The Boston Teacher Quality Network:

BPE, Boston Teacher Residency, Teach Next Year at University of Massachusetts Boston, College of Science and Mathematics at University of Massachusetts Boston, Boston Green Academy, Dudley Street Neighborhood Charter School, UP Academy Boston, UP Academy Dorchester

Table of Contents

"We've got to do a better job recruiting and preparing new teachers...that means creating alternate pathways to teaching for talented young people by expanding programs like the one used in Boston, where aspiring teachers work side-by-side with effective mentors in a year-long residency." - President Barack Obama, November 4, 2009

Introduction

Building on 30 years of experience partnering with Boston schools, BPE (formerly the Boston Plan for Excellence) is pleased to submit an application on behalf of the Boston Teacher Quality Network (called "Network" hereafter) for the Teacher Quality Partnership Program, focused on **Absolute Priority 2**: Partnership Grants for the Establishment of Effective Teaching Residency Programs, and **Competitive Preference Priorities 1 and 2**: Promoting Science, Technology, Engineering, and Mathematics (STEM) Education and Implementing Internationally Benchmarked, College- and Career-Ready Elementary and Secondary Academic Standards. Based on deep expertise and a strong track record in preparing and supporting teachers in Boston, BPE's Boston Teacher Residency (BTR) and the University of Massachusetts-Boston's Teach Next Year (TNY) will recruit, prepare, and support diverse cohorts of high quality, long-term teachers to work in autonomous and high-need Local Educational Agencies (LEAs) in Boston, meeting a critically important need in Boston and serving as a model for other urban areas across the country.

As Boston continues to use school autonomy as a primary approach in school improvement, there is a growing need for high quality, diverse educators who are prepared to drive student learning in autonomous schools. BTR and TNY, two of the oldest teaching residency programs in the country, are partnering with four expanding autonomous school districts in Boston, all of which have demonstrated rapid success in dramatically improving student achievement. As these schools, each of which constitutes its own LEA, expand to serve more children, they will need the right human capital to lead the work.

Our deep experience gives us an evidence base and lessons learned on which to build. Working together over the next five years, the Boston Teacher Quality Network will **recruit,**

prepare, and support 260 teachers, significantly improve student learning in the partner LEAs, and use the autonomies afforded to the LEAs to further advance and refine the teacher residency design. The Network residencies are best suited to fill these positions with highly qualified, long-term, diverse teachers who are trained to maximize the autonomies within schools to improve student achievement.

Competitive Preference Priority 1. Promoting STEM Education. 88% of the teachers Network residency programs train (all but secondary English residents) will be well-prepared to teach STEM, either at the early childhood, elementary, or secondary levels. Our local workforce demands STEM-strong students, and our partner LEAs demand STEM-strong teachers. Partner LEAs have designed STEM programs that develop in students the interest, skills, and habits of mind to pursue STEM careers. All LEA curricula are aligned to the Common Core or Next Generation Science Standards and are college preparatory, including 8th grade algebra, four required high school math courses, and four required high school science courses. Partner high schools offer Advanced Placement courses in both math and science as well as dual-enrollment opportunities with local colleges, including the Benjamin Franklin Institute of Technology.

Partner LEAs must hire highly capable teachers with the right skills, content and pedagogical knowledge, and mindset to cultivate the inquiry-based STEM classroom experiences the LEAs are reaching for. Unfortunately, recruiting great STEM teachers, and especially great STEM teachers of color, is challenging given the many other opportunities for STEM majors in today's economy. However, Network residencies have built their capacity to attract talented and diverse STEM candidates for these schools and train them in ways that align with LEA needs.

The Network residencies require significant STEM content knowledge upon entry into our programs, and we augment it with additional content support alongside pedagogical training (See

Project Design for detailed residency description). Our faculty, called Clinical Teacher Educators (CTEs), model strong pedagogy as they teach a content lesson to residents. Because we understand that students create knowledge by making sense of the world around them, we train residents to engage their students in inquiry-based lesson design.

Approach to STEM Learning. Like BTR and TNY, our partner LEAs' approach to STEM learning reflects a strong belief that all students must master not just STEM content but also mathematical and scientific thinking in order to be effectively prepared to be successful in college and the workforce. Students are expected to meet high expectations for both skill-building and problem-solving. Lessons are designed around student communication allowing students the opportunity to deepen their understanding by articulating their ideas and responding to each other. Independent and group problem solving supports students to learn content and language as they work to make sense of the material and build their own knowledge. This approach is highly engaging, serving to inspire student interest in STEM careers.

Standards for Mathematical Practice and Instructional Activities. Effective teachers place student understanding and achievement at the center of their teaching. Wiggins and McTighe (1998) describe understanding as more than just knowing and doing. They write that understanding requires "using knowledge and skill in sophisticated and flexible ways." The Common Core codifies this idea by defining mathematical proficiency as the synthesis of eight Standards for Mathematical Practice (SMPs): (1) Making sense of problems and persevering in solving them; (2) Reasoning abstractly and quantitatively; (3) Constructing viable arguments and critiquing the reasoning of others; (4) Modeling with mathematics; (5) Using appropriate tools strategically; (6) Attending to precision; (7) Looking for and making sense of structure; and (8) Looking for and expressing regularity in repeated reasoning. We believe the SMPs present

significant leverage for change. We have adapted BTR's math curriculum to be tightly integrated with them and in doing so, considered the particular needs of ELLs and students with special needs. We are concerned that without proper attention, these students will not receive the rigorous instruction intended by the Common Core.

BTR will disseminate across the partners a set of Instructional Activities designed to help teacher candidates and novice teachers prompt the use of SMPs. One barrier hindering the success of novice teachers to implement the SMPs is the fact that it is difficult for them to truly process how students are thinking about content while simultaneously thinking about their next teaching move. To address this, BTR uses a set of Instructional Activities, which are common, high-leverage routines that can be applied with a variety of content. Because the routines become habit, residents can focus on student discourse and student understanding. Residents begin to embed these routines into their planning and teaching.

College of Arts and Sciences. The partnership will utilize UMass Boston's extensive resources around math and science. Seven years ago, UMass Boston created the Center of Science and Mathematics in Context (COSMIC) as a bridge between the College of Science and Mathematics (CSM) and the Graduate College of Education. It was a crucial first step towards establishing a comprehensive institutional infrastructure to promote improvements in science and math education programs. Faculty from both CSM and COSMIC have since been highly involved in supporting public K-12 teachers in Boston to improve their content knowledge, map curriculum between K-12 and college, and assess student understanding. UMass Boston has taken a lead role in two important local projects: the Boston Science Partnership (a collaboration between the Boston Public Schools, Northeastern University, and UMass Boston), and the Mathematics and Science Sheltered English Project. As ELLs increase their ability to understand

and communicate in English, they face the significant challenge of also learning the academic discourse of mathematics and science. The efforts to increase learning opportunities for ELLs places increased demands on teachers and highlights the necessity of helping students develop mastery of both language and content. UMass Boston addresses this need by increasing teachers' understanding of Sheltered English Immersion. Given the population in Boston, it is imperative that all STEM teachers develop the knowledge and skills to effectively teach ELL students.

Professional Licensure. CSM, in collaboration with TNY, COSMIC, and the Applied Linguistics Department at UMass Boston, have developed two post-Masters certificates for STEM teachers: "Improving Science Content Learning for ELLs" and "Teaching of Mathematics to ELLs." These 12-credit certificates will be offered to all Network alumni and teachers in partner LEAs as they obtain professional licensure. Each certificate consists of three STEM content courses and one pedagogy course.

The courses are aligned with the Common Core and Next Generation Science Standards, and participants will be continually challenged to look at their own classroom experience and to analyze critically their own practices through classroom activities and discussion, reflective writing, and collaborative projects. The curriculum features a multidisciplinary approach with the collaboration of STEM educators, scientists and mathematicians, and experts in the field of applied linguistics. The science courses were developed by the Boston Science Partnership along with three supporting partners: Harvard Medical School, Roxbury Community College and the College Board. For example, science courses include "Integrating Sciences through Energy," "Cell Biology and Genetics," and "Environmental, Earth, and Ocean Sciences." These programs will be offered in conjunction with our other induction efforts.

Competitive Preference Priority 2: Implementing Internationally Benchmarked, College- and Career-Ready Elementary and Secondary Academic Standards. Network residency programs and partner LEA curricula are aligned with the Massachusetts Curriculum Frameworks, which incorporate the Common Core Standards, Next Generation Science Standards, and Massachusetts Early Learning Standards. Network residencies will use the Common Core Self-Assessment Tool for Higher Education & Teacher Preparation Faculty (McQueen and Wiener, 2014) to analyze and improve our alignment with Common Core. Our residents, along with CTEs and mentor teachers, identify and target specific, measurable, and realistic learning goals for each student based on the Common Core, Next Generation, and Massachusetts Early Learning Standards. Driving student achievement through alignment involves:

- Using multiple sources of formative and summative data, including the Massachusetts Comprehensive Assessment System (MCAS) and PARCC results, in addition to observations, daily assignments, student discussions, and other forms of assessment to drive daily and long-term instructional decisions and practices.
- Developing and/or selecting assessments that capture evidence and allow students to demonstrate their understanding and academic progress along several dimensions.
- Developing and continually revising instructional plans, activities, and assignments based on information derived from daily work.
- Coordinating information from multiple sources enables teachers to judge the effectiveness of their instructional decisions and improve their plans and practices.
- Participating in decisions about how to best measure student learning across a school.

We have built the capacity of our residency programs to translate the college-ready standards into teaching practice among residents in all content areas. All Network teaching methods courses include specific assignments focused on the standards that require residents to: (1) gain a deep understanding of the new standards, (2) demonstrate how they are using the standards in their unit and lesson plans, (3) demonstrate how they are planning and teaching the standard to *all* students, and (4) design assessments that test student knowledge of the standards. All residents learn to differentiate standards-based instruction for special populations.

Significance

Working together over the next five years, the Boston Teacher Quality Network will train and support 260 teachers through BTR and TNY, significantly improve student learning in the partner LEAs, and use the autonomies afforded to the LEAs to further advance and refine the teacher residency design. The Boston Teacher Quality Network includes four autonomous LEAs in Boston, all of which are state-designated "Horace Mann" *in-district* charter schools expanding rapidly due to early success: Boston Green Academy, Dudley Street Neighborhood Charter School, UP Academy Boston, and UP Academy Dorchester. In Massachusetts, a Horace Mann charter school constitutes its own LEA, which also remains a part of the locality's sending district, in this case the Boston Public Schools (BPS). As such, Network LEA partners are uniquely positioned to fulfill the role as a laboratory for public education with the potential to impact larger systemic change in the district. These LEAs are working to create outstanding new schools in places where the schools have been failing for decades.

Our **theory of action** is as follows: *If autonomous schools hire and retain diverse teachers who have the skills and dispositions that Network residency programs develop in their residents, and organize them well into a coherent instructional system, high-need students (regardless of*

special education status or English language development level) will thrive, demonstrating gains in achievement.

As these autonomous schools are expanding rapidly to serve a growing share of Boston's students, their human capital needs are growing. Network LEA partners will need to hire [redacted] diverse, highly qualified, collaborative, and data-driven teachers over the next five years. Network residencies are uniquely positioned to fill this need.

Lead Partner. BPE will serve as the lead partner for this project. BPE's mission is to *drive exceptional outcomes for all students by developing great teachers and great schools.* Throughout BPE's 30-year history, we have focused on fulfilling a basic promise of our democracy: that every child should have access to a free, quality public education. The quality of PreK-12 education is a powerful determinant of a child's life chances, yet far too many students cannot access the opportunities they need to be successful. The disparities that exist between schools and neighborhoods in Boston, and in many American cities, are significant, persistent, and shameful. Since its founding in 2003, BTR, a program of BPE and BPS, has focused on improving the most important school-based factor in addressing educational inequity: quality teaching. BTR's groundbreaking model moves the locus of teacher preparation from the college classroom to the K-12 school, where novices learn how to be effective teachers. We have successfully prepared over 500 Boston teachers in the past decade, representing more than one of every five new BPS teachers in recent years. Furthermore, we hold ourselves accountable for the student achievement in graduates' classrooms.

Building on the Boston Teacher Residency Partnership. BTR and TNY have partnered successfully since 2010 through the TQP-funded Boston Teacher Residency Partnership (BTRP), and will serve as two core partners in this project. By all measures, the BTRP has been a great

success. More than 500 residents have been trained through the Partnership to date. In the first three years alone, we prepared 72 new STEM teachers, 85 new teachers of English Language Learners (ELLs), and 69 new special education teachers to serve Boston students. In addition, nearly 400 graduates teaching in Boston have received induction training. As a result of the BTRP, our residency programs have significantly built the capacity to prepare novice teachers to use data to improve instruction and evaluate teacher effectiveness on student learning.

Supporting System Change and Improvement.

