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The Center for High Impact Philanthropy
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Pre-release

High Impact Philanthropy to Improve Teaching Quality

Focus on High-Need Secondary Students

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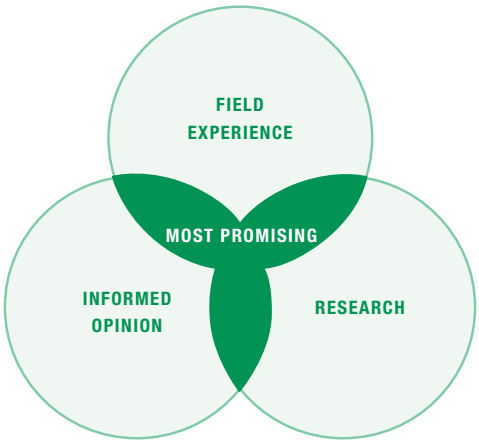
ABOUT THE CENTER FOR HIGH IMPACT PHILANTHROPY

The nonprofit Center for High Impact Philanthropy was founded in 2006 by Wharton alumni and is housed at the University of Pennsylvania's School of Social Policy & Practice. Our Center provides analysis, education and assistance to donors seeking the greatest impact in improving the lives of others. Our team brings a multidisciplinary approach, in-depth knowledge of research methods, and seasoned judgment to the analysis of high impact philanthropic opportunities.

OUR MULTI-PERSPECTIVE, EVIDENCE-INFORMED APPROACH

To meet our goal of providing smart, practical guidance to donors who care about impact, we synthesize the best available information from three domains: research, informed opinion, and field experience. By considering evidence from these three sources, we seek to leverage the strengths while minimizing the limitations of each. We believe the most promising opportunities exist where the recommendations of these three domains overlap.

SOURCES OF INFORMATION



FIELD EXPERIENCE
- Practitioner insights
- Performance assessments
- In-depth case studies

INFORMED OPINION
- Expert opinion
- Stakeholder input
- Policy analyses

RESEARCH
- Randomized controlled trials and quasi-experimental studies
- Modeled analyses (e.g., cost-effectiveness)

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WHY THIS, WHY NOW

More than ever before, American young people need a solid educational foundation to secure rewarding work and to participate fully in civic life. Yet across the United States, only approximately 70% of seniors in our public high schools — the institutions we count on to prepare our nation's youth for college or other postsecondary training — actually graduate. In districts and schools with high concentrations of poverty, graduation rates are closer to 55% or 60%.[1] Even among students who graduate from high school, the majority fail to meet the minimum requirements to apply to a four-year college,[2] and more than a quarter of entering college freshmen require a remedial course to address gaps in learning that were not addressed in high school.[3] Meanwhile, the evidence grows that an undereducated workforce threatens our country's overall economic, social, and national security.[4]

Researchers, educators, and funders across the political spectrum increasingly agree that change is needed to meet the needs of our society and its young people, and that teachers are the single most crucial lever for accomplishing that change.

Why focus on teachers

Teachers are the top in-school factor affecting student achievement.[5] A good — or bad — teacher has a greater impact on student outcomes than class size, school culture, or parental involvement in school.[6] Studies find that teaching quality has an especially strong effect on poor students.[7]

Teacher impact accumulates over a student's time in school. Students taught by highly effective teachers for three consecutive years can outscore students who had poor quality instructors over the same period by as much as 50 percentile points[8] — a gap that can equal a year or more of academic progress or the difference between being prepared for college and dropping out of high school.

For donors seeking to improve student outcomes, the critical question is, How can my funds improve teaching quality?

Purpose and scope of this guide

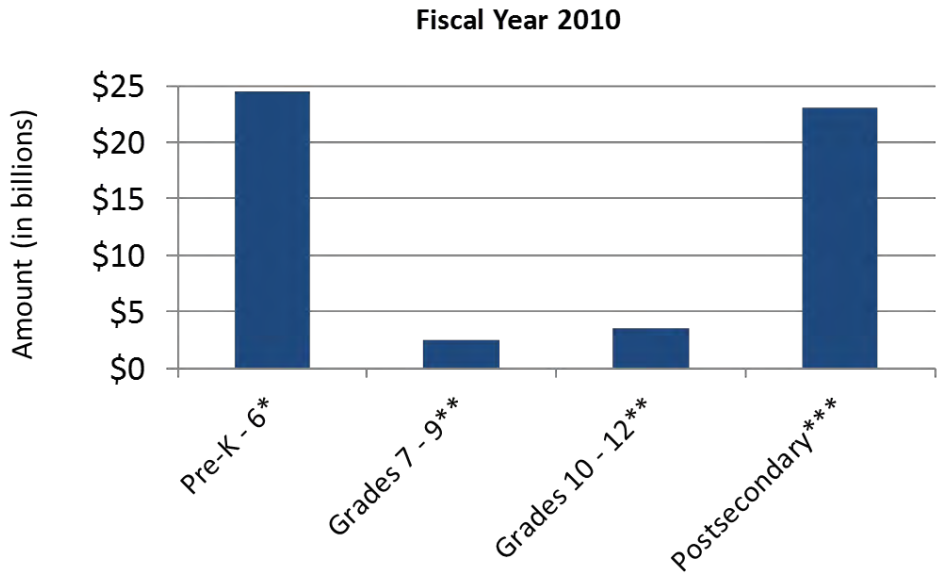
This guide answers that question by describing high impact strategies in which donors interested in improving teaching quality can invest. We focus specifically on teachers who work with "high-need" secondary students, those in grades 6 – 12 who are at risk of dropping out or leaving high school without the skills and knowledge to succeed in college or the workforce.

This focus reflects more than a practical need to limit the scope of our topic. In conversations with practitioners and funders, we often heard that efforts to improve secondary schools are

underfunded compared with elementary and postsecondary initiatives. A quick look at federal funding shows that support to secondary school education is dwarfed by funding to pre-kindergarten through sixth grade and postsecondary education (see chart 1).

Despite this relative lack of attention, high impact strategies do exist at the secondary level, as profiled in this guide. Improving teaching quality for secondary students represents a great opportunity for private philanthropy to make a difference, bridging the gap left by public investments and offering donors a chance to leverage investments in the earlier grades and sustain their impact. After all, even high-need students who receive a strong elementary school education are unlikely to make it to college if they fail to get an equally strong secondary education.

Chart 1: Federal Spending on Education



*Main funding from Title I: Improving the Academic Achievement of the Disadvantaged, Head Start, and Child Care and Development Block Grant.
**Main funding from Title I: Improving the Academic Achievement of the Disadvantaged, Federal Perkins Loan Program, and Federal Trio Programs.
***Main funding from Federal Pell Grants Program.

SOURCE: Adapted from "The Missing Middle", by Alliance for Excellent Education, 2010, Retrieved November 15, 2010, from http://www.all4ed.org/files/MissingMiddle_FY2010.pdf. Copyright 2010 by the Alliance for Excellent Education. Adapted with permission.

To help donors recognize where high impact opportunities exist, our multidisciplinary team conducted dozens of interviews with policymakers, researchers, academics, foundation program officers, teachers, principals, district leaders, nonprofit leaders, and other education experts. We made site visits to schools and to the nonprofits we profile to see their programs in action and to speak with participants, funders, students, and program leaders. We participated in conferences

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and national gatherings, including those sponsored by the Investment in America Forum, the American Educational Research Association, the Aspen Institute, the Consortium for Policy Research in Education's Strategic Management of Human Capital initiative, the Economic Policy Institute, and the American Enterprise Institute. In addition, we consulted publications by Education Week, Education Sector, the National Council on Teacher Quality, and the Education Commission of the States, among others, and reviewed available academic research on teaching quality and human capital management more broadly. Our team also had access to emerging research and nonprofit program and financial information that is not yet publically available. (See page 91 for the full list of individuals who contributed to this guide.)

While this guide focuses on high-need students during their secondary school years, many of the lessons and strategies we outline apply to improving education for all K–12 students — no matter what their level of need or level of schooling. In addition, donors interested in supporting activities to enhance learning for younger students may wish to refer to *Pathways to Student Success* (2008), our philanthropic investment guide that examines opportunities to help high-need students at each phase of their development, including elementary school.

What's in this guide?

This guide outlines approaches that we believe to be promising based on our analysis of available evidence from academic research, expert advice, and practitioner experience. It is organized into three main parts:

1. **Solutions for improving individual teachers' skills** discusses the ways donors can support better preparation of teaching candidates before they enter the classroom; programs that help novice teachers be effective from the beginning; and high-quality, ongoing professional development that allows teachers to improve their effectiveness and provides a powerful incentive for strong teachers to stay.

2. **Solutions for creating an environment for great teaching** discusses the ways donors can strengthen principal leadership and support effective whole-school reform models, two key leverage points for improving teaching quality not just in one classroom but across a school or network of schools.

3. **What donors should know about the broader policy environment** provides guidance for donors on policy issues relevant to teaching quality, including how government policies can impede or sustain a donor's impact, and how donors can get involved with policy change.

In Parts 1 and 2, we identify five solutions for donor investment. Our analysis of available evidence found no differences among the five that were meaningful enough to warrant a ranking

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based on impact and cost. In fact, these solutions are mutually reinforcing: investments in one area enable impact in another. As a result, donors who invest in a solution where other effective strategies are already being implemented will likely see the greatest impact. Similarly, just as some business climates are more favorable for certain investments, some policy environments are more favorable for certain philanthropic efforts.

