PREPARED TO TEACH
SUSTAINABLE FUNDING FOR QUALITY TEACHER PREPARATION

An Expert Report Submitted for Consideration in *NYSER v. State of New York*

Table of Contents

I. BACKGROUND

A. Teacher Quality Matters

Many tangible and intangible supports play into a school's ability to have the positive impacts we want for our children and youth. Positive early childhood experiences, safe environments, supportive homes and communities, adequate resources to provide a range of learning and developmental opportunities, productive school-community connections, good leadership—all of these make positive differences in our education system. But without strong, well-prepared teachers, none of these—not even all of them together—can support students' learning and development to achieve the State's educational goals.

Quite simply, having quality teachers in every class is essential. For most students, their teachers account for the most significant portion of time they spend interacting with adults during the school year. Who those teachers are and what they understand about human development matters. The human brain does not learn in isolation; it is part of an ecosystem that includes the individual body's social-emotional well-being, which in turn is impacted by the supports and safety of the surrounding environment.[1] In schools, teachers, both as individuals and as collaborative team members, are the driving force for creating that environment and supporting individual students on their learning journeys.

B. Implications for Teaching from the Science of Learning and Development

Recent developments in the science of learning and development make it clear that teachers must know more than disciplinary information and how to manage a class. Being a good teacher requires a complex set of skills that need both study and practice before an individual should be the sole adult leading that important space of learning—the classroom. Syntheses of current research on the science of learning and development offer several key lessons for teacher quality:[2]

1. Teachers must have well-developed skills to be able to understand how to support learning for all the individuals in their classrooms. In human development, variability is the norm, not the exception. The pace and profile of each child's development is unique, and teachers must have the opportunity to learn how to support a range of learning needs.
2. The most essential element in development and learning is human relationships, so teachers must have the dispositions, socio-cultural knowledge, and self-awareness that can put students' relational needs at the center of a classroom.
3. When students construct knowledge, they do so not based on rote or repetitious learning of facts; knowledge accrues when individuals' biology, experiences, relationships, and social constructs converge. Teachers must be able to create culturally responsive and sustaining social environments that facilitate the learning experiences that help students construct knowledge.
4. The learning process relies on social, emotional, and academic brain functions. The different parts of the brain that control social, emotional, and cognitive processes work together when a child is learning, working in concert to produce knowledge.

5. Adversity affects learning, and educators can and must respond in ways that mitigate the impacts of adversity on student learning.

C. Need for High-Quality Teacher Preparation

Given the complexities of learning, coupled with the time students spend with their teachers, it is no wonder that the most important factor under schools' control associated with student achievement is the individual teacher.[3]

Other nations know this, and they invest in the recruitment, development, and retention of quality teachers who are adept at working with their students and building cohesive school experiences with their colleagues.[4] Countries that used to perform more poorly than the United States but have now changed their educational outcomes have invested in teacher development, starting with their preparation *before* they become teachers of record in a school.[5]

As researchers at the Learning Policy Institute note, "Decades of research show that fully certified and experienced teachers matter for student achievement."[6] In fact, in one of the few studies with the data needed to explore a full range of potential indicators of teacher quality, researchers found that the qualifications a teacher had on entering the classroom were the single most important predictor of achievement within a school's control—that is to say, excluding those immutable qualities students bring to the school such as socioeconomic status.[7] In New York City, the Comptroller's office has also noted this reality, writing the following in a recent report highlighting the need for better teacher preparation in the City: "A strong educator is the single most important in-school factor in improving academic outcomes for students, with deep implications in everything from literacy to college completion."[8]

Of course, these conclusions are in line with what every parent knows and with what I and my fellow professionals know: Good teachers matter.

Becoming a good teacher is not something that can happen overnight—or even over a few weeks. We might be able to train individuals to accomplish one or two educational goals through quick-entry teacher preparation programs, but the State is charged to ensure its students are supported in much broader development.

All teachers need to be prepared to develop their students across a range of educational domains before they enter the classroom as teachers of record. New research shows that across the current urban teaching force, different teachers are effective at supporting student growth across different educational goals. A highly regarded national study, the Measures of Effective Teaching (MET), funded by Bill & Melinda Gates Foundation and conducted by top researchers from Harvard, Education Testing Service, and Dartmouth, created a comprehensive and representative data set of urban districts that has allowed us to better understand the complexities of teaching and learning in those contexts.[9] Most relevant to this litigation, 728 of New York City's public school teachers and their schools participated as one of six urban districts that MET studied.[10] Across the country, more than 3000 teachers, students, and administrators were videotaped, surveyed, tested, and evaluated using multiple measures that captured different aspects of classroom life. The resulting data allowed for analyses that established

linkages between measures of teaching that might predict improvements in student achievement outcomes in urban classrooms.

We know that there are particular teacher qualities that are correlated with gains in achievement.[11] In addition, MET data included other measures beyond achievement, such as student persistence and "growth mindset"—a highly predictive mental framework that, for example, sees intelligence and success as the result of effort instead of attributing them to fixed traits. These kinds of outcomes, which teachers can positively impact, are almost certainly more important than test scores for a strong functioning democracy, to future employers, and to individuals' own success in life. Analyses of the full range of outcomes in the MET data confirms that teaching is a multi-dimensional profession, and all teachers do not have all the skills they need to ensure every student develops across these multiple dimensions. As any principal knows through years of observation, teachers have different strengths. The MET data confirms that: teachers who were good at moving test scores up the scale were not always good at supporting students' development of growth mindset or social skills.[12] Other studies have also noted that teachers can have differential impacts on students' motivation and attendance.[13] To address educational inequities, all teachers need to enter the profession with competence across a range of skills that ensure students have support across multiple developmental goals.

In short, teaching, when done well and in ways that meet the full range of a state's goals for education, is a complex profession. To successfully support students in their human development as individuals, workers, and citizens, future teachers need the kinds of extended learning and clinical experiences that will ensure they enter the classroom prepared from their first day to support students in all the domains of human development that will allow them to thrive in the ways the State intends.

This requires, as with any clinical practice profession, an opportunity to work alongside an accomplished professional so they can consolidate their knowledge through practice.[14] No dentist or nurse or architect or carpenter or pharmacist practices independently before undergoing such an apprenticeship; teachers should also experience—and be required to undergo—a clinical practice placement that does all it can to ensure they understand and can support students' full development. In the context of schooling, since schools are organized around students' development over the course of a year, such a requirement would entail at least one year of work in a classroom, co-teaching with a fully-credentialed, accomplished teacher, so that the aspiring teacher knows how students grow and can be supported across the whole of a school year. Such placements are currently called residencies and are increasingly documented as the strongest approach to preparation and the foundation for being a strong teacher once hired.[15]

II. ATTRIBUTES OF QUALITY TEACHERS

A. Creating Quality Learning Contexts

When teachers understand how to create safe, supportive, and engaging climates, children build a sense of belonging in the world. When instruction is grounded in authentic and relevant pedagogies that challenge and encourage creativity, young minds flourish and develop identities with a sense of curiosity and possibility. When teachers know their disciplinary content knowledge and ways of thinking, especially at the secondary level and in STEM fields,[16] they can better support their students' understandings. When teachers and schools understand and respect their communities, parents are partners with their children's educators, reinforcing mindsets and expectations that help children thrive.