"Autonomy is becoming a necessary precondition of success. That's what we're proving in Boston…We're unleashing the creativity of educators, and working to bring it to scale across the city. Pair this with a talented workforce, and Boston can be the first city in America to halt the epic catastrophe that has been urban schooling. If it is within our power to extend the extraordinary results we're seeing to more children--how can we possibly hold back?" - Paul S. Grogan, President & CEO, The Boston Foundation

During the past five years, the context of education in Boston has evolved significantly and in many exciting ways. BPS, like school districts across the country, has created a portfolio of schools, with varying degrees of autonomy, as one of its core school improvement strategies. With its first autonomous school launched twenty years ago, Boston is becoming a "portfolio" district, with 45 autonomous schools within the district (including, but not limited to, Horace Mann charter schools). One in every three BPS students will attend an autonomous school in school year 2014-15. In addition, just this year, Boston's Office of Human Capital has made monumental changes in the way that teachers are hired across the district, allowing principals the autonomy to hire teachers without regard to seniority. As more autonomies are extended to schools, and more students are served by autonomous schools, there is a growing need to train

and support teachers to work within these new contexts to maximize the opportunities they provide to accelerate student achievement.

Autonomous schools in Boston are professionalizing teaching. In addition to instructional responsibilities, teachers in these schools play important roles in assessment design, schedule and calendar construction, use of data and technology, and leading teacher collaboration. The organizational structures of autonomous schools allow for teachers to work in different and creative ways, revising the composition of teacher teams, meeting structures, use of teacher time, and differentiated roles of staff.

A recent report commissioned by BPS, *The Path Forward: School Autonomy and Its Implications for the Future of Boston's Public Schools* (French et al., 2014) asserts, "School-based autonomy is a crucial but not sufficient ingredient...Success requires arming school leaders with the flexibility to use resources and supports strategically—along with talented teachers and leaders, high-quality supports and an equitable approach to allocating resources." This project helps to fuel a scalable, highly promising movement in Boston to deliver a quality education to every child.

Building Local Capacity to Improve and Expand Services. The Network will prepare highly qualified teachers to teach high-need subjects in high-need schools and support them in their first critical years. The Network will build the capacity of our teacher residency programs in order to help meet the significant and growing human capital needs of a group of autonomous public schools in Boston which are transforming educational opportunities for some of our most underserved students.

Our four partner LEAs have made teacher development core to their improvement strategies. These LEAs understand new teachers' needs and are actively seeking to hire a large

number of great new teachers and to support their growth. Each of the four LEAs has been operating for three years or less. They are all producing remarkable student achievement gains, as described below. Finally, and critically important to the work proposed here, these LEAs all have aggressive expansion plans, and will need to hire [redacted] highly qualified teachers over the next five years who enter on day one ready to carry out ambitious instructional agendas. We have designed the project to build capacity in those schools, where the learning of each and every student drives the actions of all teachers.

The Network will prepare cohorts of teachers to ensure that Boston can deliver effective instruction at scale, first within Horace Mann charter schools, and then across the district's 45 autonomous schools and beyond. Given our track record, we are confident that we can help fulfill the human capital needs in partner LEAs and across Boston more broadly with highly-qualified teachers who are prepared to teach in autonomous schools. We will prepare 65 teachers each year, graduating only those who have demonstrated the ability to be effective teachers. We expect to place at least 50% of graduates in partner LEAs, and the rest in other autonomous high-need schools across Boston.

In Boston, Horace Mann schools attempt to bring world-class education to underserved students and communities. As an integral part of the BPS and state-wide school reform strategy, Horace Mann charters serve BPS in the following ways: (1) By restarting under-performing schools in order to turn them around, bringing high quality schools to previously underserved families and neighborhoods; (2) By modeling how autonomous schools can function within a district; and (3) By innovating and disseminating best practices from which the district can learn and scale up.

Network LEA partners are living up to these aims, driving student achievement for increasing numbers of high-need students in Pre-Kindergarten to grade 12. The following table details LEA expansion plans and the characteristics of the students served by partner LEAs.

Table 1. Network LEAs: Student Characteristics and Expansion Plans

	UP Academy Charter School of Boston (District)*	UP Academy Charter School of Dorchester (District)*	Boston Green Academy Horace Mann Charter School (District)	Dudley Street Neighbor-hood Charter School (District)	Total
Geographic Area Served	Boston	Boston	Boston	Boston	**Boston**
Grade Levels, 2014	6-8	PreK-5	9-12	PreK-2	**PreK-12**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Current Students, 2014	459	562	324	177	**1,522**
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Current Student Demographics					
Free/Reduced Price Lunch	88%	86%	84%	81%	**85%**
African American or Latino	82%	93%	82%	97%	**88%**
ELLs	23%	20%	15%	17%	**20%**
Students with Disabilities	24%	16%	32%	10%	**21%**
[redacted]					

The schools included in our partnership have **demonstrated success in improving student achievement and modeling successful practices**. These four schools are all new, focused on serving high-need students and launched to reform schools that the state had designated for

turnaround. Green Academy (opened in 2012) and UP Academy Boston (opened in 2011) have improved student achievement in nearly every MCAS-tested subject over the past few years; they now outperform BPS schools in proficiency rates in ELA, math, and science by between four and 39 percentage points on each test. For example, UP Academy Boston increased the school's math proficiency rate from 23% in 2011 to 76% in 2013. Green Academy is the fastest improving school in Boston, and the second fastest improving school in the state, according to student MCAS results.

The Dudley Street Neighborhood Charter School (opened in 2012) is designed to ensure that every student reads proficiently by third grade. The school's lead class will enter third grade in the coming school year, and student performance data from University of Chicago's STEP early literacy assessment suggests that we are on track to outperform most, if not all, BPS schools in reading proficiency. According to STEP, 67% of Dudley Street School students (PreK through second grade) are reading on grade level, and 20% are just one level (three or four months) behind. The second grade class, of which just 14% were reading on grade level when they joined the school for the start of first grade, now has a 56% proficiency rate. 72% of all students met ambitious targets for growth in literacy skills. There is no public data currently available from UP Academy Dorchester (which just opened in 2013), but preliminary internal data is very positive.

These schools are bringing educational quality to Boston's underserved neighborhoods, and are expanding with the goal of serving more students and influencing BPS to create more autonomous schools. [redacted] More than anything else, school leaders tell us their **key to success is finding the right people and organizing them well in the school.** Rather than moving the

same set of highly effective teachers around each time a school lands in turnaround status, **Boston needs to grow its own teacher pipeline to ensure every child has a great teacher.**

Building on Successful Models. Network residencies will build on the success and learnings from BTRP as well as our cumulative impact on Boston's schools. 68% of TNY residents are people of color, and 91% of graduates are placed in high-need schools, fulfilling a critical need for diverse teachers in local schools. We recently analyzed BTR's impact on BPS, which was our partner LEA in the first TQP grant. It revealed the following:

- **Teacher Diversity.** In SY 2013-14, 38% of teachers in BPS are individuals of color. Among the BTR graduates teaching in the district this year, 52% are individuals of color.
- **Teacher Retention.** Among all BTR graduates three or more years out of the residency and initially placed in BPS, 83% have served three or more years in BPS. Among graduates five or more years out and initially placed in BPS, 72% have served five or more years in BPS. Harvard's Center for Education Policy Research reported that BPS has a 63% three-year retention rate and 51% five-year retention rate for non-BTR teachers (Papay et al., 2012).
- **Student Achievement.** The data available to us at this time on 113 BTR graduates indicates that, on the 2013 MCAS, 59% of students in BTR graduates' classrooms made expected growth in English language arts and 59% of students in BTR graduates' classrooms made expected growth in math, compared with 49% in English and 48% in math for all students in tested grade levels in BPS. Expected growth is defined by a Student Growth Percentile greater than 40. Student Growth Percentile is defined by the state as follows: "Each student's rate of change is compared to other students with a similar test score history." MCAS scores at Burke High School, a turnaround school at which 55% of teachers are BTR graduates,

continue to rise. Between 2010 and 2013, the school has increased its proficiency rates from 29% to 72% in English language arts and from 28% to 45% in math.

- **Student Engagement.** In Spring 2013 we administered Dr. Ron Ferguson's Tripod survey of student engagement in the classrooms of approximately 90 BTR graduates who teach at the high school level. Scores on this survey, used in the Gates Foundation's Measures of Effective Teaching study, have been found to be correlated with teachers' ability to increase student achievement on standardized tests. The average BTR graduate was rated in 7th or 8th decile (where the 5th decile is the national average and the 10th decile is the top) on all but one of the core teacher effectiveness constructs measured by Tripod. This suggests that our graduates teaching high school compare very favorably against all other high school teachers nationally who administered the survey.
- **Principal Satisfaction.** On our latest principal survey, 96% responded that they would be interested in hiring another BTR-prepared teacher.

Needs Assessment. BPS students, on the whole, are not yet performing where they could or should be. Despite pockets of excellence, just 32% of students in BPS are reading proficiently by third grade, and just 42% of Boston's 54,000 students are performing at grade level in math. The BPS high school graduation rate is 66%. Enrollment of students in our partner LEAs is limited to children living in the city of Boston. These LEAs draw from the same population of students and families as BPS, and the student demographics are representative of the sending district (BPS), as can be seen below in Table 2. Partner LEAs are growing to serve a greater share of BPS's student body and influencing BPS to extend more autonomies to district schools.

Table 2. Comparison of LEAs with Sending District (BPS) and State

	Partner LEAs	BPS	State
Grades Served	PreK-12	PreK-12	PreK-12
Current Students, 2014	1,522	54,300	955,739
[redacted]	[redacted]	[redacted]	[redacted]
Current Teachers, 2014	147	4,001	70,490
[redacted]	[redacted]	[redacted]	[redacted]
Student Demographics			
African American	54%	35%	9%
Asian	3%	9%	6%
Hispanic	34%	40%	17%
Native American	0%	0%	0%
White	7%	14%	65%
Native Hawaiian, Pacific Islander	0%	0%	0%
Multi-Race, Non-Hispanic	2%	2%	3%
First Language not English	37%	46%	18%
ELL	20%	30%	8%
Students With Disabilities	21%	20%	17%
Low-income (Free/Reduced Lunch)	85%	78%	38%
* assumes 10% turnover			

LEA Human Capital Needs. Partner LEAs will provide annual hiring forecasts to Network residencies to ensure we are recruiting and training teachers in the most urgently needed areas, which are currently math, science, special education, English as a Second Language (ESL), literacy, and early childhood, as well as teachers of color. Building on the success they have had in preparing students to the current Massachusetts standards, partner LEAs are transitioning to the Common Core and Next Generation Science Standards. Network residencies will prepare new teachers who are ready to teach to these ambitious standards to all students. This project will

meet three human capital needs: (1) *more* great teachers for innovative and growing schools; (2) *higher quality* teachers who can drive student achievement; and (3) diverse teachers to fill hard to staff positions.

1. More teachers. [redacted] Over 90% of graduates from Network residencies are typically hired by high-need schools, the vast majority in Boston. Through this project, we will prepare 260 new teachers, at least 50% of whom will teach in partner LEAs, with the rest securing positions in other autonomous high-need BPS schools.

2. Higher quality teachers. Residency programs are aligned with what new teachers need to know and be able to do in urban classrooms to be successful. We do not ask doctors to perform surgery alone after learning about surgery in a classroom. We expect doctors to undergo years of supervised and supported practice-based training to ensure they learn to complete high-stakes, complex tasks well. We must treat the teaching profession with as much respect, increasing the accountability teacher preparation programs face for the performance of their graduates. This project will ensure every graduate meets our high standards for performance. Residents who do not meet our standards will not continue in the program.

3. The right teachers for our students: STEM (science, technology, engineering, mathematics), literacy, early childhood, special education, ESL, and diversity.

STEM. By 2019, partner LEAs will need to hire 191 new secondary STEM teachers and 104 STEM-strong elementary and early childhood educators. Shortages of highly effective STEM

teachers are particularly acute in public schools across the country, and states report more shortages in STEM teachers than in teachers of other subjects (U.S. Department of Education, 2013). Only 72% of public school classroom teachers are certified in the STEM fields in which they are teaching (National Center for Education Statistics, 2008). Here in Massachusetts, 81% of schools reported vacancies in secondary mathematics teachers, and 57% reported vacancies for teachers of biology and physical science. A troubling fact is that 39% of schools reported significant difficulties in filling these vacancies in mathematics, with 23% reporting significant difficulties in finding teachers in the sciences (National Center for Education Statistics, 2004). Given the national STEM needs of the 21st century economy nationally, and particularly in the Boston area, President Obama and the Governor of Massachusetts have both called for action to address this critical issue. . BTR joined the "100K in 10" movement its first year with a commitment to prepare 200 new, highly effective STEM teachers over ten years. We are making steady progress toward that goal.