In Parts 1 and 2, donors will find:

- An analysis of the current situation, outlining key problems
- A description of what donors should look for to identify high impact models
- Examples of Models in Practice to help potential donors understand how nonprofits target issues effectively, including estimates of the impact and cost of each model that were derived from our team's analysis of available data
- Additional resources to help donors identify other organizations implementing similar models

In Part 3, donors will find:

- Guidance about how policy affects a donor's investments
- A discussion of hot topics in education policy
- Tips and resources for those who wish to influence policy change directly
- Examples of impact at the district level, in district turnaround profiles

Key concepts for donors

Models in Practice

To help donors understand how nonprofits apply high impact approaches in real-life settings, our Models in Practice provide concrete examples. Each one profiles a particular nonprofit, but the models are also useful for informing a donor's entrepreneurial efforts or illustrating ways donors can improve the impact of their current philanthropic projects. Our team has not done a scan of all of the nonprofits whose activities can improve teaching quality. However, the organizations we profile have been cited by numerous sources as delivering models worth examining. What's more important, all had strategies that are consistent with available evidence on effective human capital approaches; all provided internal program and financial information that supported the promise of their models; some had results already validated by a third party; and all had a clear commitment to and plan for performance management and measurement.

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Metrics for improvements in teaching quality

High impact philanthropy begins with an understanding of the social impact at stake, even if that impact is not yet easily or precisely measured. Currently, there is no straightforward way to measure teaching quality. Ultimately, what matters most is the effect teachers have on student outcomes. To understand whether a program is making progress in improving teaching quality — and thereby affecting student learning — donors can look at two sets of outcomes currently measured: student outcomes and teacher outcomes.

Student outcomes

For donors, the most meaningful outcomes to consider are those that are directly linked to students' advancement and further opportunities, such as high school graduation, college attendance, and job acquisition.[9] It can be difficult, however, to measure teachers' contributions to outcomes like graduation rates and college attendance. Instead, we rely on proxies such as test scores, the quality of student work, school attendance, and measures of student engagement.

Although there are drawbacks to standardized testing and many fear the limitations of "teaching to the test," research shows that better student performance on standardized tests is correlated with higher rates of high school graduation and college attendance, which in turn are predictive of better outcomes later in life, such as higher income and better health.[10] Because test scores are relatively easy to compare, many evaluations of teacher-improvement programs look at changes in student scores over time to measure the effect a teacher has on student learning.

Focusing on the *change* in student learning, as opposed to a single test score, is important. Many high-need students enter middle or high school already a grade or more behind. A teacher who not only keeps that gap from widening but also narrows it is producing impact, even if a student's raw test score remains below grade level. Many organizations and researchers have recently started using "value-added" statistical methods that attempt to isolate the effect of individual teachers on students. (See our discussion of teacher evaluation in Part 3.)

Teacher outcomes

When it comes to improving teaching quality, looking at teacher outcomes can also be useful. The most commonly used metric is teacher retention, which has gained attention because of high levels of teacher attrition nationally, just as the generation of baby boomer teachers moves toward retirement. In this guide, we reference two different retention metrics: turnover in the profession (those who leave teaching altogether) and turnover within a school (those who remain teaching but leave a given school). Both matter: teachers are expensive to replace, and recruiting and training teachers who

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quickly leave the profession is not a good investment, especially if those teachers leave before they have reached their potential. Teacher turnover *within a school* has negative consequences for school effectiveness and student performance.[11] The problem is especially acute in high-poverty schools, where turnover is 50% higher than in schools with more affluent student populations.[12] Ideally, teacher retention should be observed over timelines long enough to eliminate the influence of economic cycles (e.g., recessions, which increase retention rates). In addition, because research shows that teachers reach their peak instructional effectiveness after approximately five years, donors should look for data on numbers of teachers who stay beyond that milestone.[13]

Other teacher metrics that can help donors assess the effectiveness of programs to improve teaching quality include teacher satisfaction, career advancement, and feedback from principals.

Linking considerations of cost and impact

Only recently has a consensus formed that teachers are the key lever among in-school factors for improving student outcomes. Not surprisingly, then, most of the nonprofit models we profile are still young, and none has yet been the subject of the rigorous cost-benefit or cost-effectiveness analyses seen in other sectors, such as public health.

Donors, like decision makers in all sectors, must make investment decisions in the absence of perfect data. Since we view high impact philanthropy as an investment of capital to improve the lives of others, each of our Models in Practice contains an analysis of the link between cost and impact. While not precise, these back-of-the envelope estimates provide a useful benchmark to help donors understand how much success can cost. Donors should recognize, however, that there are limitations to comparing our estimates because of differences in outputs and quality of underlying data.

Key definitions

Throughout this guide, we refer to "high-need students," "high-need schools," "teaching quality," and "high-quality teachers." This is what we mean by these terms:

High-need students are those whose academic performance is significantly below expected levels, putting them at risk of failing to graduate or of graduating without the skills to succeed in college or postsecondary technical education. For a variety of social and economic reasons, high-need students are disproportionately from low-income and minority households.

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High-need schools are schools with significant concentrations of high-need students. They tend to have predominantly low-income, minority student populations.

Teaching quality refers to the demonstrated capacity of a teacher to influence student learning and development through a combination of content knowledge, pedagogic skill,[14] and communication and interpersonal capacities.

High-quality teachers have a positive impact on student learning. They are lifelong learners in their subject areas, teach with commitment, and are reflective about their teaching practices. In addition to deep knowledge about subject matter and the learning process, high-quality teachers have strong diagnostic skills, an understanding of learning styles and cultural influences, knowledge about child and adolescent development, and the ability to marshal a broad range of techniques to meet student needs. They set high expectations and support students in meeting them. They establish an environment conducive to learning and leverage available resources outside as well as inside the classroom.

* * *

As with all of our work, we have vetted the content of this guide with experts and practitioners in the field, individual philanthropists, and advisors to ensure that our guidance is both smart and actionable. It represents the best advice we can offer at this time. We welcome continued input and are exploring ways to update our material to incorporate new information and new developments. To receive notices of updates to this guide, please contact **impact@sp2.upenn.edu**.

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PART 1: IMPROVING INDIVIDUAL TEACHERS' SKILLS

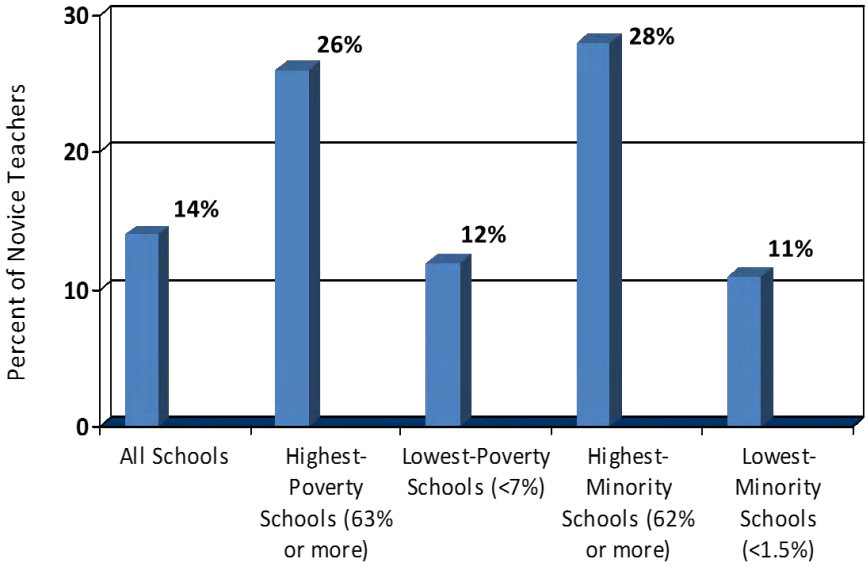
Strategies for increasing teacher skills and effectiveness exist at each phase of a teacher's career: during preparation that takes place before a teacher is employed in a school, generally referred to as pre-service; during the first few years in the profession, known as induction; and during the remainder of a teacher's employment, through ongoing training, known as professional development.

This guide focuses mainly on models that address teacher learning during the first two phases, from pre-service through the first three years of teaching. The training and support teachers receive during their first years of teaching are crucial for several reasons:

- Hundreds of thousands of novice teachers are working in U.S. public schools. Students in schools with the highest level of poverty are almost twice as likely to be assigned to novice or inexperienced teachers as those in schools with the lowest level of poverty.[15] (For a state example, see chart 2.)
- Research indicates that new teachers face a steep learning curve in their first few years. Several studies have found that teacher effectiveness (as measured by student test scores) increases sharply in years one and two and then plateaus between years three to five.[16] In fact, some studies indicate that teachers in their first year or two have a *negative* effect on student learning.[17] Given the sheer number of high-need students taught by teachers with two years or less of experience, moving novice teachers up the learning curve more quickly represents an enormous opportunity for impact.
- Approximately one-third of K–12 teachers leave the profession within their first three years on the job, and almost half leave by year five,[18] arguably before they have reached their peak effectiveness. This level of turnover is costly. Researchers examining five school districts found that it costs a district $10,000 to $18,000 to replace each teacher who leaves. In addition, teachers who move schools but do not leave the profession often transfer from high-need schools. (An estimated 19% to 26% of teachers in poor urban public schools leave each year.[19]) Such high rates of turnover can be destabilizing to any enterprise. Research indicates that high teacher turnover is correlated with lower school performance as measured by student outcomes.[20]

In other words, secondary students with the greatest needs are often taught by a revolving door of teachers with the least experience and skill to address those needs. Many challenges exist in improving this situation, as discussed on the following pages. Luckily, there are promising models that address these challenges (see *How donors can change the situation*, starting on page 16).