Examples of such welcoming, effective classrooms and schools exist everywhere in the state, but consistent access to these opportunities is not equitably distributed. Too often, schools that serve the most educationally vulnerable students have novice and underprepared teachers who do not reflect their students' backgrounds. Both lack of diversity and lack of experience hamper students' development: Achievement improves when students of color are taught by teachers of color, and better prepared, more experienced teachers are more successful at improving both learning and behavioral outcomes for children.[17] While all students benefit from teachers with different backgrounds, students of color in particular realize stronger outcomes when they have teachers who look like them.[18] Yet, despite the fact that half the nation's public school enrollment is comprised of students of color, teachers of color only account for 18% of the teaching force.[19] In New York City, only 15% of the students are white[20] but 59% of the teachers are white.[21] Parity in the proportion of teachers from underrepresented backgrounds to serve the student population in urban districts is essential.

The benefits of having well-prepared teachers from diverse backgrounds extend beyond individual children's experiences. Strong teachers stay in the classroom longer, continuously build their professional abilities, and stabilize schools that have high turnover. Stable staff with ever-strengthening professional skills create the necessary culture and knowledge base to foster consistent school improvement.[22] Without good teachers and strong schools, children experience a random patchwork of supportive and unsupportive learning environments. Inconsistent school-based experiences hurt both families and communities, since youth who are underserved in school continue to have unmet social, emotional, and academic needs that impact their daily lives beyond schooling.

Not developing a strong, professionalized teaching force also has significant financial implications. Estimates of costs for teacher turnover range from $2.6 billion to $8 billion every year nationally, with 25% to 35% of those dollars attributable to recurring annual costs for first- and second-year teachers who leave—often because they are underprepared, largely in communities that have the most need for good schools. In New York City, where turnover of novice teachers is 20%, estimated costs for turnover of these teachers would be $300 million a year.[23]

In addition, billions are spent annually across the nation on professional development, with teachers participating in these activities an average of 19 days a year. Large portions of these investments are inevitably and inadvertently wasted, since the benefits of professional development walk out the door with teachers who leave.[24] In New York City, using a low estimate of professional development costs as 5% of the NYCDOE budget,[25] and applying that to only the 20% of teachers who leave in their first five years, annual costs for professional development for novice teachers who do not remain in the district would be estimated at $340 million per year. Because of turnover issues, these are annual, recurring dollars that do not reap long-term benefits for improving the system.

We know how to address this problem, but to do so requires up-front investments in preparation approaches that ensure teachers enter the profession ready to take advantage of the benefits those professional developments bring—and capable of being efficacious teachers who want to stay in the profession.[26] Funded teacher residencies that provide quality, affordable pathways into teaching are necessary to address both instructional inequities and long-term educational improvement efforts.

Other nations have recognized the importance of investing in a strong teaching force, beginning with pre-service education. They integrate financially supported, extended teacher preparation inside P-12 schools as part of a comprehensive vision for their education systems, realizing both improved and more equitable student outcomes.[27] The National Conference of State Legislatures has noted that the approaches used in other countries are aptly applicable to state-level governance structures in the United States.[28] New York can and should apply these kinds of lessons for improving the education system by ensuring all entrants into classrooms are qualified and can fully develop their students' potential as human beings and citizens.

B. Supporting Students from Diverse Backgrounds

Inequities run deep in the fabric of the American education system, as it was constructed during a time when discrimination and racism were the acceptable norms dominating society. The system was designed to serve some children, but not all, and efforts to change this reality have been ineffective at best and increasingly harmful at worst. The recent COVID-19 health crisis has brought into sharp relief the inequities that continue to exist within our school systems.

In the context of an educational system that retains structural, funding, and ideological orientations that bestow privilege on some and create barriers for others, consistently strong teachers from diverse backgrounds are even more important. High-quality teachers can act as inoculating forces against systemic racism.[29] They can open the doors of access to higher education, helping counteract intergenerational poverty. They can ensure students with exceptional needs receive the opportunities to grow and benefit from their schooling as required both by law and ethics. They can support English Learners in the acquisition of their new language while honoring the strengths of multilingualism that maintaining home languages will bring.

The work of disrupting the inequities designed into our nation's schooling systems is no easy task, but strong teachers working in stable school environments that

are not torn apart by constant turnover of their colleagues make progress towards that end every day.[30] Increasingly, we know what it looks like to be that kind of quality teacher and how to prepare individuals for their roles in their classrooms and within their schools.[31] The State has an active role to play in strengthening the system's capacity to grow the pool of such strong teachers to create more equitable educational outcomes.

III. NEW YORK STATE'S TEACHER QUALITY EVALUATION SYSTEMS

New York State has responsibility for teacher quality through its certification granting processes and through State-approved assessments of classroom teachers' performance.

A. Regulation of Teacher Certification in New York State

As is the case in every state, the State of New York has both the authority and the responsibility to ensure that individuals who teach in its public schools are qualified to be in front of a classroom. When teachers enter the classroom underprepared, the students they serve are denied effective educational development. It is students who most need the State's supports to realize their future potential as individuals, workers, and citizens who disproportionately have teachers who are inexperienced and underprepared—correlated qualities, as I will document later in this report. In essence, these students, rather than receiving the instruction and supports they need, serve as involuntary laboratory participants for underprepared teachers to figure out how to teach so that they then can apply to teach in schools with more privileged populations.

The historic realities of a mis-matched labor market—where graduates from teacher preparation programs do not hold the certifications that districts need, do not want to teach in hard-to-staff schools, or both—has resulted in the State creating a patchwork of preparation pathways to allow individuals to become certified and fill open classroom positions. These pathways do not all ensure that teachers have the qualifications they need to support student learning. The following section describes current pathways to be able to teach in New York State to illustrate the incongruities of the system so that the Court might understand the need for an *overhaul of the certification system – along with the investments in teacher preparation I will describe below* – in order to remedy the negative disproportionate impacts that underprepared teachers have on students. None of the current pathways ensures every child, especially those from low-income backgrounds and historically underserved racial and ethnic groups, will be taught by teachers who are prepared to serve them well. Changes to these pathways are absolutely necessary to ensure that all New York students have the opportunity to learn from a qualified teacher, but such regulatory reforms are insufficient alone to meet this obligation without the investments in teacher preparation and support detailed later in this report.

1. Description of Pathways to Become a Teacher

Regulation of teacher certification in New York State falls under the New York State Education Department's (NYSED) Office of Higher Education. Several different pathways for certification exist, the major ones including two that are administered by NYSED and two that are provided through institutions of higher

education (IHEs) that must register their programs with NYSED before opening them to candidates to ensure they meet NYSED requirements.

a. *NYSED-administered programs*

Individual transcript evaluation is a pathway to certification controlled by NYSED, where individuals submit their transcripts and request that the Department evaluate whether they have met requirements for certification, including both content area and pedagogic core requirements. The existence of this pathway allows individuals to piece together requirements for coursework from a range of programs, online or otherwise, whose course descriptions offer evidence that they meet aspects of the State's requirements for different certifications. Applicants can also take coursework and apply through this pathway to receive supplemental certifications, such as for special education or TESOL, based on additional course credits and school-based experiences.