Massachusetts' Plan for Excellence in STEM Education, updated in 2014, sets five STEM goals to develop the STEM workforce by building student interest and achievement (Massachusetts Governor's STEM Advisory Council, 2013). One of the goals is to "increase the percentage of skilled educators who teach PreK–16 STEM classes." The strategies under this goal call for more licensed early childhood and elementary educators trained in STEM, increased enrollment at STEM teacher preparation programs, increased quality of new STEM teachers, and fewer STEM teachers without STEM certification. The Boston Teacher Quality Network will undertake all four strategies in this project, preparing 120 highly qualified secondary STEM teachers and over 100 STEM-strong elementary and early childhood teachers.

Literacy. Partner LEAs will hire 50 early childhood educators, 141 elementary educators, and 52 secondary English teachers who can attend to students' literacy needs. In Boston, literacy is a major challenge: just one in three students reads proficiently by third grade. Students fall farther behind in later years (Hernandez, 2011) as secondary teachers typically are not as well-versed in (or tasked with) literacy instruction. All partner LEAs begin their work with students through literacy, making reading on grade level a high priority. For example, Green Academy provides an extra literacy course for all entering 6th and 9th grade students who are reading below grade level. All partner LEAs seek to hire teachers well-trained in literacy, and will use the research-based Wilson Reading System to build literacy skills among students and professional capacity among teachers. To carry out their goals, partner LEAs will need to hire several more elementary and secondary Wilson-trained teachers over the next five years. Network residencies will prepare 44 new elementary teachers and 32 new secondary teachers with deep training in literacy. Sixty new teachers (of all grade levels) will receive Wilson Level 1 Certification.

Early Childhood Education. Partner LEAs seek to hire 50 new early childhood educators over five years. Half of all four-year-olds in the city of Boston do not have access to a Pre-Kindergarten program, and many more do not have access to early childhood educators who are highly competent. Boston has set an ambitious goal: 100% of the city's children will be ready for school by Kindergarten entry, to be accomplished by 2018. One of the initiative's core strategies is to "create professional development pathways for early education and care providers to improve their core competencies, credentials, and the quality of education they provide."

Independent studies reveal that enrolling in BPS earlier than Kindergarten has positive effects on student performance in both the short and long terms. The positive effects of Pre-

Kindergarten programs on student achievement apply to all students, including ELLs and students with disabilities. For example, in comparing the 2011 third grade MCAS English language arts scores for BPS students who did and did not attend Pre-Kindergarten programs, students who attended the programs were **27% more likely to score advanced or proficient** than those who did not. More broadly, at-risk children who don't receive a high-quality early childhood education are 25% more likely to drop out of school, 50% more likely to be placed in special education, and 60% more likely never to attend college (Ounce of Prevention, 2014).

In his 2013 inauguration speech, President Obama cited evidence that "in states that make it a priority to educate our youngest children…studies show students grow up more likely to read and do math at grade level, graduate high school, hold a job, form more stable families of their own." President Obama challenged us, saying, "We know this works. So let's do what works and make sure none of our children start the race of life already behind" (White House Office of the Press Secretary, 2013). Given the proven success of BPS's Pre-Kindergarten program and the growing body of research on the importance of early childhood education, and buoyed by President Obama's call to action, Boston is working across sectors (district schools, charter schools, community organizations) to increase the number of preschool seats staffed with highly competent early childhood educators. However, we need more highly competent early childhood teachers. Partner LEAs, and many other autonomous schools in Boston, seek to hire *more* and *higher-quality* early childhood educators. Through this project, we will train and license 60 new highly competent early childhood educators.

Dual Licensure. Partner LEAs, like BPS as a whole, are focusing their hiring on dual-licensed teachers (teachers with a content license and a second license in special education or ESL). Every teacher in Boston is responsible for the learning of students with disabilities and

ELLs. The need is so great that in 2009, BPS set a goal that 80% of teachers would be dual-licensed by 2014. While there have been rapid licensing efforts, the need for comprehensive dual licensure programs is great. Therefore, Network residencies are designed to prepare teachers to support special populations. All residents are trained within a content area (math, science, English language arts, elementary, or early childhood), complete an intensive Inclusive Practices strand during the residency year, and have the opportunity to earn a second license in special education or ESL. Through this project, we will prepare 260 teachers to serve students with special needs and ELLs in general education classrooms, and provide a second license to 140 teachers (either Initial License in Special Education, Moderate Disabilities or Initial License, English as a Second Language).

Diversity. "A teaching force that represents the nation's racial, ethnic, and linguistic cultures…is advantageous to the academic performance of students of all backgrounds, and for students of color specifically" (National Education Association, 2014). BPS has been under court order for 40 years to diversify its workforce of teachers and guidance counselors. In 1974, federal judge Arthur Garrity required that the district's overall teacher/counselor workforce consist of at least 25% African American and 10% other people of color. Currently, 38% of teachers and counselors in BPS are people of color, and BPS has not yet met the requirement for African Americans; just 21% of teachers and guidance counselors in 2013-2014 identified as African American.

In partner LEAs, 40% of school staff are people of color and all aim to increase teacher diversity. BTR and TNY represent two of the most diverse teacher pipeline organizations in Boston. In fact, BPS's new Office of Human Capital has named BTR and TNY as pipeline partners for increasing teacher diversity in its strategic plan (Boston Office of Human Capital,

2014). Both partners are committed to ensuring that at least 50% of every cohort of residents comprises people of color, and that those teachers are supported to graduate and be placed in Boston's schools. Within this target we work to ensure that African-American and Latino candidates are well represented in our cohorts. Through this project, we will prepare 130 new teachers of color for Boston's schools.

Residency Program Needs. Our experience preparing great teachers has allowed us to demonstrate a model for filling many of the human capital needs of urban school districts. With regard to teacher preparation, we have learned that we have to be incredibly clear and rigorous about **graduation standards**, in order to ensure that every student has a highly competent novice teacher. We continually assess to ensure that our program standards and tools are mapped backward from the essential skills and dispositions of a great first year teacher, and that our curriculum and coaching are mapped to those rubrics. Our residents will only graduate if they have demonstrated that they have mastered the competencies described in our planning and teaching "gateway" rubrics. Network partners will work closely together to ensure that our graduates are all prepared to be highly successful on their first day as a Teacher of Record.

We have also learned how to embed an **Inclusive Practices** course, and include an inclusive practices component on the gateway rubric, to ensure every graduate can teach students with special needs. We have designed a dual-licensure program for graduates focused on learning disabilities to address the need for more comprehensive special education training for specific teachers. Finally, BTR needs to build its capacity to prepare **early childhood** educators to fill the growing need in Boston. It will join best practices from BTR with TNY's expertise in early childhood education to create a high-performing program.

With regard to **placement**, we have learned that, while great teachers are the single most important school-based factor in student achievement, while they are absolutely *necessary* to achieve transformative results, they are not always *sufficient*. It is our experience that student achievement challenges have been framed too narrowly as a problem simply of ensuring access to high quality individual teachers. We have concluded that, in addition to the expansion of human capital pipelines, we need to rethink how human capital is organized, deployed, and continuously improved, and how schools must be organized to support those efforts. We plan to concentrate our efforts in schools that have the autonomy to support ambitious teaching and build school coherence as aligned components of one overall effort. Quality teachers in poorly organized schools struggle to transform their institutions. In other words, terrific individual teachers routinely have unrivaled impact on classes of students; at the same time, they rarely are able to create the kind of change that many schools need to deliver that impact to every child in every classroom, every day.

Over the course of the BTRP we learned a great deal about the development of successful human capital pipelines for urban school districts. One key learning, which greatly informs this proposal, is one that reflects the experience of residencies across the country: the degree of match between the residency training and the school where a graduate is placed as a teacher of record is a critical factor in the success of that teacher. Our residency programs prepare teachers who are data-driven and community-connected. We prepare people to work in teams, to reflect on their practice, and to invite others into their classrooms for feedback. Some schools are significantly better structured than others to support those approaches to teaching.

We have concluded that we need to be more deliberate about the types of schools we place graduates in so that we maximize their impact on student learning. In the right schools, graduates

work together to achieve significant and sustained instructional improvements. Graduates of Network residencies serve the highest need students, and serve them best in schools where there is an alignment of instructional vision. For this reason, we have structured the Network proposed here to place our graduates in cohorts in autonomous schools.

With regard to **induction**, we have learned that a one-size-fits-all approach does not work. Graduates from our programs secure teaching positions at one of almost 150 different schools across Boston, in different content areas and at different grade levels. The induction support provided in these many different schools and contexts differs widely. At one school, for example, a teacher may receive support from an in-school mentor, an external coach, and a great grade-level team with supportive colleagues. At another school, a recent program graduate may receive no or few school-based supports and rely solely on one of our induction coaches. There are additional differences; some schools have collegial cultures; some do not. Some school-based mentors are given release time during the school day to observe and coach a new teacher; others teach all day and can only talk outside of school hours. Add to that list of challenges the variety of needs a new teacher might have, and the variety of class and student configurations a new teacher might face. The Network will strengthen each LEA's capacity to ensure quality and sustained induction that is *differentiated* to serve each new teacher, with the goal of improving teacher effectiveness and retention in partner schools.

Project Design

Strong Theory. Over the past decade, the field of teacher education has begun to shift away from what some saw as an over-emphasis on theory to focus more intensely on clinical preparation and performance. In 2010, the National Council for Accreditation of Teacher Education's Blue Ribbon Panel on Clinical Preparation and Partnerships for Improved Student

Learning called for "turning the education of teachers upside down" by redesigning preparation along the lines of other professions of practice, such as medicine. The panel argued that "we must place practice at the center of teaching preparation" and focus on ensuring that future teachers can put knowledge to use in ways that help students learn. This recommendation was underpinned by empirical research suggesting that pre-service teachers "benefit from preparation programs that provide significant oversight of field experiences and from field experiences that are congruent with candidates' eventual teaching positions" (e.g., Boyd et al., 2008; National Research Council, 2010). The panel also called upon teacher preparation programs, schools, and districts to partner more deeply and share responsibility for preparing and supporting novice teachers.

Teacher residency programs embody the panel's recommendations. They place clinical preparation at the center of their programs, focus their training in partner schools, creatively span organizational boundaries, and build on key research about adult skill acquisition and the development of expertise through deliberate practice (Dreyfus, 2013; Ericsson, et al., 1993). Urban teacher residencies, in particular, focus on preparing teachers for the demands of teaching in a specific context with heterogeneous student populations including high proportions of students living in poverty and ELLs.

The positive impact of the residency model on teacher retention, diversity, and hard-to-staff subjects has been well established, in part by research on BTR and the other early residency programs (Papay et al, 2012). Papay et al. found that, "BTR graduates are more racially diverse than other BPS novices, more likely to teach math and science, and more likely to remain teaching in the district through year five." More recently, information on the impact of various teacher preparation programs on student achievement is beginning to emerge. For example, the

Tennessee Higher Education Commission found that graduates of the Memphis Teacher Residency posted significantly higher student achievement scores on Tennessee's composite test score measure than the average beginner teacher in the state two years in a row (Tennessee Higher Education Commission, 2013). BTR commissioned a groundbreaking study on the effectiveness of its graduates just as the national conversation on accountability for teacher preparation was beginning, and we shared the results widely to inform the field and solicit feedback. We learned from the study (in 2011) that BTR graduates were significantly more diverse and remain in the district longer than non-BTR teachers in BPS. We also learned that BTR graduates improved more rapidly than other teachers in BPS, and whereas other novice teachers in Boston plateaued in their ability to raise student test scores after their second year, BTR graduates continued to improve into their fifth year and beyond. While they did not outperform other teachers in their first years of teaching, by the fourth and fifth years of teaching, BTR graduates significantly outperformed more veteran teachers in their ability to raise students' math scores (Papay et al, 2012).

Recognizing that students in high-need schools cannot afford to wait for teachers to improve their practice, BTR has spent the last three years innovating (while sharing progress with TNY and other residencies) to ensure every single BTR graduate in their very first year of teaching is capable of delivering *ambitious* instruction: *rigorous* instruction which *consistently* engages *all* students. To do this, we needed to (1) establish clear performance expectations and exit standards, a method for regularly assessing teachers against these standards, and a process for exiting residents who could not demonstrate competencies; and (2) guarantee a high-quality practicum experience for all residents which would model effective practices and engage residents in the work.

We analyzed the key practices of great teachers, created action-oriented and normed rubrics for planning, teaching, and assessing, tied all coursework and coaching to the rubrics, and established high-stakes performance assessments called "gateways" to measure residents' ability to enact the key practices. The goal was to make sure that every graduate meets our quality standards; if a resident fails to demonstrate competence, he does not continue in the program. As part of the Network, TNY plans to replicate this approach to strengthen its residency program.