Chart 2: Highest-Poverty and Highest-Minority Schools in Wisconsin Are More Likely to Be Assigned Novice Teachers (<3 years experience)



Note: School poverty category defined by percentage of students qualifying for free or reduced lunch.

SOURCE: Adapted from "Teaching Inequality: How Poor and Minority Students are Shortchanged on Teacher Quality: A Report and Recommendations by the Education Trust" (p. 4), by H. G. Peske, and K. Haycock, 2006, Washington, DC: The Education Trust. Retrieved November 15, 2010, from http://www.edtrust.org/sites/edtrust.org/files/publications/files/TQReportJune2006.pdf. Copyright 2006 by the Education Trust. Adapted with permission.

The situation

Teaching high-need secondary students requires a host of skills. Research and practitioner experience point to six critical skill groups:

1. Content mastery of the subject taught (e.g., biology, social studies, or algebra)
2. Pedagogy — i.e., command of a wide array of instructional techniques
3. Classroom management techniques
4. Communications and interpersonal skills
5. Adolescent literacy techniques
6. Student assessment strategies

While all six skill groups are important, teachers often need to emphasize different types of skills at different stages in their careers. For example, new teachers are likely to need extra emphasis on pedagogy and classroom management, while veteran teachers may be in greater need of refreshing their content knowledge. Throughout teachers' careers, it is critical that they have the ability to adapt instruction to meet individual students' needs.

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Unfortunately, the current system of selecting, preparing, and supporting teachers presents numerous obstacles to mastering these skills. Our analysis identified four key challenges to improving individual teachers' skills. These are:

1. Lack of selectivity for recruitment into the profession
2. Teacher training and course work that are neither evidenced-based nor tied to classroom practice
3. Little or no instructional support for teachers in their first few years
4. Professional development that is not connected to work in the school or to the actual needs of students and teachers

Lack of selectivity for recruitment into the profession

College graduates who enter teaching tend to be in the bottom two thirds of their graduating classes, with only 23% coming from the top third; of those who do come from the top third, just 14% work in high-poverty schools.[21] Several major factors have contributed to a situation where top students do not consider becoming teachers as they did in the past. These factors include the decline of starting teachers' salaries relative to other professions;[22] societal shifts associated with technological change;[23] and expanded opportunities for women.[24]

This lack of selectivity is worrisome since effective secondary school teachers need mastery of the subjects they teach as well as strong basic skills in areas such as reading, writing, and arithmetic. In addition, some research indicates that higher teacher scores on verbal skills tests and on the ACT college admissions test are correlated with higher student achievement.[25] Internationally, the highest performing education systems (such as those in Finland, South Korea, and Singapore) set a high bar for entry into the profession and succeed in attracting top talent.[26]

A recent study by McKinsey & Company found that offering more competitive starting salaries holds promise as one way to attract more graduates in the top third of their classes.[27] However, changing teacher compensation is a larger policy issue, beyond the purview of most individual donors. (For more on teacher compensation, see Part 3 on the broader policy environment.) In the meantime, Teach for America (TFA) is an organization well known for attracting top talent into its highly-selective, alternative certification program. Although many TFA alumni go on to leadership roles in the education system,[28] few participants teach for more than two to three years.[29] There remains a great need for more selective recruitment of candidates interested in teaching as a career.

Teacher training and course work that are neither evidence-based nor connected to practice

Teachers can be certified to teach either through alternative certification programs or through the traditional, university-based preparation programs that prepare 70% – 80% of the nation's

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teachers.[30] Regardless of the path they take to certification, most new teachers complete these programs ill-equipped to handle the challenges of teaching high-need students.

Pre-service training for teachers is largely theory-based, with little connection to actual teaching practice. Researchers, administrators, and teachers alike describe teacher preparation as having changed little in recent decades despite advances in knowledge and increases in the demands typically placed on graduates. Few programs are grounded in evidence of what actually works to improve student learning or cover topics that are especially important to teachers planning to work in high-need schools, such as cultural competency and sensitivity, diagnosing and addressing learning deficits, and classroom management techniques.

Indeed, much of what is provided as teacher preparation is divorced from what happens in a K-12 classroom. While many programs include some kind of teaching internship (generally called "student teaching"), this practical piece of teacher training varies widely across programs in both quality and duration. Common problems include insufficient time devoted to practical classroom experience, lack of integration with course work, and lead teachers who get little guidance in supervising student teachers.[31] The result is that too many student teachers spend a lot of time observing poor or mediocre practice and little or no time in front of a class.[32]

Yet practical skills that teachers need (e.g., managing unruly or disengaged students, assessing whether a student has understood a lesson, or using alternative strategies to explain a tricky math concept) require practice under the guidance of a more skilled and experienced lead teacher. One set of interviews and surveys with education school alumni found a strong, common desire for more, longer, earlier, and better-integrated field work experiences.[33] Practice-based training models have worked well in other industries (e.g., clinical training in medicine), and research on adult learning and skill acquisition supports the efficacy of this approach.[34]

"I do not feel I was prepared for the realities of life in a school and a classroom as a teacher. There is so much more than I was exposed to in a college classroom studying textbooks. I needed real-life classroom experience."

- Education school alumnus[35]

Little or no instructional support for teachers in their first few years

Some states and districts have tried to address the uneven quality of pre-service teacher preparation by requiring that new teachers receive special support — for example, from an

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assigned mentor. Too often, though, such mandates are vague and unfunded. As a result, novice teachers receive support of varying quality.

In addition to improving teacher effectiveness, support for new teachers also improves teacher satisfaction and retention. Research indicates that one-third of K–12 teachers quit teaching within their first three years on the job, and almost half leave by year five.[36] When asked why they left, a common theme emerges: many teachers leave because they feel overwhelmed and under-supported.[37] This high rate of turnover is costly to the education system and detrimental to students, as it disrupts the cohesiveness and consistency required for any enterprise — including schools — to perform optimally.[38]

Research from other sectors confirms the importance of new employee support. For example, a study from the health care field found that nurses who have support from doctors and mentor nurses exhibit higher job satisfaction, higher retention, and, most important, enhanced patient care quality.[39] A second study found that supervisory support, positive work relationships, and a positive work environment all improve job satisfaction and retention.[40] The importance of a positive and enabling work environment for teachers is the subject of Part 2 of this guide.

"My friend and I both teach the same grade, same type of kids. But while I had an amazing mentor in my district, his district assigned him the school librarian who had never taught students, and she never once observed his teaching."

- First year 9th grade history teacher, California[41]

Professional development that is not connected to work in the school or to the actual needs of students and teachers

The American education system spends a significant amount on professional development for teachers — by one estimate, more than $3 billion annually.[42] Unfortunately, even teachers themselves believe that much of that money is poorly spent. In a recent national survey, only 59% of teachers judged their content-related learning opportunities to be "useful" or "very useful," and fewer than half gave similarly high ratings to non-content related training they received.[43] In particular, one-day workshops with outside speakers are still a common form of professional development, yet they have been shown to have no lasting effects on teacher performance.[44] Another common drawback is a lack of coherence or alignment; for example, the messages and techniques an individual teacher gets through a master's degree program may conflict with the

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approaches adopted in the school where he or she is teaching, and those in turn may be at odds with a new program being promoted by the school district.

Professional development is all too often disconnected from meaningful evaluation of skills that are known to improve student learning outcomes. This problem is not unique to education: professional development in the business world also fails in many cases to meet employees' actual learning needs.[45] The situation in education is nonetheless extreme: "The Widget Effect," a report resulting from research spanning 12 districts and 4 states (Arkansas, Ohio, Colorado, and Illinois), disclosed troubling information about the lack of meaningful teacher evaluation in the United States. Survey responses from more than 15,000 teachers and 1,300 administrators revealed that the majority of teacher evaluations are based on brief and infrequent classroom observations and rarely result in guidance about improving teaching practice. Of the teachers surveyed, 73% said that their most recent evaluation did not identify any development areas; among those who had development areas identified, less than half said they received useful support in order to improve.[46] (For more on teacher evaluation, see Part 3.)

Nonetheless, professional development is provided universally, across sectors, because good professional development does make a difference in employee satisfaction and performance. Many studies show that continuing professional learning can lead to improved organizational performance, measured by profitability, effectiveness, operating revenue per employee, reduced costs, reduced employee turnover, and organizational reputation.[47] In the business world, qualified and continually trained employees perform their jobs with greater confidence and a stronger sense of accomplishment, which ultimately develops into loyalty to the organization because of increased job satisfaction.[48]

How donors can change the situation

Our analysis of available research, expert advice, and practitioner experience points to three high impact opportunities to improve individual teachers' skills:

1. **Improving pre-service teacher preparation.** Ensure that aspiring teachers have the basic tools they need *before* they are responsible for a classroom. Donors can do this by supporting programs that selectively recruit candidates, use a curriculum that emphasizes evidence-based teaching practices, and train candidates through plenty of hands-on practice under the supervision of skilled and experienced teachers. Pages 17 – 26.
2. **Providing support to new teachers.** Provide novice teachers the kind of feedback and opportunities to learn that enable all novice professionals to improve. Effective support of new teachers can take place in school settings, through the provision of coaching by trained mentors, and through practice-based continuing education programs focused on results in the classroom. Pages 27 – 34.

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3. **Investing in teachers' ongoing development.** Provide teachers of all experience levels with professional development that is ongoing (as opposed to one-day workshops), involves school-based work with colleagues, and is linked to student, school, and teacher needs as identified through meaningful assessment. Pages 34 – 37.