Interstate reciprocity allows individuals with a 2.5 college GPA who hold a valid comparable certificate and have three years of satisfactory experience teaching, or who have completed a comparable preparation program in other states, to apply to NYSED for approval for certification, with some additional State requirements for mandated workshops and testing.

b. *IHE-Based Programs*

The other certification pathways in New York State that provide basic classroom teaching credentials are authorized through IHEs, sometimes in partnership with third parties such as Teach for America. All IHE-based programs must meet the Commissioner's regulations for the registration of programs (8 NYCRR §52.21) and meet the requirements for the specific certification area for which the program will provide certification. Candidates are expected to hold a 3.0 college GPA and to pass State-required examinations, including content, pedagogy, and performance assessment exams, though pathways have different requirements for the timing of exams. What differs dramatically across IHE-administered certifications are the expectations for teacher candidates *before they receive a certificate that allows them to become teachers of record, responsible for their own classrooms.*

Traditional preparation programs require candidates to complete all coursework, exams, workshops, and clinical practice before they are recommended for certification. Candidates in graduate programs who are offered paid teaching positions may qualify for a time-delimited internship certificate allowing them to be teachers of record before completing their programs if they have completed half of their coursework and the program approves such a placement.

Transitional preparation programs, often called "Trans B," require only 5 weeks of coursework, 40 hours of which must include clinical practice, before candidates receive a certificate allowing them to become a teacher of record. Trans B certificates are valid for up to three years as long as a

candidate is employed and receiving mentorship from the program. Over the course of two to three years, Trans B candidates must complete their additional program requirements, including the edTPA performance assessment, after which they receive regular initial certification, often with credit towards tenure and professional certification for the years they served under the Trans B as a provisionally certified teacher.

2. Assessment of the Current Certification Pathway System

The current set of certification pathways is efficient at helping districts ensure every classroom has a teacher in front of the room who holds a certification that is approved by the State. Unfortunately, none of the state's core certification pathways systematically ensures that those in front of a classroom are fully qualified to teach the students they are hired to serve. As the following assessments demonstrate, some pathways actually contribute to teacher turnover problems. I know from my experience both at the NYCDOE and as president of Bank Street that these examples are commonplace, and the data that I have reviewed, where it exists, attests to their prevalence.

a. Minimal requirements are too low.

The minimum regulations to be approved as a transitional preparation program are unacceptably inadequate. An approved program can offer entry into a full-time position with their candidates having had only a week of observation in a classroom. Research shows that such quick-entry entry programs result in underprepared teachers who are less effective and leave the profession quickly.[32]

The State created this pathway, which does not require even minimally adequate preparation, with the intention of helping districts more easily fill hard-to-staff positions. During my time at the NYCDOE, we supported the existence of this pathway for that reason. Over time, we learned that new teachers entering through programs meeting only the minimum bar of 40 hours were not able to provide our students the education they deserved. The State should immediately phase out Trans B programs with the minimum bar of clinical practice and engage in planning to dramatically limit the existence of pathways that do not have year-long clinical practice before allowing candidates to serve as teachers of record. Again, phasing out this pathway alone is not enough. The classrooms where such underqualified teachers are hired (most often those with students classified as "at-risk") still need teachers – so this change must be paired with investments to ensure that such classrooms have adequately qualified teachers.

b. Back-door entry to serve historically underserved students.

Two of the State's pathways directly contribute to inequities.

First, Trans B pathways largely supply the teachers for schools serving students of color and students from low-income backgrounds, creating a system that allows teachers who are not fully prepared to be hired to teach the state's least advantaged students.

Second, experience indicates that the State's individual transcript pathway also disproportionately allows underprepared individuals to teach in schools that serve students of color and students from low-income backgrounds. Often, candidates whose preparation qualifies them for general education positions are hired as special education, STEM, or TESOL teachers in hard-to-staff schools and subject areas, with a commitment to complete certification requirements for a supplemental certificate within a year. The State's individual pathway allows applicants to piece together a dossier that meets technical requirements for certification but that can be woefully inadequate in terms of preparing a teacher for working with the students being served.

I know from my time at the NYCDOE that this kind of back-door entry into certain certification areas was commonly used to staff classrooms serving the students most in need. I would recommend that the State conduct a thorough analysis of patterns of initial certification, employment, and supplemental certification to understand the degree to which general education-certified teachers are employed in high-needs certification areas like special education, STEM and TESOL through minimal supplemental certificates awarded through the individual certification pathway. Based on that analysis, the State should develop the incentives and supports that would ensure currently certified teachers could pursue supplemental certification that required appropriate supervised clinical practice as part of the process.

c. *Counterproductive Incentives to Support State Goals.*

The current State pathways for IHE-administered programs create disincentives for strengthening high-quality teacher preparation. First, the higher standards of traditional pathways must compete, even within a single institution, with the lower standards of Trans B pathways. Given that some pathways incentivize individuals by providing paid teaching positions before having completed programs, stronger preparation pathways that seek to ensure candidates are fully prepared to teach can be squeezed out of existence. Evidence in New York City specifically, and in general across the nation, makes it clear that longer, more contextualized preparation programs graduate candidates who stay in the profession longer, reducing the negative impacts of turnover that an unstable workforce visits on students.[33] What was initially framed as market competition to improve quality has actually resulted in disincentives for programs to strengthen requirements, for example, by creating year-long placements for clinical practice, which we know address both quality and retention issues and, when funded, also increase teacher diversity.

In effect, competition for enrollees in programs and the need to fill immediate positions has led to a kind of race to the bottom in teacher preparation. The current constellation of approved pathways works against the State's interest in promoting, supporting, and regulating teacher preparation pathways that are strong and ensure quality teachers for all students.

B. Evaluation of Effectiveness of Current Teachers

1. Description of the State's Teacher Evaluation System[34]

Teachers in New York are evaluated using multiple measures, with each district, BOCES, or LEA designing an evaluation system that meets State standards. Evaluation systems must include both student performance measures and teacher observation measures. Student performance measures must be either State or Regents assessments or State-approved assessments that are either third-party assessments or district, regional, or BOCES-developed assessments. Observations must consist of observable performance measures using a State-approved rubric that aligns to State teaching standards.[35] At least one observation must be conducted by a principal or other building administrator and must account for at least 80% of the observation component, and at least another 10% of the evaluation component must be from an external trained evaluator, potentially with the observation conducted virtually. Assessments must classify teachers into one of four categories: Highly Effective, Effective, Developing, or Ineffective.[36] These evaluations must be a "significant factor in decisions relating to promotion, retention, tenure determination, termination and supplemental compensation, and differentiated support and professional development."[37]

2. Assessment of the Teacher Evaluation System

The State's recent adjustments to the teacher evaluation system, moving away from an absolute requirement to use annual standardized tests for a substantial portion of a teacher's rating, were merited. Evidence has always existed, and in recent years has grown, that high-stakes annual tests for students are problematic measures of teacher effectiveness.[38] The current system is an improvement, but I cannot speak to its effectiveness as I have neither experience nor data on its implementation and impact. However, what is striking about the State's teacher evaluation system is that it does not seek to understand how teachers who enter the system through different State-endorsed and State-administered pathways might perform differentially. I turn my testimony now to why I urge the Court to find that the State should focus on teacher quality standards *before* an individual is allowed to teach with at least as much intent as the State has focused on a teacher's impact once in the classroom.

IV. INEQUITABLE DISTRIBUTION OF TEACHER QUALITY

A. Student Characteristics and Access to Quality Teachers

Both student poverty rates and proportions of students of color have historically been associated with inequitable educational opportunities.