To ensure that every resident has a high-quality practicum experience, BTR has increased its attention to the conditions in which residents learn. In their book *Organizing Schools for Improvement*, Bryk et al. confirmed that student achievement depends heavily on the coherence and instructional management of schools. The presence or absence of organizational conditions influences whether teachers are able to teach effectively and improve their practice (Bryk et al., 2010). Network residencies intentionally develop in their teachers a vision of good teaching which encapsulates Bryk's findings. We have begun placing residents in cohorts for their year-long practicum in schools which promote teacher collaboration and mentoring, evidence-based decision-making, and other practices we know are crucial to student learning. By concentrating our residency programs into just a few schools where we have greater influence to improve conditions, residents learn from the modeling of not just of one mentor teacher but from the school-wide practices that drive improvement. They develop the habits and skills to enact the ambitious teaching practices we have cultivated in residency preparation schools.

Recent data indicates that we are moving in the right direction. The data available to us at this time on 113 BTR graduates indicates that, on the 2013 MCAS, 59% of students in BTR graduates' classrooms made expected growth (using a state-determined metric) in English language arts and 59% of students in BTR graduates' classrooms made expected growth in math,

compared with 49% in English and 48% in math for all students in tested grade levels in BPS.[1] On Dr. Ron Ferguson's Tripod student engagement survey, BTR graduates teaching high school compare very favorably against other high school teachers nationally who administered the survey on all tested indicators: challenging students, giving clear instructions and explanations, making connections between ideas, making learning interesting, making sure students feel their ideas are important, providing encouragement and support, creating a culture of support. Principals continue to rate graduates highly on surveys (96% would hire another graduate).

We have learned that graduates are most effective when they are clustered in schools which promote the instructional coherence described by Dr. Bryk in *Organizing Schools for Improvement*. Increasingly, autonomous schools are shifting towards this vision of schooling and demonstrating success. A recent report on BPS reports that, "For the 2013-14 school year, autonomous schools received on average twice as many first-choice preferences compared to the total number of students they enrolled than traditional schools." Boston seeks to continue to expand school autonomies, and will need the right human capital to lead the work.

Our **theory of action** is as follows: If autonomous schools hire and retain diverse teachers who have the skills and dispositions that Network residencies develop in their residents, and organize them well into a coherent instructional system, high-need students will thrive, demonstrating gains in achievement. And if those schools continue to serve more students, their human capital needs will grow. Network residencies are best positioned to fill these positions

[1] Student Growth Percentile is defined as: "Each student's rate of change is compared to other students with a similar test score history."

with highly qualified, long-term, diverse teachers who are trained to engage in reflective practice and continuous improvement.

Sufficient Quality, Intensity, and Duration to Lead to Improvements. The residency model provides a comprehensive, practice-based model; we think carefully about what individual and cohorts of teachers need to learn and when, and we make absolutely certain, through observed cycles of rehearsal, enactment, assessment, and reflection, that residents and graduates are able to perform targeted teaching practices.

Network residency programs place residents in PreK-12 classrooms for a year of intensive study and practice. Working at the elbow of mentor teachers four or five days per week for an entire school year and completing thirteen months of masters-level coursework, residents acquire the theory, practical skills, and habits of continuous learning to be effective from the moment they become teachers of record. All residents commit to teach in Boston for three years, and we support graduates over that period as they hone their practice through a variety of induction services. Many graduates work in autonomous schools with other alumni, where they support each other to achieve better outcomes for students, take leadership roles, and form a critical mass of like-minded professionals committed to dramatically better outcomes for students.

Residents earn an Initial Teacher License in their primary content area, credit toward licensure in special education and ESL (with the option of completing the license either during the residency or in the following year), and a Master's in Education.

UMass Boston has learned the acute differences between a residency program and a more traditional track as it hosts both programs (though only the residency, called Teach Next Year, is included in this partnership). Their residency program attracts more career changers and people of color, and it requires a more site-based and integrated Master's program. TNY, like BTR, has

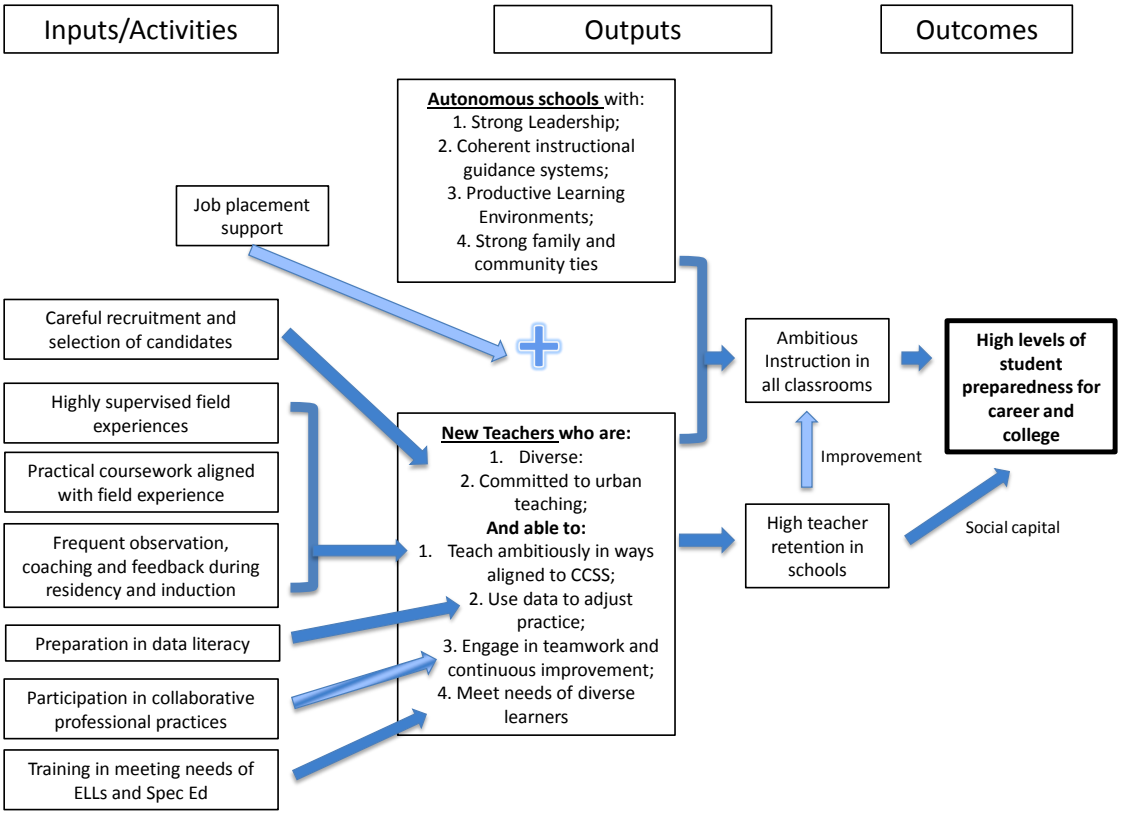
learned to shape the residency around the daily experiences of residents in the classroom, thinking carefully about what instructional challenges will need to be addressed *for students* at what time in the year. Consequently, UMass Boston has seen that residents in the Teach Next Year program learn more quickly and more deeply to enact strong teaching practices in urban schools. It has begun to apply lessons learned from both TNY and BTR across its entire teacher education department. Details on the quality, intensity, and duration of residency and induction components follow.

Intended Impact. Through this project, we intend to fulfill the human capital needs of partner LEAs through a coherent, sustained program. We will:

- Prepare and support highly effective new teachers in the high-need areas of math, science, literacy, early childhood, special education, and ESL.
- Diversify the teacher pipeline by ensuring 50% of each cohort are people of color.
- Improve teacher preparation for high-need students by ensuring all graduates are trained to implement standards-aligned curricula, use collaborative, data-driven practices to drive improvement, collaborate and innovate, and integrate theory and practice.
- Increase the placement rate of graduates in partner LEAs (to 50%) where teachers can maximize impact on student learning.
- Increase teacher retention by ensuring that 80% of graduates teach in high-need LEAs for three or more years.
- Improve student achievement by ensuring that at least 70% of students in residents and graduates' classrooms achieve ambitious student learning targets.

- Increase the effectiveness of graduates, particularly in the areas of STEM content, literacy instruction (through the Wilson Reading System), early childhood, and using data for improvement.

Logic Model. Building on what we learned in BTRP and focused on the context of autonomous schools in Boston, our logic model follows:



Preparation of Teachers with Strong Teaching Skills. Network residencies guarantee strong teaching skills in our graduates through rigorous selection, relevant preparation, and tough graduation requirements. In order to graduate, residents must complete at least 1700 hours of service in Boston's classrooms (though most complete many more) and pass the Massachusetts Pre-Service Performance Assessment, the state licensure exams in the area in which they intend to teach, gateways (competency-based evaluations of teaching effectiveness), and all graduate

courses (including assignments which are aligned with instructional goals). Residents who do not meet our expectations for performance do not graduate. Historically, about 80% to 90% of residents graduate from our programs. 100% of graduates have passed all of the applicable State qualification assessments for new teachers, which includes an assessment of subject matter knowledge in the content area in which the teacher intends to teach.

The gateway process is at the core of resident assessment. It is conducted by at least two professional educators (including BTR/TNY staff and mentor teachers). The evaluators observe a resident's lessons and collect multiple pieces of evidence, such as lesson plans, student work, student participation data, student assessments, and resident reflection. Then, they evaluate performance against a gateway rubric which has been backwards-mapped from the program's graduation requirements. Finally, they debrief with residents, citing evidence for decisions. Examples of gateway standards, which are described in detail on the rubric, include: (1) Plans and teaches high cognitive demand lessons and units of instruction; (2) Plans with knowledge of students and content; (3) Plans and integrates assessment, adapts instruction as a result of assessment data; (4) Maintains productive participation of all students; and (5) Facilitates content-focused discourse. The gateway process makes our expectations clear to residents, ensures that feedback and coaching are geared to agreed-upon, high-leverage teaching practices, and ensures the quality of graduates.

Preparation of Teachers to Understand and Use Research and Data. New teachers must be results-driven when it comes to the ability to analyze and learn from student data to improve instruction. Our partner LEAs are heavily results-driven; their viability as Horace Mann charter schools depends on delivering strong student achievement results.

As a core part of preparing teachers for these schools, Network residents are required to work with mentor teachers to give their students formative and summative assessments throughout the year and to use the data for instructional decision-making. The residents are prepared for this through a year-long data strand. Through coursework and field-based activities, residents learn to be both "assessment literate and data wise." The Network data strand supports residents to: (a) Identify, access, and analyze assessment data at the classroom, grade, and school levels; (b) Understand assessment for students with special needs and ELLs; (c) Use data regularly to plan and adapt instruction; and (d) Share data effectively with colleagues, students, and families to improve decision-making. Residents engage in regular inquiry cycles intended to support learning from student achievement data and the honing of instructional practice.

In the spring, residents are responsible for designing, planning, and leading an entire unit with an embedded assessment strategy. At the end, they must present and defend how they used data to understand what students were learning and how to make instructional decisions. Residents are required to focus on Common Core-aligned student learning goals, design lessons with goals and student learning needs in mind, look for evidence of student learning, think about different ways that students demonstrate knowledge, grapple with many different variables, and reflect deeply on their own teaching practice.

Residents in the Network track and analyze student learning. In our most recent cohort, 80% of students made expected growth and over 90% of students met the grade-level standards set by residents and mentors. While these data are highly variable, as they rely on the choice of assessments and targets across a variety of contexts, we are convinced that by collecting and analyzing this data throughout the year, residents were able to take an evidence-based approach

to lesson planning, classroom instruction, and individualized support for students. Residents are trained to use technology to collect, view, and analyze data throughout the residency.

Coordinating Strategies and Activities. The Boston Teacher Quality Network builds on the work of the TQP-funded Boston Teacher Residency Partnership. As such, Network residencies have a great deal of experience in coordinating strategies and activities with other teacher preparation and professional development programs, including those funded under Elementary and Secondary Education Act, Individuals with Disabilities in Education Act, and the National Science Foundation. BPE Chief Program Officer Simon Hess (BTR) and UMass Boston's Chair for Curriculum and Instruction Lisa Gonsalves (TNY) will lead this work, and will share information across the Network both informally and at quarterly Network meetings.

Consistency with State and Local Education Reform Activities. Network partner activities will be consistent with both Boston and Massachusetts education reform activities. In Boston, preparing and supporting diverse, quality educators is a top priority across all of the schools. Network partners will continue to work closely with leaders in Boston to ensure alignment and consistency of our human capital work. At the state level, Massachusetts is deeply engaged in work related to educator effectiveness, most especially through its Race to the Top priorities. Massachusetts is also one of seven states chosen by the Council of Chief State School Officers to participate in a two-year pilot focused on transforming educator preparation and entry systems into the profession. Jesse Solomon, Executive Director of BPE, participates on the statewide Stakeholder Working Group and will ensure that the Network activities are consistent with program and policy initiatives underway. In addition, Maura Banta, Chair of the State Board of Elementary and Secondary Education, is a longstanding Trustee of BPE, and will

continue to provide strategic guidance to BPE and to this project to ensure alignment with key related education reform activities.