Solution 1: Improving pre-service teacher preparation

What donors should look for

The most promising teacher preparation programs directly address the challenges we outlined on pages 13 – 14. Here is what donors can look for to identify a high impact program:

1. **Selective recruitment of teacher candidates based on characteristics necessary for teaching high-need students.** These include:
    - Diversity in terms of ethnicity and gender. Research suggests that minority teachers bring an inherent understanding of the backgrounds, attitudes, and experiences of minority students,[49] and some studies have found that if teachers share the same ethnic background as their students, they are more likely both to believe in those students and to produce learning gains.[50] Similarly, some research suggests that students do better in school when they have teachers of their same gender.[51] Therefore, since teaching tends to be a female-dominated profession,[52] attracting more males into teaching may increase the odds of success for male students.
    - Strong academic credentials that demonstrate mastery of the subject the candidate will teach. In particular, look for programs that attract candidates who are well prepared to teach high-need and hard-to-staff subjects such as high school math and science. Although growth in newly certified math and science teachers is outpacing growth in the number of secondary students and is sufficient to cover losses from teacher retirement, there remains a critical shortage of math and science teachers in high-need schools due to their high teacher turnover rates.[53]
    - Personal qualities, in addition to academic credentials, that practitioners and researchers have found are predictive of success. Practitioners point in particular to a personal belief that all students can succeed.[54] This predictor is probably tied to emerging research suggesting that teachers with "grit" or "perseverance" are more likely to succeed in teaching high-need students.[55]
2. **Rigorous selection process that uses multiple assessment techniques**. These include resume review, initial interview, role-play or case studies, writing samples, and proficiency tests to assess a candidate's readiness to teach high-need students. Ideally, such a process is conducted by dedicated and trained staff, using commonly agreed-upon protocols and rubrics that maximize consistency in evaluating candidates.

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3. **Course work that is evidence-based, practical, and covers content required for teaching high-need students**. This includes:
    - Curriculum that covers relevant subject-matter content (e.g., for a math teacher, core concepts in algebra and calculus) and pedagogy (e.g., techniques for helping students understand the first derivative in math). Curriculum that includes adolescent literacy techniques is important because many high-need secondary students read significantly below grade level.[56]
    - Lessons on putting theory into practice (e.g., how to apply lessons from adolescent development theory in the classroom).
    - Emphasis on specific practices shown to improve student engagement and learning, including use of student grouping and questioning techniques, as noted in Corcoran and Silander's recent literature review of effective teaching practices.[57] Doug Lemov's analysis of effective teachers (the basis for his "taxonomy" of effective teaching practices,[58] discussed further on page 33) also provides examples of best practices.
4. **Required participation in a sustained classroom apprenticeship in which student teachers take on increasing responsibility for students.** This includes:
    - Placement of student teachers in classrooms based on their likely future full-time placement (e.g., a future middle school math teacher is assigned a 7th grade math class, not a high school English class) and where the lead teacher has demonstrated classroom effectiveness and enthusiasm for coaching new teachers.
    - Providing lead teachers with support and guidance to help them integrate lessons from the student teacher's course work into the apprenticeship experience.
    - Extensive time in the classroom (e.g., two to three full days per week), with the student teacher assuming increasing responsibility, including opportunities to lead the class when ready, and designated time for one-on-one feedback sessions with the lead teacher.
    - Grading of the student teacher based on the apprenticeship component, in addition to course work, to underscore the importance of this training element.
5. **Feedback loop between the program and the school system where teachers will work**. Unlike in many other countries, the United States still lacks common standards for what students, and by extension, teachers, should know. (Read more about efforts to develop and implement common core standards on page 71.) The organizations having the greatest impact work around this issue by collaborating with districts to design their programs so they fit within the local context, particularly with regard to curriculum.

"The best programs integrate theory and practice, but there is generally a chasm between theory and practice in teacher education. Academics are primary and clinical education is secondary. There is little connection between what students learn in university classes and what they learn in

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the schools. Time in clinical settings is too short and involvement of university professors in the schools is insufficient. Too often, student teaching sites are not appropriate and performance of student teachers is insufficiently monitored."

- Arthur Levine, former president of Teachers College, Columbia University[59]

GREAT BANG FOR BUCK: IMPROVING PRE-SERVICE TEACHER PREPARATION

For $134 - $160 per secondary student, teacher residency programs can produce:

- 70% improvement in students' mastery of content in key areas, such as reading.
- 66% - 84% improvement in teacher retention rates, even in high-need schools. For a district, this represents significant savings, since replacement costs are estimated at $10,000 - $18,000 per teacher lost.

(See Model in Practice for sources, and see the appendix for details on our calculations.)

MODEL IN PRACTICE: PRE-SERVICE TEACHER PREPARATION

To illustrate the attributes of a successful model for preparing future teachers, we provide an example of a network of teacher residency programs. Residency programs can be housed within an independent nonprofit, a school district, or a university. Regardless of who initiates and houses the program, the goal is the same: to prepare teachers for careers in high-need schools by training them in high-need schools. Following this Model in Practice, we provide additional resources for identifying other organizations implementing similar models.

Model in Practice: Learning to teach through year-long apprenticeships in high-need schools - Urban Teacher Residencies

About the model: Many new teachers are unprepared for the realities of teaching, especially in a high-need school. Employing an approach borrowed from the medical profession, teacher residency programs address this problem by redesigning teacher pre-service training. Teacher residencies combine a year-long classroom apprenticeship with master's-level course work so that by the time a graduate becomes a full-time teacher, he or she has already spent a significant amount of time in front of students, in a K–12 classroom, working alongside a veteran teacher. By preparing teachers through practical learning, hands-on experience, and a strong support network, teacher residency programs are attempting to change the way teachers are trained so that they can be effective from the very start of their teaching careers. In this Model in Practice,

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we profile Urban Teacher Residency United, a network of residency programs that focus on recruiting and training new teachers for high-need urban public schools.

Nonprofit agent: In 2004, the nation's existing Urban Teacher Residency programs (located in Boston, Chicago, and Denver) formed an informal partnership to exchange best practices and promote the concept of residency-based teacher preparation. From this partnership, Urban Teacher Residency United (UTRU) emerged as a collective effort to launch and support excellent residency programs in high-need urban districts. Initial funding was provided by a Boston foundation, Strategic Grant Partners. More recently, UTRU created the Residency for Residencies Program (RRP) to help school districts, universities, and nonprofits launch new teacher residency programs. This two-year program combines intensive learning institutes with focused, individual consultation to help emerging programs design, develop, and launch high-performing residencies. To date, UTRU has partnered with 18 residency programs in 16 districts nationwide. (For the full list of programs and districts, see pages 24-25. UTRU partner programs trained 500 teachers across the country in 2009, and the organization plans to increase that number as new residency programs are created.

How it works: Urban Teacher Residencies United partner programs focus on preparing teachers for careers in high-need urban schools. Although programs can be housed in different places (e.g., universities, independent nonprofits, and districts), all involve partnerships between a university that provides course work and a school district in which participants serve as residents for a year. Each resident receives a stipend for living expenses during the training year and a subsidized master's degree upon completion of the program.[60] Residency programs in the UTRU network are characterized by the following elements:

Rigorous recruitment and selection of candidates: Each program selects a diverse and high-performing group of recent college graduates, career changers, and community members to become residents. Recruitment focuses on attracting minority teachers and teachers in high-need subject areas, such as math, science, and special education. Program candidates are selected through multiple interviews with role plays, case studies, and careful assessment of content knowledge.

Three-year teaching commitment: In return for the stipend and subsidized master's degree, residents commit to teaching in a high-need public school for at least three years.

Careful selection and training of mentors: Each resident is paired with a mentor teacher who is an experienced teacher from the district. The mentor teacher is selected and trained to play six explicit roles: effective teacher, coach, clinical faculty member, program leader, learner, and assessor.[61]

Apprenticeship year with ample opportunities for practice: During the apprenticeship year, residents gradually move from a collaborative co-teaching role to an increasingly demanding, lead-teaching role. The mentor teacher serves as coach and role model, and all mentors receive

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ongoing support and training to ensure that the classroom experience is well-structured and aligned with the university course work. The course work varies by program, but all programs in the UTRU network emphasize mastery of classroom management, cultural awareness, and assessment techniques that enable teacher candidates to gauge student progress and understanding. All residents learn to engage students in problem solving, critical thinking, and project-based learning to make subject matter more meaningful.

Peer network: Residents train as part of a peer group cohort that provides support and collaborative learning throughout the residency year and beyond. Groups of residents are placed in the same school, and residents complete their master's degree course work with their cohorts. In interviews with residents, the importance of the cohort community was a recurring theme. As one former resident said, "cohort seminars had a support group component, which was really helpful….Even after official gatherings stopped, residents continued to come together to see and support each other, and I have remained very close to several of my cohort members."[62]

Post-residency program support: After completing the residency year, residents are given assistance with job placement in one of the district's schools, as well as access to an on-site induction program that includes one-on-one consultation with classroom observations and targeted feedback throughout the first two years of solo teaching. (Residency programs sometimes partner with the New Teacher Center — see page 28 — on the induction component.) UTRU programs also have an active alumni network, which serves as a resource as graduates pursue further professional growth.

Professional advancement for mentors: Beyond preparing residents to hit the ground running when they become full-time teachers, teacher residencies create new career paths for the experienced teachers who serve as mentor teachers and teacher leaders, thereby building capacity in high-need schools.

Impact: Teacher residency programs are a relatively new innovation in teacher preparation. As a result, no rigorous efficacy or cost-effectiveness studies exist to substantiate their impact. Nevertheless, our analysis of existing data points to the model's promise.