The State uses two different measures of student poverty: Eligibility for Free or Reduced Price Lunch (FRPL) and a more comprehensive measure the State calls "Educational Disadvantage" (ED) that takes other student characteristics into account. Table 1 provides the 2018-19 data for student poverty rates in the state, in the state not including New York City schools, and in New York City overall. In addition, using a rank-ordering of schools in New York City based on their FRPL percentages, Table 1 provides the average FRPL and ED percentages for the

City's highest, lowest, and middle two quartiles of schools serving students who are identified as FRPL eligible.

New York City clearly serves the highest proportion of students from economically and educationally disadvantaged backgrounds. While a quarter of the City's schools have only a slightly higher student poverty rate than the state average, the other three quartiles serve dramatically higher proportions of students in poverty. In fact, the average rate of student poverty in the highest quartile of schools is 90%.

Table 1: Student Poverty Rates and Percentage of Students of Color

Student Poverty 2018-19	FRPL	ED
New York State	55%	57%
New York State - no NYC district schools	45%	48%
NYC	75%	75%
NYC - highest quartile* - FRPL**	90%	89%
NYC - middle quartiles* - FRPL	77%	77%
NYC - lowest quartile* - FRPL	58%	58%

*Quartiles based on NYC geographic district-level student FRPL rates
** % FRPL for NYC quartile groups is a simple average
Source: data.nysed.gov, 2018-19 Student & Educator Report (FRPL) and Enrollment Data

When he was United States Secretary of Education, John King, who had previously served as the New York State Education Commissioner, turned the focus of the U.S. Department of Education to the question of whether students within a state had equitable access to effective educators. He knew that students like those in the lowest quartile in New York City often did not have access to effective teachers. He required all states to submit a plan to address inequitable access to effective educators.

The New York State plan used several indicators to explore the distribution of effective educators in the state. The findings clearly established inequitable access to effective educators for students in poverty and students of color. For students in poverty, the report found the following:

"Compared to students in the quartile of schools with the lowest percentage of students in poverty, students in the quartile of schools with the highest percentage of students in poverty:

- are 2.8 times more likely to be placed with first-year teachers
- are 10.6 times more likely to be placed with teachers who are not highly qualified [as defined by No Child Left Behind]
- experience a teacher turnover rate that is 68% higher." [39]

The federal government also required analyses of equitable access to effective educators for students of color. The New York State plan defined students not identifying solely as white, either racially or ethnically, to be "minority."[40] State

data show that 57% of students in public schools across the state come from these backgrounds, while 85% of students in New York City would be classified as "minority." For these students of color, the equity plan established that:

"Compared to students in the quartile of schools with the lowest percentage of minority students, students in the quartile of schools with the highest percentage of minority students:

- are 3.8 times more likely to be placed with first-year teachers
- are 13.8 times more likely to be placed with teachers who are not highly qualified
- experience a teacher turnover rate that is 84% higher
- experience a turnover rate of teachers with less than 5 years of experience that is 20% higher."[41]

All of these indicators are deeply intertwined and correlate with teachers' preparation pathways, as this portion of my testimony will demonstrate.

B. Analysis of Key Indicators of Teacher Quality

1. Certification Credentials

As was noted in the *CFE* Trial Court decision, certification credentials themselves do not guarantee effective teaching, but "the lack of certification is generally an indicator that a teacher falls below minimal adequacy."[42] In considering individuals, there are always exceptions to the rule. But at a system level, when problematic patterns exist year after year, and research confirms the existence of the patterns, something must change. In my experience, whether a person has a certification related to the students and subject matters they teach should be the lowest bar to assess whether, at a systems level, students have access to effective teachers.

As Table 2 shows, in New York State, a surprisingly high 11% of teachers are teaching out of their certification areas. That number, though, masks more troubling realities. As the State acknowledged in its plan for equitable access to quality teachers, New York City serves much higher proportions of students of color and students in poverty;[43] removing New York from the state average lowers the state percentage of teachers out of certification areas to only 6%. The disparities between students in the NYCDOE compared to the rest of the state then are in more realistic—and stark—comparison: Students in the City are more than three times as likely to have an out-of-certification teacher. For students in the NYCDOE's highest quartile of FRPL schools, the percentage is more than four times the state average excluding the City, as fully a quarter of teachers are teaching out of their certification areas. Similarly, for students of color, they are likely to be taught by teachers who are out-of-certification at rates between 16% and 22%, compared to the state average excluding the City of 6%.

Table 2: Teacher Qualifications, Levels of Student Poverty and Percentage of Students of Color

Teacher Qualifications 2018-19	Out of certification*	
	#	%
New York State	23318	11%
New York State - no NYC district schools	9337	6%
NYC	13981	20%
NYC - highest quartile FRPL	4013	25%
NYC - middle quartiles FRPL	6876	18%
NYC - lowest quartile FRPL	3092	19%
NYC - highest quartile students of color	2947	16%
NYC - middle quartiles students of color	7495	22%
NYC - lowest quartile students of color	3539	20%

*Teaching in fields/subjects in which they don't hold certification
Source: data.nysed.gov, 2018-19 School Report Card data (Staff Qualifications and Expenditures per Pupil)

When vast swaths of students have teachers who are teaching out-of-certification – particularly when those students are disproportionately at-risk students – the State cannot be said to ensure they are receiving an appropriate education. The State has certification standards because certification matters. It is unacceptable for 20% of teachers in New York City to be teaching out of certification. It is particularly problematic that at-risk students are much more likely to have out-of-certification teachers in New York City, because they need effective teachers the most.

2. Certification Pathways

The court in the *CFE* Trial Court decision also found as credible defendants' testimony that certification does not guarantee teacher quality,[44] which I would affirm yet also qualify: If the State's certification pathways were all high-quality—which they are not—certification status would better ensure all teachers would be effective educators.

For example, the system currently classifies all state certifications as valid, even though many novice teachers could have entered the classroom with as little as one week of classroom-based clinical practice. Technically, they are certified; in no way are such teachers prepared. In both special education and teaching English as a second language, the State also allows an individual to complete a traditional general education program leading to a general teaching certificate and then to add on four courses—which do not necessarily have to include any integrated clinical practice—that will allow the addition of a valid supplemental certificate for that teaching area. Such a supplemental certificate could easily be accomplished in a summer term or online in night classes disconnected from any reflective practice around those candidates' work with students—something we know to be crucial for being able to teach different students effectively. Again, these individuals become technically qualified but are unprepared because the system provides no way of ensuring supplemental certificates are connected to the kind of applied study that learning to teach these special populations requires.

The State does not make data on teacher certification pathways available for analysis, but my experience in the NYCDOE allows me to say unequivocally that the patterns in the district reflect patterns nationally. Teachers who enter through routes that allow quick entry into paid teacher of record positions are most likely to have positions in schools serving students from economically disadvantaged backgrounds and schools with high proportions of students of color. If these teachers were equally effective at supporting learning, their disproportionate hiring in high-needs schools would be irrelevant. But they are less effective than fully prepared teachers.[45] In addition, though they might build their skills over time if they were to stay in the profession, underprepared teachers leave the profession at rates 25% higher than fully certified teachers. In Title I schools and schools serving the greatest proportions of students of color, where such teachers are most likely to have positions, they leave at even higher rates than their peers—30% higher in Title I sites and 60% higher in sites in the bottom quartile of schools serving high proportions of students of color.[46]

This discussion, along with my description of certification pathways in Section V.A., has important consequences for how this Court evaluates the state of affairs in NYCDOE schools. As I noted above, it is unacceptable for 20% of teachers in New York City to be teaching out of certification. But that statistic and related data mask the full extent of the problem. Many of those teachers whom the State classifies as teaching "in certification" are, in fact, underprepared to be in the classroom because they obtained certification through one of the many pathways that does not ensure a teacher is prepared before becoming a teacher of record. *As a result, far more than 20% of teachers in NYCDOE schools are not sufficiently prepared to teach the students and/or subjects in their classroom.* This state of affairs is intolerable.