Alignment with Massachusetts Early Learning Standards. Both Network residencies will include an Early Childhood teacher residency as part of this project. In Massachusetts, Governor Patrick has prioritized early education as a key strategy in closing the achievement gap and positioning all children for success in school and life. Massachusetts has developed rigorous state standards that outline expectations for preschool learning and development, as well as various efforts to link the early education and K-12 systems from birth to third grade through aligned screening, assessment and curricula practices. Our residencies will be aligned with both the National Association for the Education of Young Children's accreditation standards and the Division of Early Childhood Professional Standards and Recommended Practices. And, our early childhood educators will learn to ensure students learn the early childhood standards described in the Massachusetts Curriculum Frameworks and Massachusetts Department of Early Education and Care's Preschool Learning Guidelines.

Alignment with State Standards. See page 7, Competitive Preference Priority 2.

Recruitment and Hiring Objectives. Partner LEAs provide hiring projections to guide the Network's recruitment and selection efforts and plan to hire residency graduates to fill a portion of teaching vacancies in high-need subject areas. Network residencies have developed a robust recruitment model which seeks and cultivates high-potential candidates. To ensure that candidates reflect our communities, we recruit heavily from within Boston. We have strong outreach, not just to local colleges, but also to community and faith-based organizations, staff in local K-12 schools, diverse pipeline partners such as City Year and Breakthrough Collaborative, and to the general public via advertising geared towards career changers. We use social media,

word-of-mouth campaigns, and individualized communications to educate targeted audiences about the residencies. The Network commits to enrolling cohorts in which 50% of residents are people of color, and we have built our recruitment capacity to ensure that high-quality candidates of color apply to our programs. In particular, we are invested in cultivating a Male Teachers of Color community in Boston to increase the number of students taught by men of color, who are underrepresented in our schools. In addition, we aim to increase the diversity of math and science teachers in partner LEAs by recruiting people of color who have strong content knowledge in math and science.

We set ambitious recruitment targets around total number of applications, number of applications in each content area, and number of applications for various demographic groups. We then track candidate data regularly in advance of each admissions cycle deadline to make sure that our goals are met to ensure a high-quality and diverse cohort.

Resident Selection and Selection Criteria. Interested applicants complete an application, which includes essays demonstrating writing skills and beliefs about teaching, an academic transcript, and three letters of recommendation. Residents are then selected through a competitive selection process—less than 20% are accepted. We have continued to refine our selection process as we have learned more about the attributes of successful teachers by studying the practice and impact of program graduates. We have instituted performance-based Selection Days to test for those attributes, such as receptivity to feedback, being data-driven, and having a collaborative learning stance. All applicants must be a US citizen, national, or permanent resident, have a bachelor's degree with an undergraduate degree of GPA of 3.0 or above, have a record of professional accomplishment, and have experience working with children. We first evaluate residents to determine if they pass a content screen in the area in which they want to

teach. For example, a biology applicant must have either successfully taken six or more college- or graduate- level courses in biology, or pass the biology state licensure exam. If they pass this screen, they are considered for other criteria by multiple reviewers.

Highly-rated applicants are invited to participate in Selection Day. TNY's Selection Day consists of interviews with mentor teachers, TNY staff, and course instructors. BTR's Selection Day includes a writing assessment, two interviews, a group problem-solving activity (mimicking a teacher team meeting), and a lesson with real students (who contribute their own ratings). Elementary residents and secondary STEM residents also take a math assessment. Raters include BTR and school-based faculty, mentor teachers, and graduates, all of whom must undergo training. The day helps the Network to evaluate candidates' commitment to and expectations for Boston's children, content knowledge, learning stance, receptivity to feedback, writing skills, problem-solving strategies, persistence, critical thinking skills, orientation towards social justice and equity, commitment to long-term teaching in Boston, oral communication skills, and interpersonal skills.

Stipends, Agreements to Serve, and Repayments. Accepted applicants who wish to enroll in BTR or TNY sign an Agreement to Serve, which meets all the criteria listed in the Higher Education Opportunity Act, including a commitment to serve as a full-time teacher in a high-need school for three years. During their residency year, residents who complete an application receive an annual living stipend, which helps us to attract teachers to the program regardless of economic status, increasing access to the profession. Graduates who do not fulfill the requirements set forth in the Agreement to Serve are required to repay this stipend, with interest. Repayments are used to support the future work of the residency programs.

Integration of Pedagogy, Classroom Practice, and Teacher Mentoring. The greatest strength of Network residencies is the strong integration of theory and practice. We enact this integration through our structures for staffing and accountability. We have combined two former job roles (course instructor and school-based coach) into one, called the Clinical Teacher Educator (CTE). CTEs teach Content Methods courses and provide school-based coaching, enabling them to align the coursework and practicum experience. CTEs courses draw on deep knowledge of residents' experiences in schools, and they ensure residents understand the history and theory behind specific instructional practices that are relevant to their students. Residents, mentors, and CTEs work together in the following manner: (1) residents read about a certain theory; (2) CTEs model a linked instructional practice for the residents; (3) residents design a lesson using that practice for their students; (4) residents rehearse the practice with their CTE and peers and receive feedback; (5) residents revise their plan with their mentor teacher; (6) residents enact the practice with students in the classroom while mentor observes; (7) residents collect measures of student learning; and (8) residents debrief the lesson with the mentor teacher and CTE. Besides extensive practice and feedback cycles, residents also write papers and create portfolios that demonstrate their ability to analyze pedagogical theories within the context of classroom practice. Mentor teachers are both mentors and learners themselves, as the team of resident, mentor, and CTE work together to improve outcomes for students.

Through BTR, we have developed a set of Instructional Activities for each content area. Instructional Activities are content area-specific teaching practices that are designed to help teachers elicit high cognitive demand thinking from students. They are introduced, modeled, and rehearsed during graduate courses and enacted and debriefed as a part of the practicum. Instructional Activities contribute to effective teaching in a number of ways. They serve to

orchestrate a classroom environment in which everyone participates, assess student understanding to inform instruction, make clear to students what is expected of them across classrooms and grade levels, and enable novice teachers to focus on content and student responses. They also allow for shared expectations and language, so teams of mentor teachers and residents can all work on the same practice and support each other's improvement. We plan to scale this approach across the Network as a tool for novice teachers to implement high quality lessons.

Our accountability structure is such that mentors and CTEs are responsible for ensuring that each resident learns to embody the indicators on our gateway rubrics. Therefore, both the mentor and the CTE conduct their work with residents (modeling, teaching, assigning, reflecting) around these indicators, ensuring tight coherence and alignment of theory and practice. For example, a Content Methods syllabus will name a gateway indicator as the objective for a certain course session. The reading and assignments for that week will align with that indicator, and the CTE will ask the mentor teacher to model that indicator during the same week that the resident is asked to learn it. With these two strategies, we have eliminated the barrier between curriculum and practicum that hinders many teacher preparation programs.

Rigorous Graduate-Level Coursework and Master's Degree. All Network residents are enrolled in graduate-level courses and earn a Master's Degree in Education from UMass Boston. Course Instructors (who are often CTEs) support residents to contribute to student achievement gains by guiding them in their learning of effective practices and relevant theory and helping them to connect to the specific instructional demands of their current contexts. Residents bring their student achievement data, and other relevant artifacts, to their courses. Instructors share responsibility for helping residents effectively analyze, understand and use these data and

artifacts to serve their students. The coursework and residency experience is uniquely aligned to support residents to make connections between what they are reading and learning in their courses and what they are practicing in the classroom. Instructors embed the development of key assignments and school based tasks throughout the program. These common tasks and assignments include case studies and learning profiles of specific students, lesson planning (fall), unit planning (spring), and video and reflective writing assignments.

Courses are designed with Boston's students and curriculum in mind. Courses cover topics such as classroom management, human development, foundations of teaching, specific methods of teaching ambitiously in a particular content area, inclusive practices, literacy, and using data. Resident courses take place throughout the summer, as well as 1.5 days per week throughout the school year. Some coursework is occurs in schools, which allows for group observations and reflections on teacher practice. Throughout the courses, Common Core Standards and Next Generation Science Standards form a base from which residents work. Residents must pass all coursework in order to graduate.

True to the Common Core, partner LEAs' instructional philosophies, and our principles of instruction, the focus of our teacher preparation programs is on student reasoning and students' abilities to consider different arguments and communicate their thinking verbally and in written form. This emphasis on student understanding is supported by the finding that student learning gains are greatest in classrooms in which instructional tasks consistently encourage high-level student thinking and reasoning, and least in classrooms in which instructional tasks are consistently procedural in nature (Silver et al., 1995). If students are thinking, they need to be communicating their ideas, and so teachers need to elicit, assess, and respond to their ideas and teach students to respond to each other's ideas. This requires setting and maintaining clear

expectations for student participation and writing. Thus, student understanding, academic discourse, and writing are at the fore of all of our work in teacher education, and are supported by both coursework and practicum experiences.

Guided Teaching Apprenticeship. The Network residencies are designed to prepare effective urban schoolteachers for autonomous, high-need schools. Therefore, we require a full year of service and learning in a mentor teacher's classroom in high-need LEAs. Residents are placed in school-based cohorts, where they form learning communities with the mentor teachers and CTEs. Mentor teachers and CTEs collaborate to ensure resident and student learning, thereby aligning the practicum experience with coursework objectives. CTEs are able to simultaneously coach residents and mentors and provide just-in-time coaching as needed. Residents gradually assume more and more responsibility throughout the year, until they can fully co-teach at the end of the year. In the fall, we focus residents on planning and teaching parts of lessons, such as the Do Now or a Guided Reading session, to achieve specific objectives. In the winter, residents plan and teach entire lessons. In the spring, residents plan and co-teach entire units. These activities require residents to incorporate lessons learned across their coursework (content methods, classroom management, using data, inclusive practices, etc.). They are guided through this work as they are challenged to continuously improve their practice to benefit their students.

The practicum experiences develop new teachers for Network schools as they work together in cohorts to solve problems, learn to operate in classrooms with differentiated staffing (multiple adults performing different but coordinated roles), expect to make their practice public, ask for feedback and use it to get better, and seek to enact common, high-leverage teaching practices across teaching teams so as to create better results for students. These practices make an

enormous difference in autonomous schools with structures that are designed to promote teacher learning.

Mentor Teacher Selection, Training, and Compensation. Mentor teachers are selected based on their use of effective teaching methods, a structured and engaging approach to differentiation of instruction for all students, and a commitment to making available the thinking and reasoning behind their instructional choices. Mentors are also expected to have a strong and targeted knowledge of, and approach to, formative and summative assessment. They must present student achievement data (such as scores on the MCAS or DIBELs) to our programs that demonstrates their ability to increase student learning. A prospective mentor must be an experienced, reflective and collaborative teacher with strong content knowledge and exemplary teaching ability. All mentor candidates must demonstrate effective planning and teaching skills and evidence-based instructional strategies in their respective content area, including literacy, math, and science for elementary and early childhood. Potential mentors must be open to questions and feedback about teaching practice, comfortable and skilled at observing and giving feedback to another teacher, collaborative and entrepreneurial. Many mentors are teacher leaders, implementing new curriculum modules and conducting inquiry cycles with their colleagues. The Network residency programs observe all mentor teachers in the classroom before accepting a mentor teacher candidate.

Because serving as a mentor involves an extensive time commitment, which benefits students and residents alike, mentors receive an annual stipend for their work. We provide monthly trainings as well as ongoing individual coaching for mentors which cover both advanced pedagogy and coaching skills aligned to resident as well as student needs. Examples include trainings on setting language objectives for each lesson, understanding aspects of the Common

Core Standards, teaching literacy to older students, boosting science content knowledge, and facilitating student discourse. We see the mentoring relationship as a year-long conversation based in practice through the effective use of observations, discussions, and co-teaching opportunities. Mentors set aside time at least once per week to provide residents with feedback on their teaching. These activities strengthen the content knowledge and teaching skills of teachers in partner LEAs as they continuously reflect on their own practice.

STEM. See page 3, Competitive Preference Priority 1.

Literacy. To address the need for improved reading proficiency across grade levels in Boston, in 2013, BTR began offering training in the Wilson Reading System to graduates in our special education dual-licensure program in order to better support the vast number of struggling readers in Boston. During an intensive four-week summer program, participants learn the essential components of reading instruction through the Wilson system, apply their learning as they provide daily one-to-one tutoring for struggling readers, and receive extensive feedback from Wilson trainers. Last summer, participants increased their students' reading scores on the Wilson reading assessment by 29% over four weeks. This year, we have expanded the program to serve additional graduates and our Special Education CTE is becoming Level 2 certified so that she can be a local trainer, building capacity in Boston and reducing costs. In addition, our secondary English and elementary residency programs focus on preparing teachers to develop exceptional reading and writing skills among students.

