collection and analysis) using Bayesian approaches as applied to CREST-Ed educational data.

Data Source	Indicator	Targets for Indicators	Timeline	Responsible Party
Prior Beliefs on Teacher Efficacy from interviews and quantitative teacher efficacy survey	A research report is written	Research report discusses Bayesian mixed-method research paradigm and has example using teacher efficacy	First report at end of third academic year. Yearly report thereafter.	Curlette

Pr 5.1.3 Pre-Baccalaureate and Resident Programs: Teacher retention for teachers participating in Cross Career Learning Communities (CCLCs).

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
List of teachers participating in CCLCs is given to Georgia PSC to see if teacher is within the	% of teachers in CCLC which are teachers next year	75%	Report available by Dec. 1 each year for preceding academic year	Patterson

CREST-Ed partnership				
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A slightly lower percentage is stated as target because the CCLCs do not necessarily have only teachers trained through CREST-Ed.

Pr 5.1.4 Pre-Baccalaureate and Resident Programs: Interviews of selected participants in Cross Career Learning Communities (CCLCs).

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Interviews of selected teachers in CCICs	Qualitative Report	Qualitative Report	Report available by Oct. 1 st each year for preceding academic year	Curlette

Pr 5.3.5 Social Network Analysis - Density: CREST-Ed School Network Meeting.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Results of School Network Surveys from CREST-Ed and comparison schools	Social Network Density Measurement	Starting in year 2 a 5% increase in CREST-Ed school network; 10% increase in density by year 5	Report available by June 1 each year	Curlette

Pr 5.3.6 Social Network Analysis -Diameter: CREST-Ed School Network Meeting.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Results of School Network Surveys from CREST-Ed and comparison schools	Social Network Diameter Measurement	Starting in year 2 a 5% decrease in diameter of CREST-Ed school network; 10% decrease in diameter by year 5	Report available by June 1 each year	Curlette

Pr 5.3.7 Social Network Analysis – stable and consistent: CREST-Ed School Network

Meeting.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Results of School Network Surveys from CREST-Ed and comparison schools	Social Network Assessment of Stability and Consistency	Starting in year 2 a 5% increase in CREST-Ed school network; 10% increase instability and consistency by year 5	Report available by June 1 each year	Curlette

Pr 5.3.8 Social Network Analysis - Clusterings: CREST-Ed School Network Meeting.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Results of School Network Surveys from CREST-Ed and comparison schools	Social Network Assessment of Clusterings	CREST-Ed will have more favorable clusterings than comparison school networks	Report available by June 1 each year	Curlette

Pr 5.3.9 Social Network Analysis - Centralizations: CREST-Ed School Network Meeting.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Results of School Network Surveys from CREST-Ed and comparison schools	Social Network Assessment of Centralizations	CREST-Ed will have more favorable centralizations than comparison school networks	Report available by June 1 each year	Curlette

Pr 5.1.10 All Programs: CREST-Ed Leadership Consortium activities.

Data Sources	Indicator	Targets for Indicators	Timeline	Responsible Party
Minutes of annual mtg of Leadership Consortium	Report of minutes	Report of minutes	Report available by July 1 each year for preceding academic year	Benson