For the record, let me also state that these realities are not because the teachers somehow are themselves lacking as individuals. On the contrary. I have known and worked with many alternatively certified teachers who work heroically to support their students' learning. But because they enter the classroom with so little experience, they cannot be as effective as they could be had they had quality preparation. The problem does not lie in the individuals; it lies in the State's pathways that allow, and even incentivize, underprepared teachers to enter the classroom prematurely, and in the system-wide lack of investment in teacher preparation that requires a reliance on such teachers.

The State has used its powers to enact changes in teacher preparation pathways in the past. The preparation pathways currently in existence are deeply intertwined with labor market supply issues since teaching positions cannot be left open.[47] Someone must lead students in the classroom. Over the past two decades, enrollment in traditional teacher preparation programs has dropped precipitously,[48] so to address the exigencies of teacher shortages, quick-entry teacher certification pipelines have become embedded in most urban districts' portfolios. As an immediate solution for labor needs, these pathways have been successful policy options. In fact, I once supported them to help the NYCDOE have more flexibility for finding committed individuals to

serve in hard-to-staff schools. However, this human capital approach exacerbates educational inequities by creating a revolving door of underprepared teachers.

We need a different policy solution. The flaws in the system disproportionately disadvantage students in poverty and students of color, and those students are disproportionately found in the NYCDOE. The State's patchwork of teacher preparation pathways is a root cause of teacher quality challenges. The certification system is outdated, neither aligned with research on the difference between impacts of quick-entry programs on the system and more traditional approaches, nor aligned with the growing research base of what our teacher preparation system should look like to ensure every teacher is well prepared. Creating and supporting a coherent set of teacher preparation pathways that ensure candidates from diverse backgrounds can enter the profession through high-quality programs is a lever the State has control over and that would improve the quality of teaching and learning for all students.

3. Years of Teaching Experience

Improved research data and methodologies have demonstrated that teacher retention—increasing the number of years teachers have to consolidate their knowledge around the complex work of teaching—itself improves students' outcomes. Over time, teachers continue to improve their impact on achievement and other student outcomes, not just in the first few years of teaching, when their learning curves are particularly steep, but also throughout their second and even third decades of teaching.[49] As the Learning Policy Institute has shown, a "synthesis of 30 studies analyzing the effect of teaching experience on student outcomes found that teaching experience is positively associated with student achievement gains throughout a teacher's career."[50]

A host of outcome improvements accrue to students who have more experienced teachers. Student achievement is improved.[51] Disciplinary referrals are reduced. Students are absent less frequently. Motivation improves.[52] Experienced teachers also exert school-level positive impacts on student learning through their interactions with colleagues.[53]

As Table 3 shows, students in the NYCDOE are often denied these educational benefits. They are more likely than their counterparts across the state to have inexperienced teachers, defined by the State as having fewer than 4 years of experience. Across the state, 16% of students are being taught by inexperienced teachers, but much of that is driven by the numbers in New York City. Excluding NYCDOE students, only 11% of the state's students outside of the City are taught by inexperienced teachers. In the NYCDOE, 24% of students have inexperienced teachers, more than double the average rate for the rest of the districts in the state. For students in the highest quartile of FRPL schools, 30% are taught by inexperienced teachers. Students of color similarly experience these disparities.

Table 3: Teacher Experience, Levels of Student Poverty and Percentage of Students of Color

Teacher Experience 2018-19	Inexperienced Teachers*	
	#	%
New York State	32551	16%
New York State - no NYC district schools	15364	11%
NYC	17187	24%
NYC - highest quartile FRPL	4552	30%
NYC - middle quartiles FRPL	9027	23%
NYC - lowest quartile FRPL	3608	22%
NYC - highest quartile students of color	3756	21%
NYC - middle quartiles students of color	9253	26%
NYC - lowest quartile students of color	4178	25%

*Fewer than 4 years of experience
Source: data.nysed.gov, 2018-19 School Report Card data (Staff Qualifications and Expenditures per Pupil)

In addition to the State's definition of inexperienced teachers, the research continues to support the *CFE* Trial court's findings that the "evidence validates the unremarkable proposition that teachers, like any professionals, frequently require several years' experience to achieve competency. The court finds that teaching experience of two years or less is correlated with poor teacher quality."[54] As Learning Policy Institute has noted, there is "clear evidence that teachers with more experience are on average more effective than those with only 1 or 2 years of experience."[55] Studies in both New York and North Carolina have found that students of teachers with more than 2 years of experience, among other characteristics, realize higher achievement growth.[56] The North Carolina study found that the negative effects of having an inexperienced teacher with substandard credentials—such as the quick-entry programs in New York—were larger than the effects of race and parent education combined, and the impacts on mathematics achievement were particularly large. Having teachers with more than two years of experience also was found to have a much larger positive effect on student achievement than reducing class size.[57]

NYSED does not provide publicly available school-level data on the numbers of teachers who are in their first or second years of teaching, but, again, as the State's own analyses concluded in their report to the federal government: "Compared to students in the quartile of schools with the lowest percentage of students in poverty, students in the quartile of schools with the highest percentage of students in poverty are 2.8 times more likely to be placed with first-year teachers…[and c]ompared to students in the quartile of schools with the lowest percentage of minority students, students in the quartile of schools with the highest percentage of minority students are 3.8 times more likely to be placed with first-year teachers."[58]

The State is required to report data on first- and second-year teachers to the U.S. Department of Education's Office of Civil Rights. Table 4 shows data from that source, though the reality is even worse than the numbers indicate because these are panel data—one year of novice teachers. Students don't exist in the school system for only one year; they experience compounding

impacts of underprepared teachers year over year, something these panel data do not capture.

In the NYCDOE, data show that students in Title I schools are much more likely have a first- or second-year teacher. Unlike other data I have discussed, statewide distribution of first- and second-year teachers roughly mirrors that in New York City. All this means that poor students and students of color are far more likely to have a rookie teacher across the state – an unacceptable state of affairs where students are, on the whole, likely to receive inadequate instruction and support as a result. Because of teacher turnover, a topic I will turn to next, students in these schools are likely to have repeated first- or second-year teachers, diminishing their learning opportunities across their school careers.