Student outcomes: The best available data come from an evaluation of one of the founding programs in the UTRU network, the Boettcher Teachers Program in Colorado. The evaluation, conducted by The Evaluation Center of the University of Colorado Denver's School of Education & Human Development, looked at student test score data.[63] Our analysis of this study found:

- Reading test score gains for students of Boettcher teachers were approximately 70% higher than the reading scores of students taught by non-Boettcher trained new teachers in similar schools, representing a statistically significant difference (4.5 percentile gain versus 2.6 percentile gain[64]). In other words, a student who was performing better than 20% of peers is now performing better than 24.5% of peers, suggesting that the student's rate of learning accelerated. For high-need students, gains like this are critical to closing achievement gaps.

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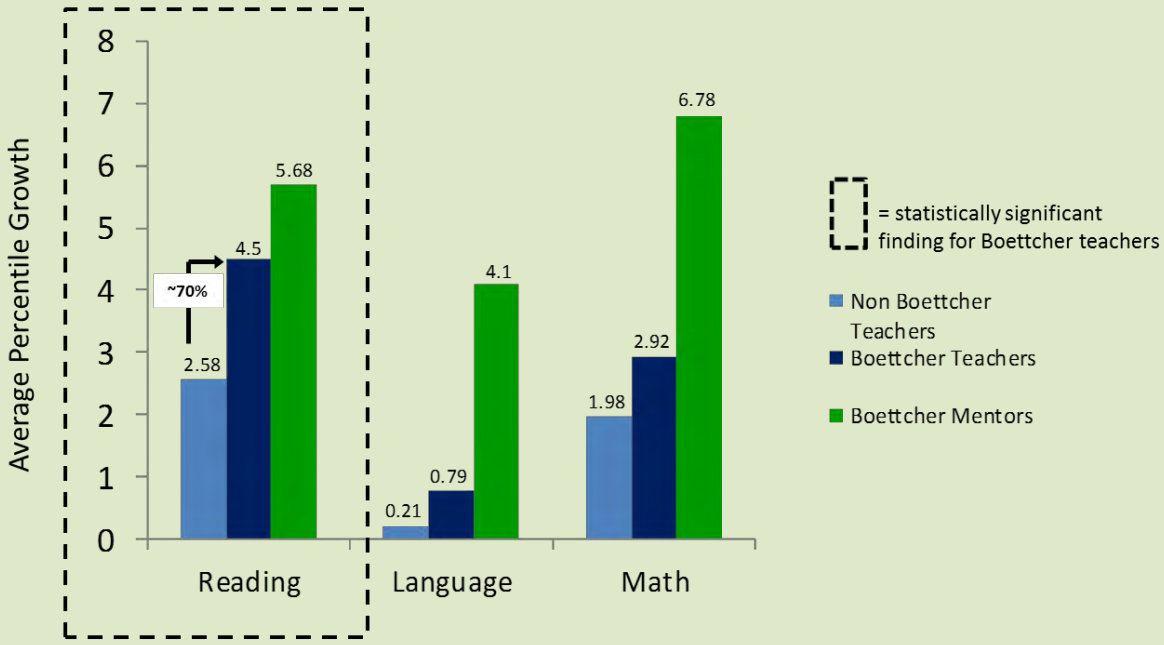
- Students of Boettcher teachers showed gains across all other tested subjects, although only reading gains were statistically significant.
- Students of Boettcher *mentor* teachers showed significantly greater gains in all subjects compared with students of both Boettcher–trained new teachers and other new teachers. This is to be expected, since mentor teachers have more teaching experience, yet this finding supports the program's strength in selecting mentors who have demonstrated effectiveness in teaching high-need students. Some hypothesize that serving as a mentor can improve an experienced teacher's practice, although further studies are needed to validate this hypothesis.
- Schools with high concentrations of Boettcher teachers showed greater gains than the state median in at least two subjects. For 2009, all five training site schools showed rates of student growth that exceeded the state median.

Chart 3: Average Student Growth on MAP Subtests, Fall 2008 – Spring 2009



Note: Results were statistically significant for Boettcher teachers only in reading; gains in language and math were small enough to be due to chance. Results for Boettcher mentors were statistically significant across all three subjects

SOURCE: Adapted from information provided by Anissa Listak, Executive Director of Urban Teacher Residency United, March-April 2010. Adapted with permission.

More data on the effect of residency training on student outcomes is expected to be released in 2011 or 2012 by Thomas Kane, professor at the Harvard Graduate School of Education, who is leading a study of the Boston Teacher Residency program.

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Teacher outcomes: Teacher retention is a useful indicator because high levels of teacher turnover can be damaging to schools and students, as well as financially costly to districts.[65] For donors, retention is particularly important because residencies require considerable upfront investment in selecting and training teacher candidates. UTRU partner programs have tracked retention rates of former residents and have found rates significantly higher than those typical of urban districts.[66] The founding programs in the network — Academy for Urban School Leadership (AUSL) in Chicago, the Boettcher Teachers program, and the Boston Teacher Residency (BTR) — have been around long enough to have data showing that the majority of teachers they train stay beyond the required three-year commitment. After five years:[67]

- The retention rates for the three founding programs represent an improvement of 66% to 84% over the national five-year retention rate of 50%.[68]
- 83% of AUSL teachers are still teaching, compared with an average of 33% for the Chicago district, representing a 151% improvement in retention.[69]
- 85% of BTR teachers are still teaching, compared with an average of 50% for the Boston district after only four years, representing an improvement of more than 70%.[70]
- 92% of Boettcher teachers are still teaching compared with an estimated average of 60% in Colorado after only three years, representing an improvement of more than 53%.[71]

Principal satisfaction: Principals rated 88% of Boston Teacher Residency graduates as equally effective or more effective than other first-year teachers. A majority were rated as "significantly more effective." More than 94% of principals indicated their desire to hire additional BTR graduates.[72]

All UTRU partner programs are currently conducting program evaluations.[73]

Costs/resources required:[74] The total program cost per resident ranges from $37,350 to $84,000, depending on the city, with an average cost per resident of $50,000. The Boettcher program is on the low end, at approximately $38,000.

Costs include mentor and resident stipends, program personnel, recruiting expenses, program materials, and mentor training. Of these costs, the resident stipend varies the most, depending on the local cost of living. Stipends are typically $10,000 – $11,000 but can be as high as $32,000. Most residency programs require residents to pay tuition, but tuition costs are almost always subsidized or discounted in some way. The average tuition cost is about $7,400.[75] To date, the costs have been covered by a mix of private philanthropy, district funds, and federal funds through programs like AmeriCorps.[76]

While researching this model, we frequently heard concerns about the high upfront costs of teacher residency programs. For donors seeking impact, a model's costs need to be understood in relation to its impact. As the cost-per-impact estimate below illustrates, residency programs offer the promise of great philanthropic bang for buck. Nonetheless, residency programs around the country are looking for ways to reduce or redistribute their costs. Some ideas include substituting

loans for cash payments to residents, and requiring school districts to pay mentors from professional development budgets.

Cost per impact: Based on current program costs and the results of the Boettcher program, we estimate that, for $60 to $134 per secondary student, Urban Teacher Residencies can lead to the following impacts:

- *Improved student outcomes.* Measurable gains in student mastery of content in important areas such as reading. Students taught by Boettcher-trained new teachers demonstrated statistically significant reading gains that were approximately 70% higher than gains by those taught by non-Boettcher new teachers.[77]
- *Improved school functioning* as indicated by high rates of principal satisfaction and increased teacher retention.[78] After five years, the BTR, AUSL, and Boettcher programs had teacher retention rates significantly higher than district and state averages, and rates represent an improvement of 66% to 84% over national five-year retention rates,[79] despite the fact that the residency graduates were all teaching in high-need schools.
- *Savings to school districts.* The costs of residency programs should be weighed against the high cost of teacher turnover. In Chicago, for example, replacing a teacher costs approximately $18,000,[80] and five-year retention rates for Chicago's AUSL graduates represent an improvement of 151% over the current district average.[81] At that rate, Chicago would save $900,000 per 100 teachers over a period of five years.

[For detailed explanations of how we arrived at cost and impact estimates, see the appendix.]

Nonprofit contact: Anissa Listak, UTRU executive director, at (312) 397-8878 x114, or visit the UTRU Website at www.utrunited.org. Contact information for founding programs: AUSL at www.ausl-chicago.org, BTR at www.bostonteacherresidency.org, and Boettcher at www.boettcherteachers.org.

Beyond our Model in Practice: Other resources for donors

Urban Teacher Residency United is an organization whose partner programs put the attributes of great teacher preparation into practice — but those attributes can be found in other models and approaches. The UTRU network itself includes numerous programs, each somewhat different, that follow the basic principles described in the Model in Practice profiled above. As of summer 2010, UTRU included the following partner programs:

- Academy for Urban School Leadership, Chicago
- Boettcher Teachers Program, Denver metropolitan area
- Denver Teacher Residency
- Boston Teacher Residency

- Philadelphia Teacher Residency
- Memphis Teacher Residency
- I-START, New York City
- New Visions for Public Schools-Hunter College Urban Teacher Residency, New York City
- University of Chicago Urban Teacher Education Program, Chicago
- Aspire Teacher Residency Program, Oakland, CA
- Indianapolis Urban Teacher Residency
- Los Angeles Math and Science Residency
- Teach/Here, Chattanooga and Knoxville, TN
- Atlanta Teacher Residency
- Pittsburgh Residency Program
- Richmond Teacher Residency
- Twin Cities Teacher Collaborative, Minneapolis and St. Paul, MN

Supporting University-Based Teacher Preparation Programs

Below we describe resources and suggestions for donors who want to support university-based teacher preparation programs. After all, this is still the way a majority (about 70% – 80%) of teachers are trained today,[82] and some donors may have connections to particular universities that they wish to support. While university-based teacher preparation programs have received a great deal of criticism, some programs are doing a much better job of preparing teachers than others. Although there is no broad consensus on how to best assess these programs,[83] efforts are underway to rate and improve schools of education based on some of the attributes discussed on pages 17-18.