Serving ELLs and Students with Disabilities. One in five students in partner LEAs has an identified disability and one in five is Limited English Proficient. All teachers in partner LEAs, therefore, are responsible for teaching ELLs and students with special needs. Therefore, Network residencies prepare teachers to drive student learning on both content and academic language in

general education classes. CTEs in ESL and Special Education teach a year-long, practice-based course on Inclusive Practices and coach residents in their classroom placements, all of which have ELLs and students with disabilities. Many residents also rotate through substantially separate special education classrooms or ESL classrooms for additional experience. To serve students with disabilities, residents learn how to choose, implement, and refine accommodations to drive student learning and are required to do this for specific students as part of their final assignments. Residents participate in IEP (Individualized Education Program) meetings in order to both learn how IEP meetings are run and to build understanding of students' needs. Residents also explore how technology can facilitate universal design for learning and differentiated instruction, and support the intentional implementation of accommodations. For example, they look at how tools like Voicethread, Readability, and Wordle can support variability in the classroom as learners differ in the ways that they perceive and comprehend information.

All residents also learn how to shelter content for ELLs without sacrificing cognitive demand. One area of focus for Network residency program is helping all residents and mentor teachers to teach content through the intentional use of academic language. Academic language is the means by which students develop and express content understanding. Academic language includes the language of the content (vocabulary and functions and forms of language associated with learning outcomes in a particular subject) and the instructional language used to engage students in the learning context. This means both ensuring students have access to the content through the language used, but also, more importantly, ensuring students are constantly building their academic language skills so that they can participate in high-cognitive demand tasks. All CTEs, mentor teachers, and residents receive training on setting appropriate language objectives for lessons and supporting students to reach those objectives.

Having residents focus on inclusive practices and teaching all students during their residency year gives them an opportunity to practice how to differentiate instruction (one of the most difficult skills for new teachers) while having a mentor teacher and CTE to guide their actions and provide support.

Dual Licensure in Moderate Disabilities and ELLs. To respond to the needs of partner LEAs for more dual-licensed teachers, Network residency programs offer residents the opportunity to earn a second license in Special Education (Moderate Disabilities) or English as a Second Language. While a few residents complete the second license during their residency year, we encourage residents to enroll after graduation to ensure more comprehensive training. Like the residency, these programs involve both a coursework and practicum component, and require the passing of Massachusetts licensing exams. The special education program supports all participants to write, implement, and evaluate Individualized Education Plans (IEPs), understand and comply with all federal and state laws (including IDEA), and use assistive technologies. It also builds student efficacy, as evidenced by students' understanding their own learning profiles and leading their own IEP meetings. Participants come to know their students and strategically design instruction, classroom procedures, data collection processes, or communication structures, all in service of addressing their students' diverse learning needs. As a part of BTR's 13-month special education licensure program, which focuses on learning disabilities, all participants provide one-to-one tutoring to struggling readers and receive Wilson Level 1 Certification. BTR's year-long ESL licensure program incorporates new state standards for ESL, called WIDA (World-class Instructional Design and Assessment English Language Development).

Early Childhood Education. Due to the growing need for highly competent early childhood

educators, Network residency programs will run early childhood residency programs. After residents demonstrating performance reflecting specialized training and capacity to educate young children, we will endorse for the Initial Massachusetts license, "Early Childhood: Teacher of Students with and without Disabilities." In creating a new early childhood residency program, BTR will utilize its own best practices in teacher education and draw from the best practices nationally, including from TNY and Wheelock's TeachBoston program (which was launched under the TQP-funded Boston Teacher Residency Partnership).

Residents in our early childhood programs will have the same rigorous coursework and practicum requirements as residents teaching in other grade levels, but with coursework and practicum designed around the specific needs of young learners.

Core program components. In order to ensure highly competent early childhood graduates, residents will build their understanding of child development, language and literacy, curriculum, assessment, working with families, cognitive and social-emotional development, and policies and professionalism. Residents will learn how children learn through play, how to build strong relationships with children, and early risk factors that may impact a child's cognitive or social-emotional development. Through the program, residents will promote literacy and language development, inquiry and exploration, and math and science skills in young children, building on young children's natural curiosity. To effectively scaffold learning at each age, residents will learn to provide ample time for exploration and manipulation, observe and listen to children's comments and questions, model and challenge and coach children during their interactions, encourage children to reflect and self-correct, provide children with the language for mathematic and scientific properties and processes and relationships, play games with mathematical and scientific content, and encourage peer interaction and collaboration (Epstein, 2006).

Induction. Induction serves three linked goals for partner LEAs: increasing graduates' effectiveness, increasing the retention of high-quality teachers, and positively impacting student achievement. Recently, the Carnegie Foundation for the Advancement of Teaching confirmed that, "The primary driver of the exodus of early career teachers is a lack of administrative and professional support" (Headden, 2014). Through formal induction programs as well as through alumni community building, the Network will provide the professional support required to improve and sustain cohorts of high quality teachers within partner LEAs. To the extent possible, other teachers in Network LEAs will be invited to participate in these professional development activities.

Network residencies provide induction supports to graduates (including early childhood graduates) for three years after completing the residency. Induction staff participate in professional learning communities and incorporate the latest research on teacher effectiveness into their work. Supports for graduates include:

- *Differentiated, individual and group coaching and mentoring.* Induction coaches (either school-based or from BTR or TNY) will engage graduates in their first two years of teaching with individual, targeted, competency-based induction cycles focused on specific areas of improvement. Cycles include planning, observation, mentoring, assessment, and reflection. Via feedback surveys, 63 graduates in 2013-2014 reported that 98% of coaching cycles were "helpful" or "very helpful" in meeting their teaching and learning needs. We also facilitate (or engage an experienced program graduate to facilitate) group coaching around specific problems of practice. These groups may be school-based or may cross school boundaries to encourage professional collaboration within and between schools. Graduates use this time to bring real challenges in real time to a group of co-learners. Over the next few years, we will be identifying

and developing graduates' classrooms to serve as "high-leverage practice" classrooms that regularly exhibit exemplary teaching. Through the Network's induction efforts, these classrooms will be made public for residents and new graduates to observe and learn from. Finally, we plan to explore and more fully utilize digital coaching solutions to increase our reach. We plan to measure the results of our coaching through the Massachusetts Teacher Evaluation Rubric and the statewide standardized exams (MCAS and/or PARCC).

- *Dual-licensure programs for special education and ESL.* We expect to dual-certify 140 teachers as a part of this project. See details above (Page 46).

- *Professional licensure for STEM teachers.* Offered through the College of Science and Mathematics at UMass Boston, these courses (offered at no cost to Network teachers) increase access to STEM content learning with and from academic experts (See page 6).

- *Workshops and symposia.* The Network will offer workshops and symposia on using data, working with students with special needs, planning for the first week of school, enabling joyful learning, and using technology, among other subjects. All Network teachers will be invited to attend these events which prompt shared learning and problem-solving.

- *Networking opportunities for graduates.* BTR graduates say one of the greatest benefits of being a BTR graduate is that there is an entire network of teachers with a similar mindset and common language, working together for children in Boston. We provide opportunities for graduates from various schools and cohorts to interact, share ideas, and help each other. As we deepen the partnership between the BTR, TNY, and partner LEAs, we will increase the opportunities for networking and shared learning across the Network.

Role of Partners and Partnership Collaboration. As the lead partner, BPE will manage the grant, convene partners, share our expertise, and recruit, prepare, place, and

induct 160 highly effective diverse educators for high-need subjects in partner LEAs and other autonomous schools in Boston. BPE will also continue to convene a network it created—the Boston School Data Network—to share data practices among autonomous schools. TNY will prepare, place, and support 100 diverse new educators in STEM and early childhood education, with a particular focus on enrolling career changers. TNY will also host an annual Teacher Symposium for Network teachers to learn from each other. The College of Science and Mathematics at UMass Boston will lead the professional licensure program for STEM teachers. Green Academy, UP Academy Boston, UP Academy Dorchester, and the Dudley Street Neighborhood Charter School will inform the Network partners of annual hiring projections, hire program graduates when there is a strong match between a graduate and a position, and provide collaborative and targeted school-based mentoring and professional development (sometimes in place of BTR/TNY induction services). Network residencies will recruit and prepare new teachers based on partner LEA hiring needs, and the partners will host a joint hiring fair for Network program graduates. Finally, all partners will share lessons learned from the project with other schools, organizations, and networks, such as the Core Practices Consortium and the 100Kin10 movement (of which BTR is a part). See Management Plan for additional detail on coordination and collaboration.

Resources to Operate the Project beyond the Grant. The Network has established broad support from stakeholders for this project (See Appendix G for Letters of Support). All partners have a commitment to a long-term collaboration and to sharing best practices to increase impact on student learning well beyond the life of the grant. Partner faculties and staff will be directed to focus on this project for the next five years and beyond.

All partners have strong fundraising track records and capacity to cultivate support from private funding partners who are committed to serving the children of Boston. The partners' Boards of Directors are committed to helping to raise the matching funds needed to carry out this project over the next five years, and to sustain the project beyond the scope of the TQP grant. UMass Boston has already committed $2M in in-kind match from private sources towards this effort (See Letter of Support in Appendix G). Last year, the Barr Foundation invested in BPE's strategy to support autonomous schools in Boston with a six-year, $5M grant. BPE and other Network partners have successfully used previous federal grants to leverage private matching funds. TQP funds would primarily pay for personnel, consultants and contracted services (e.g. adjunct faculty), resident stipends and benefits, and mentor stipends. No funds will be used to supplant existing streams of public revenues. See Budget Narrative and Management Plan for details.

Management Plan

Capacity of Lead Partner. BPE has the proven capacity to manage this project, both in terms of achieving the objectives on time and within budget, and in terms of the fiscal responsibilities of managing the partnership. BPE has successfully managed several high impact federal grants, including Transition to Teaching, Investing in Innovation, and Teacher Quality Partnership grants.

BPE is well-positioned to disseminate practices both locally and nationally in order to scale success. In the decade since BTR was founded, we have seen a rapidly growing focus on the issue of quality teacher preparation. To address the many requests BPE receive to replicate BTR in other cities, we collaborated with the Boettcher Teachers Program in Denver and the Academy for Urban School Leadership in Chicago to launch Urban Teacher Residency United (UTRU), a

national nonprofit designed to support the development of residency programs. UTRU disseminates the best practices of BTR and other residency programs; in the last decade, with BTR's support, over 20 teacher residency programs have established themselves, and many traditional programs are incorporating opportunities for clinical practice. BTR has directly supported the replication by training staff from other programs, sharing our materials and tools, and sharing lessons learned with local and national partners as we refine our own work to better serve teachers and students.

Network Leadership. The Network is led by a steering committee made up of project leads and key representatives from each partner. The project leads are responsible for the overall successful completion of key milestones and activities, on time and within budget, from each partner. BPE's Chief Program Officer, Simon Hess, will lead the steering committee and oversee the Network.

Implementation Plan. The project includes a planning period (October 1, 2014 to June 30, 2015), during which the Boston Teacher Quality Network Steering Committee will meet monthly to develop a detailed implementation plan for the next four years of the project. During the planning period, we will further refine the implementation plan, as outlined at a high level below.

We have included a substantial planning period to ensure sufficient time for Network LEAs to clearly define their human capital goals, and for Network partners to ensure that their programs can address those goals – beginning with the recruitment of appropriate cohorts of residents - and measure progress towards goals over the next four years of the program. Based on BPE's experience managing a TQP grant, we expect to be in close contact with our U.S.

Department of Education program officer during the planning period, and throughout the duration of the grant, to ensure full Department support of our plan.

Annual Project Milestones. Both BTR and TNY have many years of experience managing a residency program. As we begin our planning period for the Boston Teacher Quality Network, we will build the implementation plan around a number of key annual milestones which are important to both the Network residency programs and LEAs:

June: Network programs will sign Memoranda of Understanding with LEAs for the following year.

July: Residents begin with an intense summer coursework experience. Graduates begin induction, including Week 1 planning support and school-based summer institutes. Network residencies and partner LEAs collaborate on planning induction for graduates in their schools.

August: LEAs will share initial hiring projections with Network programs to inform recruitment for the following cohort of residents.

September – Residents begin year-long practicum. Residency recruitment begins for next cohort. Induction work described in Project Design continues throughout the year. MCAS or PARCC data is released is BPE evaluates program impact with this new data.

November – March – Residents perform gateway assessments and take on increasing responsibility in classroom. Some residents are exited from program. LEA representatives help to select residents for the next cohort to ensure good fit.

December – LEAs confirm hiring needs for spring placement season.

January – May – LEAs interview and hire from current pool of Network program residents. Annual surveys are conducted for residents, graduates, and principals.