Table 4: Distribution of First Year Teachers among Students in Poverty/Students of Color[59]

First and Second Year Teachers, 2017-2018		First year Teachers		Second Year Teachers		First and Second Year Teachers	
		#	%	#	%	#	%
NYS, Excluding NYC							
% of non-white student population	>50	2172	6%	1841	5%	4013	11%
	>75	1436	7%	1208	5%	2644	13%
	>90	624	6%	576	6%	1200	12%
Title 1 Status	Non-Title 1	1626	3%	1503	3%	3129	6%
	Title 1	3983	4%	3525	4%	7507	8%
NYC Only							
% of non-white student population	>50	5004	7%	3638	5%	8642	12%
	>75	4380	7%	3129	5%	7509	13%
	>90	3527	8%	2533	6%	6060	13%
Title 1 Status	Non-Title 1	594	4%	509	5%	1103	8%
	Title 1	3807	7%	2767	5%	6575	12%

*Note that the total number of teachers across Non-Title I charter schools is just under 100, so the percentage values are high. These data are not indicative of any systemic patterns because of their lack of representativeness across any sample.
Source: Office of Civil Rights data collection: https://www2.ed.gov/about/offices/list/ocr/docs/crdc-2017-18.html

4. Turnover Rate

Teacher turnover destabilizes schools. In the United States, our educational system relies on in-service teacher professional development opportunities to support the kind of deeper understanding of teaching and learning that other countries might accomplish in two-year paid post-baccalaureate programs.[60] As a result of the design of our systems, the continued development of teachers' knowledge and practice base must be built into any district's human capital development plan. When teachers leave the profession before even establishing themselves, the very foundation of any plan to build human capital capacities in schools is undermined.

A major driver of teacher turnover is being underprepared upon entering the classroom. As the Learning Policy Institute has documented, teacher turnover

is 25% higher among teachers entering through quick-entry pathways. When those teachers take positions in schools serving large proportions of students from low-income backgrounds or students of colors, their turnover rates are even higher.[61] Mathematics and science teacher turnover rates in Title I schools are already higher than in non-Title I schools, and turnover rates for teachers certified through quick-entry programs in those fields are more than 80% higher in those sites. Turnover rates are 70% higher for teachers in schools serving the largest concentrations of students of color. Teacher turnover rates are 90% higher in the top quartile of schools serving students of color than in the bottom quartile for mathematics and science teachers, 80% higher for special education teachers, and 150% higher for teachers entering through quick-entry programs.[62]

New York City has worked hard in the past decade to reduce teacher turnover. Still, more must be done. As Table 5 shows, more than a fifth of new teachers leave within 5 years. And students in the highest quartile of schools serving large proportions of students eligible for FRPL once again fare the worst in the city.

Table 5: Teacher Turnover of Early Career Teachers

Teacher Turnover 2018-19	Turnover - Fewer than 5 Years	Turnover - All
New York State*	21%	11%
NYC**	20%	15%
NYC - highest quartile, FRPL	24%	18%
NYC - middle quartiles, FRPL	19%	14%
NYC - lowest quartile, FRPL	18%	14%
NYC - highest quartile students of color	18%	13%
NYC - middle quartiles students of color	21%	16%
NYC - lowest quartile students of color	21%	16%

* Data do not allow for disaggregation of NYC from state data; state averages would likely be much lower, as they are with other indicators, if NYC students could be separated out and compared to the state average without their disproportionate impact on the state value because of the size of the NYCDOE.
**Data for NYC reflects a simple average of the turnover data reported for its geographic subdistricts
Source: data.nysed.gov, 2018-29 Student and Educator Report

About Table 5, it is important to note that, although the State's data shows a similar rate for early career turnover as the NYCDOE does, unlike other data I have presented in previous charts, due to data limitations, the statewide value in this chart includes both New York City data and data for charters. As a result, any comparisons about retention rates to state averages that use the State's publicly available data should be considered carefully, as they likely mask important differences between the three groups of schools—NYCDOE, charters, and other schools in the state. In short, the teacher turnover rate across New York state, excluding New York City, is almost certainly lower than the 21% for newer teachers and 11% overall reported above.

Despite the blunt data available from the State to understand retention in the NYCDOE, excellent data exists from the City. In June of 2019, the New York

City Comptroller's Office released a well-researched report recommending the NYCDOE and the City itself invest in teacher residencies instead of in its large Trans B program, the New York City Teaching Fellows, a proposal with which I agree and to which I will return. The Comptroller's Office had access to data that most other researchers do not, so the analyses are nuanced, and they are in line with both the national research on turnover and the testimony I am providing here.

One data point in that report in particular I would like to draw to the Court's attention. The Comptroller's Office cited a New York City Independent Budget Office ("IBO") analysis that explored the relationship between preparation pathways and turnover.[63] Table 6 presents data from the IBO's analysis of retention of teachers who entered the NYCDOE teaching force through different pathways: the New York City Teaching Fellows, Teach for America, and what are often called traditional programs. Both Teach for America and Teaching Fellows provide 5-7 weeks of summer training, and then their enrollees begin teaching in the fall.[64] They receive a range of incentives to enter these pathways—tuition, housing, food, and a full salary with benefits. Traditionally prepared teachers pay their own way into the profession, completing coursework, 100 hours of field work, and 14 weeks of student teaching.

When traditionally prepared teachers find a position in the NYCDOE, they are as likely as entrants from other pathways to leave after the first year—all these pathways hover around 80% retention after one year—but they are much more likely to remain in their schools over time. Teach for America corps members haveslightly higher one-year retention rates and then drop out of the NYCDOE workforce precipitously at the end of their two-year contracts. Teaching Fellows land somewhere in between.

Table 6: Comparison of three-year teacher retention rates from select pathways in the NYCDOE[65]

	2011-12 cohort	Percent remaining at original school after		
	#	1 year	2 years	3 years
NYC Teaching Fellows	2536	78.5%	56.1%	41.1%
Teach for America	244	84.3%	39.0%	23.9%
Traditional Pathway	134	80.7%	68.8%	60.3%

While it is undeniable that teachers from traditional pathways are less likely to serve in schools with high proportions of students of color or students eligible for FRPL, it is also true that these new teachers are not incentivized to do so, unlike teachers from Trans B pathways. The City had a long-running program that provided some evidence that, with incentives, programs could attract candidates into programs that exceed the requirements for traditional preparation and result in exceptional results. The Hunter College/New Visions residency partnership conducted a longitudinal analysis of seven cohorts of graduates from the residency program. Not only did their graduates have a

positive impact on achievement; their overall retention rate is 91%, and after six years three-quarters of graduates are still teaching.[66]

Here, I return to my analysis of the challenges with the State's teacher certification pathways in this section of the report and reiterate that, while certification is no guarantee of teacher efficacy, if most teachers entered the profession through high-quality financially supported teacher residencies like the one the Hunter College/New Visions partnership modeled, certification is much more likely to be a strong predictor of effectiveness.

It is time for the system to move away from fast-track pathways into teaching. Too many students in the NYCDOE are subjected to less effective novice teachers, year after year. We can address these linked problems of credentialing, pathways, teacher inexperience, and turnover. It will take investment and thoughtful work to redesign our teacher preparation systems, but our experience across the nation through the *Prepared To Teach* initiative indicates that both districts and institutions of higher education are ready for the work. The systems now need supports.

5. **Diversity of the Teaching Force**

The diversity of the teaching force is an absolutely critical indicator of a system's ability to provide a sound, basic education to every child. When a student and a teacher are the same race, the effects on student achievement are positive, with an effect size of about 0.020 to 0.029 standard deviations for math and 0.013 to 0.020 for reading. In practical terms for Black students, having a single Black teacher in the elementary years through fifth grade means they are 13% more likely to graduate from college.[67] That is how important it is that the system find ways to attract, prepare, and retain teachers of color.