For example, the independent **National Council on Teacher Quality (NCTQ)** has recently begun a review of the nation's undergraduate and graduate schools of education against a set of 39 standards that reflect what school district leaders say they most need in new teachers. NCTQ's first report, on Texas-based schools, is available online at www.nctq.org/edschoolreports/texas. The report names four schools as having a "strong overall design" for teacher training: **Dallas Baptist University, Southern Methodist University, the University of Texas – Pan-American,** and the **University of Texas at Austin**. (A second report, on Illinois-based schools, is also available online at www.nctq.org/edschoolreports/illinois.) NCTQ is scheduled to release a national review of education schools in partnership with U.S. News and World Report in the summer of 2011.[84]

Arthur Levine, former president of Teachers College at Columbia University, conducted a review of graduate schools of education and published a report in 2006 (available at www.edschools.org). Although Levine's assessment is generally scathing, he highlights four

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teacher preparation programs as "exemplary:" **Alverno College** in Milwaukee, **The Teachers College of Emporia State University** in Kansas, the **University of Virginia Curry School of Education**, and **Stanford University School of Education** in California.

A new program that is designed to re-structure university-based teacher training is the **Woodrow Wilson Teaching Fellowship (WWTF)**. Like teacher residencies, WWTF programs place a premium on careful selection of prospective teachers (Fellows), and practice-based training delivered through clinically focused course work and a year-long apprenticeship in a high-need classroom. Unlike many residency programs, WWTF programs are located within universities, a feature intended to drive systemic change in how teachers are prepared at the university level.[85]

The Woodrow Wilson National Fellowship Foundation will enter a state only at the governor's request, and with buy-in from local unions, the business community, and other key stakeholders. The state vetting process generally takes from two to three years. Once participating universities have been chosen, each university has 12 –18 months to design its program and get approval from Woodrow Wilson. A core idea behind WWTF programs is that each program should be tailored to meet local needs. Nonetheless, all are required to incorporate the following key components:[86]

- The program must be a clinically-based master's program.
- There must be collaboration between arts and sciences and education schools (for example, arts and sciences professors teaching in the graduate school of education and joint curriculum development).
- The university provost must lead the effort, indicating true buy-in from the university. (The provost selects and supports a program director who manages the day-to-day work.)
- The program must partner with high-need districts, and the districts should be involved in curriculum design.
- Program participants must have university mentors for their first three years of teaching.

Still in its very early stages, the WWTF program recently graduated its first cohort of Fellows in Indiana, and new programs are getting started in Michigan and Ohio. In Indiana, four universities are participating, and each accepts approximately 20 Fellows per year, forming a "cohort." Each Fellow receives a $30,000 stipend (to cover the cost of the master's program and some living expenses) and makes a commitment to teach for at least three years afterward in a high-need urban or rural secondary school.[87] More information on the program is available at www.wwteachingfellowships.org.

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Solution 2: Providing support to new teachers

Many new teachers enter the classroom with inadequate preparation, and a disproportionate number of them are teaching in high-need schools. Providing instructional support to new teachers is therefore a critical strategy for donors aiming to strengthen teacher quality and, ultimately, student learning.

What donors should look for

Promising nonprofit models to improve the effectiveness of new teachers revolve around providing them with instructional support, although the format and structure of programs vary. Some involve mentoring and coaching and are embedded within schools or districts (e.g., the New Teacher Center, profiled on page 28). Others are off-site training programs targeted to new teachers (e.g., the Teacher U and TNTP programs, mentioned on pages 32-34), and may be managed independently from the district. Here is what donors can look for in a high impact program:

1. **Selective recruitment of instructors, mentors, or coaches who are effective teachers of students and adults**. This is evidenced by:
    - Recent classroom experience, where they demonstrated their own effectiveness with high-need students.
    - A strong interest in coaching new teachers, and positive and constructive relationships with peers, since not every successful teacher works equally well with adults.[88]
    - For in-school programs, experience teaching in the district.
2. **Training and support for instructors, mentors, or coaches on specific ways to coach and interact with new teachers**. Examples include:
    - How to help new teachers track and analyze their own teaching practice, assess their students' work, and make improvements accordingly.
    - For programs not embedded in schools, (e.g., the Teacher U and TNTP teacher certification programs), information about the curriculum for which new teachers are responsible and background on school context.
    - For programs embedded in schools (e.g., the New Teacher Center,), clear indication of whether or not the instructor or mentor will formally evaluate the teacher's performance (e.g., for tenure purposes). Some argue that a non-evaluative role is more effective because it promotes trust between the novice teacher and the mentor,[89] which in turn lets the new teacher ask questions and take calculated risks that result in better performance.[90]
3. **Interactions between the new teacher and mentor or coach that focus on the novice teacher's actual work in the classroom.** These may include shared lesson planning, role-

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modeling, analysis of student work, or analysis of the new teacher's practice using classroom videotapes or transcripts. By contrast, some mentoring models focus on social or emotional support, or on generic suggestions about how to be a better teacher.

4. **Regular and sustained interaction that involves at least two years of regular — usually weekly — meetings.** Emerging research suggests that the benefits of such relationships develop only after two years of involvement.[91]

GREAT BANG FOR BUCK: PROVIDING SUPPORT TO NEW TEACHERS

For $34 - $40 per secondary student taught by a new teacher, two-year comprehensive in-school mentoring programs can result in the following impacts:

- Gains on standardized tests that are enough to move the average student 4 percentile points in reading and 8 percentile points in math — improvements that can make an important difference for high-need students who need accelerated learning to close achievement gaps.
- Teacher effectiveness after the two-year program that is greater than the average third-year teacher and equal to the average fourth-year teacher.
- 76% improvement over national teacher retention rates.

(See Model in Practice for sources, and see the appendix for details on our calculations.)

MODEL IN PRACTICE: SUPPORT FOR NEW TEACHERS

This Model in Practice illustrates how one organization, the New Teacher Center, puts the attributes described above into practice by providing in-school support to new teachers. New teachers are assigned effective mentors from the district who work with them one-on-one to improve instruction. Following this Model in Practice, we provide additional resources for donors interested in supporting high impact new teacher support models, including two examples of practice-based certification programs targeted to new teachers.

Model in Practice: Comprehensive in-school mentoring support for new teachers - New Teacher Center

About the model: On-the-job support for new teachers is tremendously important given the weaknesses of most teacher preparation programs today. In a comprehensive new teacher induction program, mentors work one-on-one with novice teachers to analyze their teaching and suggest improvements. Effective mentors are experienced teachers from the participating district who have been successful with students in their own classrooms and are able to work collaboratively and constructively with adults. Ideally, mentors are released full time to work with

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a portfolio of new teachers matched by content and grade level. In this Model in Practice, we profile the nonprofit New Teacher Center, a leader in providing comprehensive support to new teachers around the country.

Nonprofit agent: The New Teacher Center (NTC) was established in 1998 as part of the University of California Santa Cruz by CEO and former teacher Ellen Moir to support new teachers in nearby school districts. Today, NTC operates as an independent nonprofit organization, implementing in-school mentoring programs in 30 U.S. school districts. In addition to its in-school programs, NTC offers an online mentoring program — e-Mentoring for Student Success (eMSS) — through which beginning math, science, and special education teachers can find mentors with experience in their subjects and grade levels. The organization has managed to scale up quickly and effectively; today NTC is a $17 million organization with more than 200 employees[92] and a presence in all 50 states, either through its in-school mentoring model or through eMSS. Since 1998, NTC has served more than 49,000 teachers and 5,000 mentors across the country,[93] more than any other program profiled in this guide.

How it works: NTC partners with school districts, policymakers, and education leaders to design and implement induction programs that increase the effectiveness of new teachers. While some program details vary from district to district, there are certain NTC requirements:

- Mentors have allocated, sanctioned time for weekly one-on-one meetings with new teachers.
- Mentors participate in 12 days of professional development per year.
- Mentors serve a three-year term as a mentor.
- The program spans the first two years of a new teacher's career.

Other key features of the program are:

Selection and training of mentors: NTC relies on partner districts, principals, and existing mentors for referrals of strong mentor candidates. This referral-based pipeline has facilitated the impressive scaling up of the program. Once candidates are selected, mentors are trained in a wide array of teacher assessment tools designed to help analyze and improve new teachers' practices. For example, NTC tools give mentors guidance on how to observe a new teacher and provide specific, constructive feedback; how to assist new teachers in analyzing their own practice and identifying goals; and how to coach new teachers on effective ways to engage parents.

Differentiation of mentor's role and principal's role: Although mentors are encouraged to work closely with principals in supporting new teachers, there is a clear distinction between the mentor's role as an instructional coach and the principal's role as both coach *and* evaluator. Mentors do not take part in evaluating their mentees for purposes of promotion or dismissal by school leadership. Program leaders underscore the importance of this distinction. Without it, fear of losing their job or getting a bad evaluation can prevent new teachers from seeking help from mentors.[94]

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Professional advancement of mentors and capacity building for districts: The NTC program benefits new teachers, but it also represents an investment in the professional development of mentor teachers and overall capacity of the district. Mentors meet weekly to discuss their development as instructional coaches, thus building their own practice as teachers and school leaders. Many NTC mentors cite their weekly "mentor forums" and other training as the best professional development of their teaching careers, and numerous NTC mentors have moved into school leadership roles following their experience with NTC.[95]

Impact: NTC's work has been the subject of internal assessments, and the organization participated in a study on comprehensive induction conducted by Mathematica Policy Research. Findings regarding student and teacher outcomes support the strength of the model.