April – June – LEAs host hired residents for extended periods in their schools to acclimate them to school expectations, approaches, systems, and culture. Network programs will conduct joint planning and sign Memoranda of Understanding with LEAs for the following year.

July – Residents graduate. Special education dual licensure program summer practicum begins, focused on literacy training via the Wilson Reading System. BPE manages a formal feedback process from the LEAs to Network residency programs, both assessing the quality of graduates and making suggestions for program refinements.

Tasks and Responsibilities. During the planning year, the partners will complete a detailed workplan. The chart below provides the template and sample tasks to guide that process.

Project Objective: Prepare and support highly effective new teachers in the high-need areas of math, science, literacy, early childhood, special education, and ESL.			
Key Milestones	**Related Tasks**	**Timeline**	**Staff Responsibility**
Refine recruitment strategy to focus on high-need areas	Update recruitment materials, strengthen pipeline partners	By December 2014, and annually thereafter, update materials and websites	Recruitment staff at BTR and TNY
BTR: Plan for adding early childhood residents	Hire CTE and design methods course	By June 2015	Simon Hess
Enroll Network graduates in professional licensure courses at the College of Science and Mathematics, UMass	Identify and publicize courses to all Network graduates and partner schools	Annually by June 2015	Simon Hess and Lisa Gonsalves
Prepare 35 graduates per year for dual licensure	Recruit and enroll 35 teachers per year; conduct courses; Partner with LEAs for practicum	Annually, starting with the first Network graduating cohort	Simon Hess and Lisa Gonsalves, CTEs for Special Education and ESL
Monitor progress	Collect data and share with programs against targets for each high-need area	Ongoing	Edward Liu and Lisa Gonsalves
Project Objective: Diversify the teacher pipeline by ensuring 50% of each cohort of residents are people of color.			

Key Milestones	Related Tasks	Timeline	Staff Responsibility
Meet annual targets for recruitment and selection of high-quality candidates of color.	Meet with community and faith-based organizations and pipeline partners (Breakthrough Collaborative, City Year, etc.) to publicize Network residency programs	Ongoing	Recruitment staff at BTR and TNY
Monitor progress	Collect data and share with programs	Ongoing	Edward Liu and Lisa Gonsalves
Project Objective: Increase teacher retention by ensuring that 80% of graduates teach in high-need LEAs for three or more years.			
Key Milestones	**Related Tasks**	**Timeline**	**Staff Responsibility**
Place 50% of graduates each year at Partner LEAs	Annual needs assessment of Partner LEA hiring projections	Annually each fall, by November 1	Partner LEA Principals and Recruitment staff
Offer induction support to graduates	Work with Partner LEAs to ensure induction matches school and graduate needs	Ongoing	Simon Hess and Lisa Gonsalves, Partner LEA Principals
Assess the match between Network Program graduates and hiring schools	Conduct annual Principal Survey of Network Program graduates and review employment records from partner LEAs	Annually each spring	Edward Liu and Lisa Gonsalves
Project Objective: Improve teacher preparation for high-need students by ensuring all program graduates are trained to implement standards-based curricula, use collaborative, data-driven practices to drive improvement, collaborate and innovate to drive student learning, and integrate theory and practice.			
Key Milestones	**Related Tasks**	**Timeline**	**Staff Responsibility**
Prepare 65 new teachers annually	Ensure Gateway assessments align with objective and LEA needs	Spring 2015	Marcie Osinsky and Lisa Gonsalves
Ensure residency programs align to the Common Core Standards	Use the Common Core Self-Assessment Tool for Higher Education & Teacher Preparation Faculty	October 2014 – June 2015	Clinical Teacher Educators, with oversight by Marcie Osinsky and Lisa Gonsalves

Project Objective: • Improve student achievement by ensuring that at least 70% of students in residents and graduates' classrooms achieve ambitious student learning targets.			
Key Milestones	**Related Tasks**	**Timeline**	**Staff Responsibility**
Complete long-term outcomes study	Contract with external evaluator	Execute contract by March 2015	Edward Liu
Collect and report on student performance data in Graduates' classrooms	Collect data from MCAS student growth percentiles and standardized tests administered by Network LEAs	Annually each summer	Edward Liu

Performance Feedback and Continuous Improvement. The Network has instituted a number of structures to ensure continuous improvement. During the planning year, we will establish a tight feedback loop with Network LEAs to ensure the residencies are filling LEA human capital needs. The Network residencies continuously collect data for organizational learning. The programs solicit feedback from residents, graduates, principals, and even students through a set of surveys and focus groups throughout the year. For example, principals are asked to compare our graduates with other teachers with the same level of experience and provide detailed feedback on the performance of graduates in a number of areas (such as content knowledge and classroom management). We also log residents' performance data, and recruitment staff collects a great deal of data on the applicant pool and the admissions pipeline. Finally, we collect student achievement data annually for graduates' classrooms.

Even when data collected suggest an overall positive picture of resident or graduate performance, we scrutinize the data closely and triangulate multiple sources of data to identify areas that might benefit from improvement. For instance, data from the Tripod student survey issued to students of BTR graduates (see page 16) suggested classroom management as the area in which BTR graduates' teaching could be strengthened, even though they were above average nationally. These data matched feedback we were getting from principal ratings and residents'

survey responses. As a result, BTR has substantially revised to how we train residents in classroom management.

We have a wealth of data on participating residents, starting from when they apply to our programs, through their residency year, and to their current teaching placement. All collected data are used for organizational learning to drive continuous improvement. As the lead partner in the Network, BPE (through its newly formed Office of Data and Improvement) is charged with driving continuous improvement via innovation, better execution, and research.

Communication and Coordination among Boston Teacher Quality Network Partners. BPE will host monthly meetings with Network partners to ensure regular communication and progress towards joint goals, and conduct a more formal meeting once each quarter. Agendas for the quarterly meetings will be developed collaboratively, coordinated by Simon Hess, BPE's Chief Program Officer. The purpose of the quarterly meetings will be to ensure consistent communication, to coordinate work across the partnership, and to share best practices and learning.

Network partners will participate in an annual Boston Teacher Quality Network Meeting, building on a successful practice of the Boston Teacher Residency Partnership. The annual meeting will be an opportunity for Network partners to present problems of practice for discussion, to present best practices for sharing and replication, and to hear from residents, mentor teachers, and Network staff about the opportunities and challenges of the work.

BPE will host a job fair each spring, where residents will have the opportunity to meet with leadership and staff of partner LEAs. BPE will also convene an annual symposium to facilitate a city-wide conversation and sharing of best practices with interested and effective Boston-area

teacher preparation organizations, including traditional teacher preparation institutions, Teach for America, and newer programs, such as the Sposato Graduate School of Education at Match.

BPE will convene the Network leaders monthly during the planning year to craft a detailed implementation plan. Specifically, we will work with the LEAs to create a clear and concrete vision of what they seek in hiring a first year teacher. Network partners will ensure that the LEA vision is reflected in our selection, promotion and graduation criteria for residents. BPE's Office of Improvement will also track effectiveness of graduates carefully and engage in a formal feedback process wherein partner LEAs provide regular and critical feedback as well as common data. By designing a tight feedback loop between Network programs and LEAs, we will continuously improve our program, based on data. Most importantly, we will define together what data we will collect on student achievement, so that we can track our graduates' impact on student achievement gains.

Qualifications of Key Personnel. Biographies for select key personnel follow. See Appendix F for resumes for these and other key personnel.

Jesse Solomon is the Executive Director of BPE. Mr. Solomon founded the Boston Teacher Residency program in 2003. Previously, he taught middle and high school math for 10 years in Boston and Cambridge. He was a founding faculty member, lead teacher, and a member of the board of directors at City on a Hill, where he began and directed the Teachers' Institute, a school-based teacher preparation program. Mr. Solomon has been an instructor at the Harvard Graduate School of Education and is a National Board-certified teacher. He holds a BS in Mathematics from MIT and an MEd from the Harvard Graduate School of Education. The Barr Foundation named Mr. Solomon a Barr Foundation Fellow in 2009 for his leadership, and he is also a Pahara-Aspen Institute Education Fellow.

Stefanie Cronin, CPA is the Chief Financial Officer at BPE. Ms. Cronin is responsible for managing BPE's financial performance, including cash flow, financial reporting, and budgeting and provides the financial lens to BPE's strategic decision-making. Prior to joining BPE she provided financial consulting services to not-for-profit organizations. Ms. Cronin has been an audit manager with an accounting firm and also held a variety of financial and operations roles at CIGNA, a Fortune 100 company. A graduate of Mount Holyoke College, Ms. Cronin holds a master's degree from the University of Hartford.

Lana Ewing is Principal of UP Academy Dorchester. Previously, she worked at The Achievement Network (ANet) as the Managing Director, supporting the Directors of School Support and the 55 schools the team served in the Greater Boston area. At ANet, Ms. Ewing also directly coached schools to use performance data to drive instructional decisions. Prior to joining ANet, Lana was a founding elementary teacher at The Edward W. Brooke Charter School. Ms. Ewing was a 2003 Teach for America corps member in New York City. Lana is a graduate of Connecticut College (BA) and Fordham University, where she earned her MEd.

Lisa Gonsalves is Chair of the Department of Curriculum and Instruction and Associate Professor at the College of Education and Human Development at UMass Boston. Dr. Gonsalves began her work with the BPS in 1996, beginning with the Jeremiah Burke High School and Dorchester High School. Dr. Gonsalves serves as the Director of Teach Next Year. She earned her Ph.D. at Boston College

Shoma Haque is the Chief Operating Officer at BPE. She shares responsibility for leading and managing BPE, and oversees recruitment for BTR. After a career as an information technology consultant at Deloitte & Touche, Ms. Haque switched to the non-profit field and has worked for Nuestra Comunidad Development Corporation, City Year, and as a Rappaport Fellow for the

City of Somerville. Ms. Haque has a BS from the Wharton School at the University of Pennsylvania and a Master of City Planning from MIT.

Simon Hess is the Chief Program Officer at BPE. He oversees school-based programs, including BTR. He was most recently the Chief Executive Officer of Civitas Schools, an organization operating three Chicago International Charter School campuses serving 2,200 students. Prior to joining Civitas, Mr. Hess served as the principal of Gordon Tech High School in Chicago and was an administrator and teacher in BPS for eight years. He holds a BA from the College of the Holy Cross, an MEd from the Harvard Graduate School of Education, and an MBA from the Kellogg School of Management at Northwestern University.

Matt Holzer is Headmaster of Boston Green Academy. He previously served as the Assistant Headmaster at BGA. He leads the academic program at Boston Green Academy and helped to design and launch BGA as a member of the Founding Group. He most recently served as the Program Director for Humanities and Humanities Curriculum Coach for the Boston Public Schools, and taught high school for nine years in New York City and San Francisco. Mr. Holzer earned his Bachelor of Arts in Public Policy from Brown University and his Master's degree in Education from the Harvard Graduate School of Education.

Yamila Hussein, EdD is a CTE of ESL and Sheltered English Instruction at BPE. Dr. Hussein has a BA in English literature from Al-Quds University, Jerusalem, an MA in Community Education from Harvard University, and an EdD from the Harvard Graduate School of Education. Prior to joining BPE in 2011, Dr. Hussein worked with and for Palestinian children in Palestine. She has also designed, directed and taught intensive academic programs for teacher professional development in Boston (Harvard, Boston College, Lesley University, Boston

Teacher Residency) and abroad (Morocco, Jordan, Spain, Palestine, the Balkans). She is fluent in English, Spanish, Arabic, and Palestinian Sign Language.

Christine Landry is the Founding Principal at the Dudley Street Neighborhood Charter School. Ms. Landry began her career as a Teach for America corps member in Baton Rouge, Louisiana. She was a founding educator at Monarch Academy in Oakland, California, where she taught K/1 and 2/3 for five years. She went on to help plan another charter school in Oakland, Berkley Maynard Academy, where she worked as a lead educator, literacy specialist, and later the school's principal. Ms. Landry graduated from Wesleyan University with a BA in Government and American Studies and earned an MA in Educational Leadership from San Jose State.

Amy Lucenta is a CTE of Mathematics at BPE. She has been a mathematics educator in public and private schools for close to 20 years. After teaching middle school and high school mathematics, she served as an elementary math coach in the Newton Public Schools. In addition, Ms. Lucenta has provided professional development through educational collaborative organizations, the Massachusetts Department of Elementary and Secondary Education, and to local districts as they transition their curriculum and pedagogy toward full implementation of the Common Core State Standards.

James Morrison is the Principal at UP Academy Boston. Previously, Mr. Morrison taught reading and writing at James M. Singleton Charter and New Orleans College Prep in the Recovery School District. Prior to teaching, Mr. Morrison worked in consulting for Collective Next, Inc. and monitored the large-scale implementation of Reading First in Kentucky elementary schools. He holds a Bachelor of Arts degree and Post-Bachelor's Teacher Certification from the University of Kentucky.