The NYCDOE is comparatively successful on this front, and again they should receive acknowledgement for the hard work they have put into recruiting a diverse teaching force. At the same time, the disparity between the proportion of teachers of color and students of color in the system is unacceptable. Almost 60% of teachers are white, while 85% of those they teach do not identify as white.

I was unable to review any data that would answer a key question that should be asked related to the diversity of the NYCDOE teaching force. National data indicate that more teachers of color than ever before are entering teaching, but they also are more likely than their white counterparts to enter through quick-entry pathways—and to exit from the profession more quickly than White teachers prepared through the same pathways.[68] To the extent that the NYCDOE is effective at recruiting teachers of color, but they enter through quick-entry pathways, the system would be losing the potential talent of a much higher proportion of these recruits than they would had they been supported through a residency program.

V. ATTRACTING, PREPARING, AND RETAINING QUALITY TEACHERS AND RESOURCING THOSE EFFORTS

A. A Quality Teacher Preparation Model

Teacher residencies, where aspiring teachers—whether in undergraduate or post-baccalaureate programs—work for a full year in schools with accomplished teachers, achieve the goals that are needed to substantively and materially diminish the state's educational inequities. Teachers prepared through financially supported, contextually situated residency partnerships between districts and programs that embed residents in partner schools are proven, as noted earlier, to reduce turnover, improve retention and staff diversity, and support improved student learning.

The mechanisms for these improvements are straightforward. Residents are integral to the classroom, planning, delivering, assessing, and reflecting on instruction with their mentor teachers. Residents experience the full curriculum, seeing how its pieces fit together to build towards broader learning goals. They have a year of real-time reflective practice grounded in students' lived experiences and learning successes and challenges, allowing them to consolidate their crucial knowledge base around educational pedagogy and the science of learning and development. They are fully integrated into the school so they develop an appreciation of how the work in an individual classroom connects to other classrooms and the whole school. Residents interact daily, with supports from the school and program, with the students and community they serve, building the respect and understandings that are so necessary to enact culturally responsive and sustaining practices. They work with parents, engage in special education IEP meetings, lead enrichment opportunities, participate in extracurricular activities.

Residents enter their first year as teachers of record with such rich learning experiences that they largely avoid the widely documented challenges of first year of teaching and the negative impacts on student outcomes attributable to first year teachers' learning curves. Their residencies allowed them to gain a full understanding of what it means and takes to teach.[69] What's more, emergent research confirms an intuitive assumption: Having a resident teacher from a quality program embedded in a classroom alongside the teacher of record can improve student outcomes in the classroom where the resident is placed during preparation.[70]

Universal residency preparation would materially change the futures of students in the state, but the state must adopt a planful approach to raising standards for preparation to realize this promise. First, the collection of pathway options that ultimately exist in the state must provide flexibilities to address local needs while simultaneously ensuring equal rigor as defined across a broad range of features that reflect the complexities of teaching and learning. Second, the state must find ways that support short-term hiring for teacher shortages that do not incentivize individuals into low-quality pathways and disincentivize the development of high-quality programs that require more commitment on the part of candidates before they have full-time positions as teachers of record. Third, high quality residencies

must be financially accessible for all, and especially for candidates from underrepresented backgrounds.

It will take time to create a system that accomplishes all these goals, but doing so is both necessary and within reach, as I will establish in the remainder of this report.

B. Equitable Access to Quality Teacher Preparation

High-quality teacher preparation is not equitably accessible for every aspiring teacher today. Two economic factors play driving roles here. The first relates to the quality of the preparation program itself. High-quality, integrated, intensive learning opportunities take time and human resources. It costs money to ensure reasonable class sizes and teaching loads in higher education institutions so faculty have the time they need to keep up on research in the field, work together to strengthen and integrate coursework within the program, and attend to teacher candidates' learning needs in personalized ways. Impacts of cutting corners on human resources in teacher preparation are no different from those in P-12: Aspiring teachers will underperform once they graduate if they do not have high-quality, supported faculty in their programs.

The second economic factor weighs even larger: Aspiring teachers' own financial burdens. Unlike other fields such as engineering, pharmacy, architecture, and engineering, where entrants to the profession are paid to work alongside fully certified mentors while earning their credentials, clinical practice in teaching has traditionally been unpaid, forcing teacher candidates to work full-time for free, usually for a semester and sometimes for an entire school year. For candidates without financial means, they either must take out additional loans to meet living expenses or work on top of completing coursework and student teaching all day.

These expectations have a disproportionate impact on teacher candidates of color, who, according to federal data linked to income and financial aid packages, come from families with less than half the income of white education majors.[71] Unsurprisingly, quick-entry programs where individuals are able to enter classrooms with full pay and benefits with as little as a week of observation, completing their training while they are already responsible for the well-being and learning of students, disproportionately enroll higher numbers of candidates of color, who, because of systemic inequities throughout all of our opportunity systems, disproportionately come from low-income backgrounds.[72] As noted earlier, these pathways unfortunately also have the highest rates of teacher turnover, with novice teachers of color from such programs leaving the profession at even higher rates than their white counterparts, effectively squandering states' capacity to retain people of color who want to be teachers.

Other industrialized countries with high-performing and fast-improving education systems have embraced integrated, financially supported teacher preparation systems where higher education and P-12 schools work together to develop and deliver intellectually sound, clinically rich extended preparation experiences that aspiring teachers can afford.[73] We established Bank Street's *Prepared To Teach* initiative, housed at the Education Center, to build a knowledge base that could help states move towards high-quality preparation systems that candidates could afford.

Prepared To Teach has conducted nationwide survey research, including teacher candidates in New York, to explore candidates' financial burdens, finding that:

a. A full 85% of graduate students and 76% of undergraduate students indicate that they worry 'Very Frequently' or 'Frequently' about their financial situations.

b. More than 60% of candidates indicated that they need to work to support themselves while engaged in their unpaid full-time clinical placements required for certification; a third of those work multiple jobs.

c. Most aspiring teachers could not manage an unexpected expense above $250.

d. Over 50% of aspiring teachers take out loans to support themselves during their year engaged in clinical practice.

e. Living expenses rank higher than tuition costs in terms of financial challenges aspiring teachers face, as they cannot work as much, if at all, while pursuing their required clinical hours.

f. Average loan debt for undergraduate education majors was $30,000 and $63,000 for graduate students.[74]

Strengthening the capacities of novice teachers so that all students have access to an adequately prepared teacher will, above all, require financial supports for teacher candidates.

C. Financially Supported Teacher Residencies

While there are many strong teacher preparation programs that graduate novice teachers who are adequately prepared to manage a classroom and support growth in student learning, funded teacher residencies consistently attract, prepare, and retain a diverse pool of well-qualified teachers, including for schools that are high-need or hard to staff.[75]

In particular for places facing teacher quality challenges, financially supported teacher residencies would address multiple needs. They would strengthen instruction in classrooms with residents; they would attract more diverse candidates, creating a more just and effective overall teaching force; they would reduce some of the negative impact of early year teachers' struggles; over time, they would reduce the numbers of novice teachers hired each year by remaining in the field, thus preventing students from experiencing a series of first- and second-year teachers; and they would stabilize school staff, enabling investments in professional development to have their intended impacts instead of being poorly invested in short-term, underprepared teachers.