Student outcomes: Analyses of student gains on annual achievement tests found measurable impacts on student outcomes:

- Internal assessments of student test scores found that NTC teachers who had completed the NTC two-year induction program were, on average, more effective than third-year teachers and as effective as fourth-year teachers who had not participated in the program.[96] In other words, NTC's teachers move up the professional learning curve faster than other new teachers. This difference is critical, since high-need students are disproportionately taught by new teachers.[97]
- Internal assessments also found that students of NTC teachers achieved reading gains that were equivalent to the gains of students taught by more experienced teachers, despite being in classrooms with high percentages of low-achieving students and English language learners.[98]
- A recent Mathematica Policy Research study found that two years of the kind of comprehensive induction provided by NTC can result in significant student learning gains in teachers' third year of teaching. These gains are enough to move the average student from the 50th percentile up 4 percentile points in reading and 8 percentile points in math.[99] For high-need secondary students who often enter middle or high school already behind, this type of accelerated learning is necessary to close achievement gaps.

Teacher outcomes: Teacher retention is a useful factor to consider since high teacher turnover can be damaging to schools and students and financially costly to districts.[100] Equally important for donors, retention of these more effective teachers is an important indicator of the sustainability, or "stickiness," of the investment. NTC's internal impact evaluation found:

- Six-year teacher retention rates for NTC represent an improvement of 16% over the California average: 88% of NTC teachers were still teaching after six years, compared with 76% statewide.[101] These rates were for schools served in Santa Cruz and Silicon Valley in California. (For donors outside California, California retention rates may not provide the best benchmark since some form of induction is provided to all teachers in the state.)
- Six-year teacher retention rates for NTC represent an improvement of 76% over even the national *five*-year retention rate: 88% for NTC, compared with the 50% national five-year

average.[102] Again, these rates were for schools served in Santa Cruz and Silicon Valley in California.

Although the Mathematica Policy Research evaluation found no effect on teacher retention, NTC's internal assessments may be more relevant because they looked at NTC's specific model over a longer time frame.[103] Other research confirms that higher levels of induction support are correlated with improved teacher retention.[104]

Costs/resources required:[105] The annual cost-per-teacher for an NTC induction program is $6,000 – $7,000 (or a total of $12,000 – $14,000 for the two-year program). The main costs are salaries for directors, administrative support, and professional development coordinators, as well as facilities, materials, and equipment. In California, the district pays about 35% of program costs, and the state pays about 56% through the Beginning Teacher Support and Assessment (BTSA) program; the remaining 9% reflects the additional time burden on administrators and teachers of implementing the program.

Cost per impact: For an estimated $34 – $40 per secondary student, NTC's comprehensive induction programs can result in the following impacts:

- *Improved teacher effectiveness (as measured by student test score growth).* After completing the two-year comprehensive induction program:
  - Teachers are, on average, more effective than third-year teachers and as effective as fourth-year teachers.[106]
  - Students experience learning gains that are enough to move the average student from the 50th percentile up 4 percentile points in reading and 8 percentile points in math.[107]
- *Improved teacher retention.* Six-year teacher retention rates for NTC[108] represent an improvement of 76% over the national average.[109]
- *Savings to society.* A cost-benefit study conducted by NTC researchers Anthony Villar and Michael Strong at the University of California Santa Cruz found that for every $1 invested in high-quality teacher induction programs, $1.66 is returned to society after five years as a result of reduced teacher turnover costs and increased teacher effectiveness.[110]

[For detailed explanations of how we arrived at cost and impact estimates, see the appendix.]

Nonprofit contact: Brian H. Kaplan, vice president of development, at (650) 265-7675, or visit the New Teacher Center Website at http://www.newteachercenter.org.

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Beyond our Model in Practice: Other resources for donors

Below, we provide three additional examples of programs that give instructional support to novice teachers: one in-school mentoring program, similar in some ways to the New Teacher Center, and two independent master's and certification programs for new teachers that directly tie course work to teachers' day-to-day experiences in the classroom. While our team has not done extensive due diligence on all three programs, each incorporates many of the attributes of high impact support models described on page 27-28 and has been shown to produce positive results for students.

Another example of a mentoring program embedded in schools: Educational Testing Service

The **Educational Testing Service (ETS)** offers the comprehensive Pathwise Framework Induction Program, a mentoring and support model for beginning teachers. The ETS model was included in the recent Mathematica Policy Research evaluation of comprehensive induction programs, along with the New Teacher Center (see page 30, in the New Teacher Center Model in Practice profile). To find out more about ETS's Pathwise series of professional development programs, see http://www.ets.org/pathwise.

Two examples of practice-based certification programs: Teacher U and The New Teacher Project

Teacher U, housed at Hunter College in New York City, is a two-year program designed to enable full-time teachers working under a provisional license to pursue a master's degree in education. Geared toward novice teachers, Teacher U mainly enrolls those in their first two years of teaching. Classes meet on weekends during the academic year and for sessions during two summers. The program serves teachers from both district and charter schools;[111] most participants are employed in New York City schools, with a few working in schools in New Jersey, Connecticut, and other districts in New York state.

The Teacher U program is characterized by the following attributes:

- *Instructors who have recently demonstrated classroom gains:* Teacher U instructors are school leaders and teachers who have recently closed achievement gaps in their own K–12 classrooms. They are therefore well-equipped to model teaching techniques and strategies and to provide specific instructional feedback to novice teachers.
- *Hands-on, tactical curriculum tailored to subject and grade-level needs:* Course work is interactive, uses technology, and has a strong emphasis on reflective practice — i.e., teachers analyze their own instruction in order to learn from mistakes and successes. Some courses are divided by grade level and academic subject, while others focus on general instructional techniques that are useful for all teachers. The curriculum draws on

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practices highlighted by Uncommon Schools managing director Doug Lemov, who has articulated a set of effective teaching practices often referred to as "Lemov's taxonomy." Examples of Lemov's instructional techniques include asking follow-up questions after a correct answer to make sure a student really understands, creating a hook with which to begin a lesson, and structuring questions that progress from simple to complex.

- *Graduation contingent on student gains:* To graduate and receive a master's degree from Teacher U, participant teachers must demonstrate that the students they teach have made significant learning gains. Upon beginning the program, each teacher sets specific student learning goals for his or her classroom, and graduation is contingent upon meeting those goals. At a minimum, for a participant to graduate, the majority of his or her students must achieve one year of learning growth in the participant's second year of the program.

Teacher U is a new program, with the first class having graduated in August 2010. Of that class, about 92% of participants graduated on time,[112] having successfully reached the Teacher U benchmark of one year's growth for students in one year's time. On average, students of Teacher U 2010 graduates achieved 1.3 years of growth.[113] For more on Teacher U, see http://www.teacheru.org/.

The New Teacher Project (TNTP) is an organization that specializes in recruiting, placing, and training teachers in high-need schools. Among other programs, the organization implements a certification model for working teachers that emphasizes many of the same values and strategies as Teacher U (and any high impact new teacher support model). This certification model, often referred to as the Practitioner Teacher Program, emphasizes immediate impact on student learning by providing new teachers with practice-based seminars taught by veteran K–12 teachers. Participants earn state certification by completing TNTP's *Teaching for Results* seminar series, a year of successful full-time teaching, and a district mentorship program. Upon finishing the program, all candidates meet federal "highly qualified" requirements.[114]

As with Teacher U, participant teachers must demonstrate evidence of impact on student achievement to earn certification. Candidates submit unit plan outlines, videos of themselves teaching their students, student progress reports, and surveys from students and parents. In addition, program directors observe and evaluate candidates in their K–12 classrooms.[115]

TNTP has partnered with school districts in the following states:

- California – Oakland Practitioner Teacher Program
- District of Columbia – District of Columbia Practitioner Teacher Program
- Louisiana – Louisiana Practitioner Teacher Program
- Maryland – Maryland Practitioner Teacher Program
- Rhode Island – Rhode Island Teaching Fellows

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- Texas – Texas Teaching Fellows
- Pennsylvania – Pittsburgh Practitioner Teacher Program
- Tennessee – Tennessee Practitioner Teacher Program

To date, TNTP has certified more than 2,800 teachers. In 2010, 85% of participants reported that the *Teaching for Results* content seminars increased their classroom effectiveness. The program has also been proven to produce highly effective teachers. In a multiyear value-added study by the state of Louisiana, TNTP's Louisiana Practitioner Teacher Program was the only preparation program in the state for which there was evidence that new teachers who participated were more effective than both new and experienced teachers in four of five core content areas: mathematics, science, reading, and English language arts.[116] The evaluation is available at http://regents.state.la.us/pdfs/PubAff/2010/Value_added_08-26-10.pdf.

Solution 3: Investing in teachers' ongoing development

Ongoing professional development can take different forms and serve different purposes, such as training all teachers in a new curriculum or addressing a particular school-wide weakness in student performance. Making time for and investing in school-based professional development is an important component of an enabling school environment, discussed in Part 2 of this guide.

As in other fields, professional development can also be used to provide continuing opportunities for staff to learn, improve, and advance. Meaningful learning opportunities for teachers require effective methods of identifying the strengths and weaknesses of individual teachers. Reliable teacher evaluation can provide the basis for targeted professional development. (For more on teacher evaluation, see page 73.)[117]

Whatever the impetus, investment in professional development for teachers should produce higher levels of student learning.