Alexis Oosting is a CTE of Special Education at BPE. Before joining BPE as a BTR instructor and induction coach in 2009, Ms. Oosting taught for 8 years as a special education teacher. She worked in inclusive and substantially separate classrooms with elementary, middle, and high school students. She also spent a year teaching in an alternative education setting. Ms. Oosting received her BA in Learning Disabilities from Hope College and her EdM in Mind, Brain, and Education from Harvard University. In her current role as CTE, Ms. Oosting coaches BTR graduates, teaches courses, and supports residents and mentors.

Magdalene Lampert is a Senior Advisor at BPE. She advises BPE on the design and development of BTR's clinical teacher education program. She coordinates the "Learning Teaching in, from, and for Practice" Project, a project across the University of Washington, the University of Michigan, and UCLA. She also consults with New Visions for Public Schools in New York City to design teacher development that supports achievement of the learning goals in the Common Core State Standards. Dr. Lampert has taught elementary and high school mathematics, pre-service and in-service teacher education, and doctoral courses for aspiring teacher educators. She has written extensively about teaching practice, including the book *Teaching Problems and the Problems of Teaching.* Dr. Lampert is Professor Emerita in the University of Michigan School of Education. She received the 2014 Outstanding Contribution to Education Award from the Harvard Graduate School of Education and the 2014 AACTE Outstanding Journal of Teacher Education Article Award from the American Association of Colleges for Teacher Education Committee on Research and Dissemination.

Edward Liu is the Chief Improvement Officer at BPE. Dr. Liu leads BPE's efforts to understand why certain teachers produce exceptional student learning gains and to embed these insights into BTR and other programs. Before joining BPE, Dr. Liu was Assistant Professor of Educational

Administration at Rutgers University. He began his career as a high school history teacher and was founding co-director of Summerbridge Portland. Dr. Liu holds an EdD from the Harvard Graduate School of Education, where he was an original member of the Project on the Next Generation of Teachers and co-authored *Finders and Keepers: Helping New Teachers Survive and Thrive in Our Schools* (AACTE Outstanding Book of 2005). Dr. Liu also holds an MBA and AM in Education from Stanford University, and a BA from Yale.

Marcie Osinsky is the Director of Clinical Teacher Education at BPE. She has overseen BTR's teacher preparation curriculum since 2003. She began her career teaching the first and second grades in the Cambridge Public Schools. Her experiences there led her to explore how partnerships with community and educational institutions can support teacher preparation and student achievement and the role of teacher leadership in urban schools. Ms. Osinsky holds a BA and a Masters in Education from the University of Massachusetts Amherst.

Andrea Wells is a CTE of Science at BPE. She began working at BPE in 2010, first serving as a host school site director. As an undergraduate, Ms. Wells majored in Physics and Integrated Science at Northwestern University. She then taught Physics, Chemistry, Earth Science, Physical Science, and Algebra in Chicago. After ten years of teaching, she moved to Boston where she earned her MEd at Harvard's Graduate School of Education.

Evaluation Plan

Evaluation and Accountability Strategy. The Boston Teacher Quality Network evaluation plan has two components serving different yet complementary purposes: (1) a long-term outcomes study and (2) formative progress monitoring.

- **Long-term outcomes study.** One component involves a quasi-experimental outcomes study using value-added analysis to evaluate the relative effectiveness of Network

graduates in raising student test scores. This study will also use additional statistical methods to compare the placement and retention of network graduates to those of other new teachers in Boston.

- **Formative progress monitoring.** The second component of the evaluation involves collecting annual data to monitor the Network's progress toward meeting TQP Performance Measures, to drive continuous program improvement, and to address gaps and limitations of value-added analysis in terms of assessing impact on student achievement.

Component 1: Long-term Outcomes Study. The Network will contract with an external evaluator, such as Harvard's Center for Education Policy Research, to use data obtained from Boston Public Schools and/or the Commonwealth of Massachusetts to study the following:

1. Achievement of students taught by Network graduates
2. Retention of Network graduates in placement schools, relative to teachers prepared in other programs
3. Diversity of graduates initially placed in teaching positions and their relative retention over time (i.e., Are graduates of color retained at the same rate as White graduates? Are Network graduates of color retained at higher rates than Boston teachers of color prepared by other programs?).
4. Extent to which program graduates are hired to teach high-need academic subject areas
5. Variation in graduate effectiveness in raising student test scores across school contexts (To what extent do characteristics of the school work environment explain variation in graduates' ability to raise student test scores?)

The Value-Added component of the study will evaluate the relative effectiveness of BTR graduates in raising student achievement in math and reading, as compared to other newly hired teachers in BPS. The analysis will be limited to math and ELA teachers in grades 4 through 8 (the only grades and subjects for which value-added scores can be estimated using the MCAS state test). The researchers will use data that links individual teachers to individual students by classroom to estimate what are commonly referred to as value-added models (McCaffrey et al., 2003; Sanders, 2000). These models attempt to isolate the portion of each student's growth in test scores from one year to the next that is attributable to that student's teacher from such other factors as achievement in the previous year, demographic characteristics, and the effects of classroom and school peers.

Because the value-added achievement component of the outcomes study can only include approximately one fifth of Network graduates, due to the fact that value-added scores can only be produced for about one-fifth of all classrooms overall, BTR and TNY will collect additional student achievement and growth data, on an annual basis, to allow us to report on progress toward meeting the GPRA Performance Measures. Discussion of this data collection and research plan can be found in the section below.

Component 2: Progress Monitoring. To monitor progress toward meeting project goals and performance measures, the Network residency partners will: (1) carefully track graduation rates, licensure exam pass rates, job placement, and graduate retention; (2) survey principals who employ and supervise graduates; (3) survey residents and mentors, and (4) collect student achievement and/or growth data from mentor-resident classrooms as well as graduates' classrooms, particularly in subjects and grade-levels not covered by the external outcomes study. Network residency partners have and will continue to invest in database and other information

technologies to capture and store these data. They will work the partner LEAs, BPS, and the state to gain access to needed data on graduate performance.

Key Project Objectives and Measures

- Network will prepare 65 new teachers annually
- Of these teachers:
    - 31 (48%) will be prepared in secondary STEM content areas [shortage area]
    - 11 (17%) will be prepared in elementary, with strong literacy and STEM training [shortage area]
    - 8 (12%) will be prepared in secondary English language arts, with strong literacy training [shortage area]
    - 15 (23%) will be prepared in Early Childhood [shortage area]
- 50% of Network residents will be individuals of color
- 50% of Network graduates will be placed in partner LEAs
- 90% of graduates will be hired by high-need LEAs
- 80% of graduates will be retained in teaching in high-need LEAs for 3 years

TQP GPRA and Title II Section 204(a) Performance Measures

(a) ***Performance Measure 1: Graduation***. **The percentage of program completers who attain initial certification/licensure by passing all necessary certification/licensure assessments and attain a master's degree (residency program) within two years of beginning the program.**

As previously mentioned, Network residency partners are committed to graduating only those program participants who meet rigorous performance standards. Thus, each program

typically exits 10-15% of residents who begin the program each year, and another small percentage leave the program for personal reasons (e.g., health issues, family emergencies).

Measurable Outcome: At least 80% of individuals who enroll in the Network residencies will attain initial licensure within two years of beginning the program.

Data Source: Program records and confirmation of licensure status from Commonwealth of Massachusetts

(b) ***Performance Measure 2: Employment Retention***. **The percentage of beginning teachers who are retained in teaching in the partner high-need LEA or high-need ECE program three years after being hired by the high-need LEA or high-need ECE program.** This also aligns with Measure HEA(2) from Section 204(a) of Title II.

Measurable Outcome: At least 80% of graduates placed in partner high-need LEAs will be retained three years after being hired.

Data Source: Employment records from partner LEAs

(c) ***Performance Measure 3: Improved Scores.*** **The percentage of grantees that report improved scaled scores on assessments for initial State certification or licensure of teachers.** This aligns with Measure HEA(3) from Title II, Section 204(a).

The Massachusetts DESE requires that all candidates for teacher licensure take and pass a two-part Communications and Literacy test (with Reading and Writing subtests) and one or more subject tests. Statewide pass rates on the Communication and Literacy tests are relatively high (around 80%); it is on the Subject Area tests where more candidates have difficulty passing (state-wide pass rate of 64% in the most recent administrations).

The Network partners have already instituted a comprehensive set of supports – preparation courses, study groups, and individual tutors – to help residents who need additional help pass the

licensure exams. The Network's target pass rates on the state licensure exams are considerably higher than the statewide pass rates.

Measurable Outcome: At least 90% of program completers will pass the Communication and Literacy licensure exam, and at least 90% of program completers will pass all Subject Area exams required for licensure in their Content Area.

Data Source: Residents' test score reports released to Network partners.

(d) ***Performance Measure 4: Student Learning.*** **The percentage of grantees that report improved aggregate learning outcomes of students taught by new teachers**. This aligns with Measure HEA(1) from Title II, Section 204(a).

As was mentioned earlier, the first component of Network evaluation of impact on student learning will involve a long-term quasi-experimental study using value-added analysis to evaluate the relative effectiveness of Network graduates in raising student test scores. However, data limitations in Massachusetts and Boston mean that this rigorous study can only provide insight into the effectiveness of approximately one fifth of Network graduates (those who teach Math or ELA in grades 4-8) in terms of raising student test scores.

In addition to this longer-term evaluation, Network residencies will also collect and analyze data each year to on the achievement outcomes of the students in resident-mentor classes as well as the classrooms of graduates.

Data on Student Performance in Resident Teachers' Classrooms: Student achievement data will come from two sources. First, where possible, we will acquire data from results of standardized tests administered by the schools in which residents are placed for their field experience. For Math and English, grades 4-8 and 10, we will obtain MCAS Student Growth Percentiles (the growth measures used in Massachusetts) for students in resident-mentor's

classrooms. If the schools administer benchmark assessments in other grades and subjects, we will collect these data as well.

Second, we will collect and analyze data from the pre-, mid- and post-tests designed by the teacher candidates and given to students during select curriculum units that have been completely planned and taught by the teacher candidates.

We will use both sets of data to determine which students (and what percentage) made expected growth or mastered the core content being taught in the units. Currently approximately 50 percent of students across the city of Boston make expected growth each year.

Measurable Outcome: At least 70% of students taught by residents and mentors will demonstrate expected growth and/or mastery of the core material taught by the teacher candidate.

Data Source: MCAS student growth percentiles; standardized tests administered by partner schools; unit pre, mid, and post-assessments

Data on Student Performance in graduates' classrooms. We will adopt a similar strategy for collecting data on the performance of graduates, but a greater emphasis will be on student achievement over the entire year as teacher of record (as opposed to focusing on a single curriculum unit).

Measurable Outcome: At least 70% of students taught by graduates will demonstrate expected growth and/or mastery of the core material taught.

Data Source: MCAS student growth percentiles; standardized tests administered by partner LEAs and other autonomous schools in Boston; teacher or department- administered tests in grade levels or subjects where annual standardized tests are not being administered

Additional HEA Performance Measures. Employment records from partner LEAs, annual alumni surveys, and internal placement records kept by the Network residencies will be used to collected data on the following performance measures laid out in Section 204(a) of the Higher Education Act.

HEA (4)(B): The percentage of highly qualified teachers hired by the high-need LEA who are members of underrepresented groups

Measurable Outcome: 50% of Network graduates hired by high-need LEAs will be members of underrepresented groups

HEA (4)(C): The percentage of highly qualified teachers hired by the high-need LEA who teach high-need academic subject areas (such as reading, mathematics, science, and foreign language, including less commonly taught languages and critical foreign languages)

Measurable Outcome: 90% of Network graduates hired by partner LEAs will teach math, science, English language arts, or early childhood.

HEC (4)(D): The percentage of highly qualified teachers hired by the high-need LEA who teach in high-need areas (including special education, language instruction educational programs for limited English proficient students, and early childhood education)

Measurable Outcome: 25% of Network graduates hired by partner LEAs will teach Early Childhood Education, Special Education, or programs for LEP students.

HEC (4)(E): The percentage of highly qualified teachers hired by the high-need LEA who teach in high-need schools, disaggregated by the elementary school and secondary school levels

Measurable Outcome: Early Childhood 20%; Elementary: 20%; Secondary: 60%

HEC (4)(G)(ii): As applicable, the percentage of teachers trained to: (ii) To use technology effectively to **collect, manage, and analyze data** to improve teaching and learning for the purpose of improving student academic achievement.

Measurable Outcome: 100% of program graduates will be trained to use technology effectively collect, manage, and analyze data to improve teaching and learning for the purpose of improving student academic achievement.

Data Source: Performance assessment in which residents must demonstrate ability to collect, manage, and use data to adjust the teaching during a unit.

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