D. Estimates of Costs

Quality teacher residencies have two major cost centers that must be addressed to ensure widespread adoption and success: Startup dollars and recurring costs to support residents and their mentor teachers. The second cost center, in particular resident supports, is the one most in need of new, dedicated funding streams.

Prepared To Teach has documented that, in districts with high turnover, investing in residencies is not only educationally sound; it's economically sound. Because

the real costs of turnover in large districts for a first-year teacher who leaves is roughly $20,000 per year—not counting ancillary costs of remediation needs and potential inappropriate special education identification—reducing turnover in early career teachers ultimately can save a district money. *Prepared To Teach* has analyzed data from eight districts across the country, and investments to create enough teacher residencies to meet 80% of a district's recurring hiring needs would, within roughly 5 years, are projected to reduce hiring needs by a half to 2/3, saving millions of dollars a year.[76] These dollars could then be reinvested into the residency partnership, creating a sustainable residency pathway.

Costs for creating a large enough pipeline of residency-prepared teachers that could begin to substantially improve retention rates varies depending on three key variables, the first being the numbers of residency-prepared hires the district desires. For the purposes of cost modeling to demonstrate the feasibility of flipping the system from one relying on Trans B pathways to one relying on funded residencies for hiring, I have chosen to model costs based on the number of first- and second-year teachers—6575—in Title I schools in New York City. Since 20% of first year teachers generally leave their positions, regardless of the pathway, and teachers in Title I schools leave at higher rates, this number serves as a solid anchor for transforming the quality of new teachers in the NYCDOE's highest need schools. The modeling assumes programming to replace 20% of that number in Year 1 and 20% of the remaining portion of that number that continues to leave the profession in Year 5 and beyond. Because of increased retention, that number decreases over time, from a need for 1315 teachers in Year 1 (20% of 6575) to 658 in Year 5 (a total reduction by 1/2 over time in turnover).

The second variable that drives the cost model is the amount of money that would be provided to each resident during the program. For this, I have selected $40,000, a value that I believe would be able to attract candidates from diverse backgrounds to the NYCDOE, including many career changers, into the program. Assuming the initiative could scale to the full 20% of the need in the first year, costs for stipends at that amount for all 1315 residents would total $52,600,000.

Those costs can be substantially reduced through strategic reallocation of existing roles in schools that already have salaries associated with them. For example, many programs have found ways to incorporate a day of substitute teaching once a week into the program. Residents sometimes engage this paid work in connection to supportive coursework; other times they substitute in their placement classes, where they are already prepared for the day's lessons, while their mentor teachers cover the class needing a substitute. Such a model in the NYCDOE could earn residents up to $7,200 at current substitute teacher rates. Proctoring assessments, before- or after-school tutoring, and other occasional additional duties could bring another $800 in pay that already existed in the budget, for a total of $8,000 per candidate covered through budgets that already exist—a 20% investment from the district in the residency that does not require any budget shifts.

Key to these reallocation approaches is that the compensated experiences do not overshadow clinical placement learning and are designed integrally with the overall residency experience so that the quality of the program is not compromised. With careful planning, the total cost for stipends for all 1315

residents in this high-quality preparation scenario would be reduced by over $10,000,000, leaving a net uncovered cost of $42,080,000. Table 7 summarizes those calculations.

Table 7: Calculations for Stipend Costs for Residency Program Serving NYCDOE Title I Schools

Number of teachers needed*		Investment required to fund all stipends needed, at 40K/resident	Reallocation from existing roles (20%, or $8000/candidate)	Net Cost
Year 1	1315	$52,600,000	$10,520,000	$42,080,000

* Assumes 20% of the number of first- and second-year teachers in Title 1 schools (6575); see Table 4.

The cost of this investment is about $1280 per NYCDOE student in the residency year, and the benefits, or returns on the investment, recur each year the graduate remains in the system. Such models are wise investments of our public dollars into education.

In addition, not only would investing in residencies improve outcomes for students; they would, over time, save dollars that currently offer no instructional benefits to students—dollars spent on recurring turnover of early career teachers. With urban turnover costs estimated to be at least $20,000 per teacher, replacing 1315 teachers each year costs the system $26,300,000 a year in recruitment, onboarding, training and supports for new teachers, separation costs for departing teachers, and other invisible yet real turnover-related activities.[77]

By the third year of a large-scale funded residency implementation, turnover begins to reduce because residency-prepared new teachers are not leaving, unlike previous new teachers. *Prepared To Teach* has modeled how turnover reduces over time; here, those Title I schools would only need 658 hires a year if residency graduates were retained at conservative rates research has documented. Cost savings from reduced turnover would have created opportunities for the district to phase out work related to turnover costs so that the saved dollars could fund the residents directly. Table 8 summarizes those calculations.

Table 8: Projections for Costs by Year 5

# of teachers needed		40,000K/ resident	$8,000 in role reallocation	Cost savings from retention	Total district funds available	Net Cost
Year 5*	658	$26,300,000	$5,260,000	$13,150,000	$18,410,000	$7,890,000

* Current projections based on existing residency retention literature suggest that increases in retention will reduce the need of new hires by 2/3 if the pool of residents is both large enough and targeted enough to meet district hiring needs.

Of course, other considerations will need to be brought into such an initiative, including start-up costs to establish a residency partnership that brings programs' quality commitments in line with districts' needs, supports and compensation for the mentors with whom residents are placed, site development for residency placement sites, and the actual planned scaling of a scope of the work that can

ensure quality results. This model also only costs out supports for first- and second-year teachers in Title I schools; the NYCDOE hires roughly 6,000 teachers a year, and all of them should be well prepared, as this model would provide. All these considerations can easily be planned and costed out; districts and programs think about these aspects of their work regularly. The assumptions here point to the reasonableness of the investment for the profound impacts it can have.

Both the historic approaches to teacher education and the range of new quick-entry models that have come into existence are inadequate to meet the needs of today's students. Residencies can be developed to meet the state's teacher labor force in ways that also improve outcomes and redress historic inequities in the educational system. Scaling funded residencies, especially in high-turnover contexts such as New York City, is infinitely doable and must, in my opinion, be part of any remedy that seeks to address the root causes of our school systems' inequitable outcomes.

NOTES

[1] David Osher et al., *Drivers of human development: How relationships and context shape learning and development1*, 24 APPL. DEV. SCI. 6–36 (2020).

[2] Pamela Cantor et al., Malleability, plasticity, and individuality: How children learn and develop in context1, 23 APPL. DEV. SCI. 307–337 (2019); David Osher et al., Drivers of human development: How relationships and context shape learning and development, APPL. DEV. SCI. 1–31 (2018); Linda Darling-Hammond et al., Implications for educational practice of the science of learning and development, 24 APPL. DEV. SCI. 43 (2019).

[3] TEACHERS MATTER: UNDERSTANDING TEACHERS' IMPACT ON STUDENT ACHIEVEMENT, (2012), http://www.rand.org/pubs/corporate_pubs/CP693z1-2012-09.html.

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[5] OECD, *supra* note 4; Darling-Hammond et al., *supra* note 4; Marc S. Tucker & Linda Darling-Hammond, Surpassing Shanghai: An agenda for American education built on the world's leading systems (2011).

[6] JESSICA CARDICHON ET AL., Inequitable Opportunity to Learn: Student Access to Certified and Experienced Teachers 36 (2020).

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[59] Charter schools, which are known to have particularly high rates of turnover and hence of first year teachers, have been excluded from this analysis.

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