What donors should look for

The best professional development programs for teachers share the following characteristics that donors should look for:

1. **Connection to teachers' classroom practice and clear alignment with the school's priorities and goals.**[118] Research suggests that retention of skills and knowledge quickly deteriorates if not used and updated regularly.[119] This finding supports the notion that teachers need ongoing professional development and that the training they receive should be closely connected to their actual practice. If a school is struggling with low student math scores, for example, a professional development program might help teachers incorporate

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specific strategies to improve students' understanding of algebra concepts, including how to identify and correct common student mistakes.

2. **Intensive and ongoing training**. Findings vary, but many studies show that interventions that offer 30 – 100 contact hours of training over a 6 – 12 month period have a positive effect on student achievement.[120]
3. **Focus on building strong working relationships among teachers.**[121] This is most easily achieved if programs are embedded in schools, classroom-based, and taught by teacher leaders from within the school rather than outsiders. Additionally, if high-performing colleagues lead the programs, schools can leverage "peer effects" — the positive effects that highly effective teachers have on the practice of their colleagues.[122]
4. **Use of active learning strategies.** For example, observation and modeling have been found to increase proficiency more than lecture-only forms of professional development.[123]
5. **Evaluation to identify areas of need and enable continual improvement**. This could include:
    - District analysis of overall student performance.
    - School-based analysis of student performance.
    - Meaningful individual teacher assessment.
    - Evaluation of the professional development itself.

District example: Ongoing development for teachers

The world of professional development is something of a free-for-all, with a mind-boggling number of organizations, universities, and individuals offering services to individual teachers, schools, and districts. Districts themselves often design and implement their own professional development programs. Overall, there is little quality control and even less evaluation of the effectiveness of specific programs or initiatives.

We opted to provide a district professional development example, rather than a nonprofit provider, because districts are largely responsible for providing development opportunities and programs to teachers. As discussed above, professional development works best when tailored to the specific needs of teachers, schools, and districts. This is not to say that there are no worthy nonprofit programs, or that it may not make sense for a district or school to contract out professional development expertise; however, we hesitate to recommend a program generically when it may or may not be appropriate to a particular place or situation.

Below, we provide an example of how private donor funds enabled the school district in Duval County, Florida to improve its support for teachers across all experience levels. This example incorporates many of the principles outlined above, and Duval's efforts have led to documented and quantifiable improvements in student learning. Following this district example, we provide

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some additional resources for donors wishing to support ongoing professional development programs for teachers.

Effective Professional Development: Duval County and the Schultz Center for Teaching and Leadership

Since 2002, the Duval County public school district in Florida, encompassing the city of Jacksonville, has partnered with the Schultz Center for Teaching and Leadership to pioneer a wide range of professional learning programs that have had a positive impact on student learning. The Schultz Center is a nonprofit organization founded in 1997 with philanthropic support from Fred Schultz, a local businessman. Schultz's $1 million donation was matched by state grants and supplemented by local fundraising.[124]

To address the demands of the standards- and assessment-based reforms that dominated the early 2000s, Duval County and the Schultz Center abandoned the longstanding model of teacher professional development that had focused on isolated workshops. Instead, they instituted clinical, site-based, and standards-driven opportunities for teachers to hone their craft. Duval County teachers and administrators have access to dozens of professional development programs, specific to their learning needs. The Schultz Center offers two-way video conferencing that allows educators to observe colleagues in action and take part in conversations with trained facilitators. Programs include state-mandated content classes, either online or in-person; three-year academies for mentors, administrators, coaches, and teacher leaders; and Continuous Learning Cycle courses, which train school staff on-site in a self-directed program of data gathering and analysis focused on identifying student needs and coming up with ways to adjust instruction to better meet them.[125]

Duval County's work is also notable for its attention to evaluation. The Schultz Center has a research and evaluation director who collaborates with program design teams and teachers in the field to gauge the effects of the Center's programming. An analysis performed internally and confirmed by an independent evaluation organization found a correlation between the number of hours teachers engaged in Schultz Center professional development and their students' scores on the Florida Comprehensive Assessment Test (FCAT).[126] For each additional six-hour day of literacy training a teacher received, student scores on the FCAT increased by a half point. The findings indicated that students of teachers who completed the Schultz Center's Literacy 101 program (a 14-day, 84-hour course) could be expected to score seven points higher than students whose teachers had no literacy training. This positive correlation was amplified when socioeconomic status was taken into account: low-income students were more likely to score higher on the FCAT if their teachers had taken part in the maximum number of

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math and literacy program hours at the Schultz Center.[127] In 2009-10, the Schultz Center trained more than 38,000 teachers for a total of approximately 400,000 hours.[128]

Beyond our district example: Other resources for donors

Donors seeking other examples of good, ongoing professional development can contact the following organizations, which can help identify initiatives that are already underway in a given community.

The National Staff Development Council, now known as **Learning Forward**, is a professional association dedicated to ensuring student success through quality professional learning for teachers and other school leaders. The organization developed and promotes a set of standards for professional development that are used in 40 states. The standards are primarily designed to help districts and schools plan, organize, and evaluate professional development, but they could be of use to donors as well. The standards as well as other resources on professional development are available at http://www.learningforward.org/index.cfm.

Other resources include the **National Commission on Teaching and America's Future** (http://www.nctaf.org/resources/related_links/teacher_education/) and the **National Board for Professional Teaching Standards** (http://www.nbpts.org). The National Board for Professional Teaching Standards offers an intensive, subject-specific advanced certification program for teachers who have been teaching for three years or more.

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PART 2: CREATING AN ENVIRONMENT FOR GREAT TEACHING

Nearly every urban district includes some schools that are extremely troubled and some that, despite facing similar challenges and serving similar populations of students, are succeeding. The main difference between the two is an enabling environment for teacher performance and, in turn, student performance. Teacher performance — like most employees' performance — can be strongly influenced by factors such as the quality of leadership and supervision, interactions with peers, opportunities for professional development and advancement, compensation and rewards systems, and workload.[129]

Across industries, studies have shown that employee satisfaction and retention are highly dependent on work environment, which includes supervisory support, work relationships, opportunities for professional growth, and role clarity.[130] A study of nurses found that one major cause of burnout in their field is lack of supervisory support, along with frictions in peer relationships and work pressure.[131] Another study found that a strong social support system in the workplace leads to professional growth through effective knowledge and skill transfer.[132] Enabling teachers to do their best work and encouraging the most successful teachers to stay can result in the kind of sustained improvements in teaching quality that many donors seek.

In this section, we highlight solutions for improving the environment at the school-level. In Part 3, we will discuss what donors should know about the broader policy environment.

"*Improving student learning, especially in high-need, low-income schools, requires increasing the professional capacity of schools. This is an organizational challenge that calls for a well-designed organizational response. Staffing weak and dysfunctional schools with a steady stream of talented and motivated individuals may serve some students in the short run, but it will not strengthen their schools in the long run.*"

- Susan Moore Johnson, professor, Harvard Graduate School of Education[133]

The situation

Teachers do not exist in a vacuum. Even the most skilled teacher will struggle to succeed in a school that lacks an empowering and supportive environment — and many such schools exist in the United States today. Without a culture that enables promising teachers to improve, encourages great teachers to stay, and dismisses those who are not up to the task, teachers cannot

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reach their full potential in the classroom. Ultimately, it is the highest-need students who will suffer the consequences.

Training great teachers who promptly leave the profession is a short-term and costly fix to the teaching quality problem. As stated in Part 1, roughly one-third of K – 12 teachers leave the profession within their first three years on the job, and as many as half leave by year five.[134] Some turnover is to be expected, and attrition is not necessarily bad if it helps rid the system of poor performers. Part of the trend can undoubtedly be attributed to larger shifts in the U.S. labor market and in cultural expectations: staying at one job or company for many years is now the exception for most workers rather than the rule, and people who take teaching positions generally have more and better-paying options than they did in the past. However, a large amount of this turnover (about half) is due to teacher dissatisfaction[135] and could be addressed by the improvements in work environment that we discuss on the following pages. Turnover in high-poverty schools is also 50% higher than in low-poverty schools.[136] What's most important, research indicates that high turnover rates in schools — reported to average 19% – 26% annually for high-poverty public schools[137] — have a clear negative impact on school effectiveness and student performance.[138]

The costs of teacher turnover for students and schools

Consequences of high turnover in schools: Research indicates that high teacher turnover in schools is correlated with weaker student outcomes.[139] This is not surprising, as high rates of turnover can be destabilizing to any enterprise.

Consequences of high turnover within the profession: Researchers examining five school districts found that it costs a district between $10,000 and $18,000 in replacement costs (e.g., recruitment and advertising costs, administrative processing, and training for new hires) per teacher who leaves.[140] When teachers leave the profession before they are fully developed as educators, districts and taxpayers fail to get the maximum return on their investment.

"…from an organizational perspective, some teacher turnover, especially of ineffective teachers, is necessary and beneficial. But… high rates of teacher turnover are of concern not only because they may be an outcome indicating underlying problems in how well schools function, but also because they can be disruptive, in and of themselves, for the quality of school community and performance."

- Richard Ingersoll, Ph.D., professor, University of Pennsylvania[141]

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When it comes to the school environment in which teachers work, there are numerous challenges to improving teaching quality, many of which are heightened in high-need schools. Those challenges include:

1. Structural barriers to forming relationships with peers, students, and parents
2. Lack of a professional culture and pay structure that reward performance
3. Unsafe physical environment and student behavioral problems
4. Lack of leaders prepared to lead high-need schools

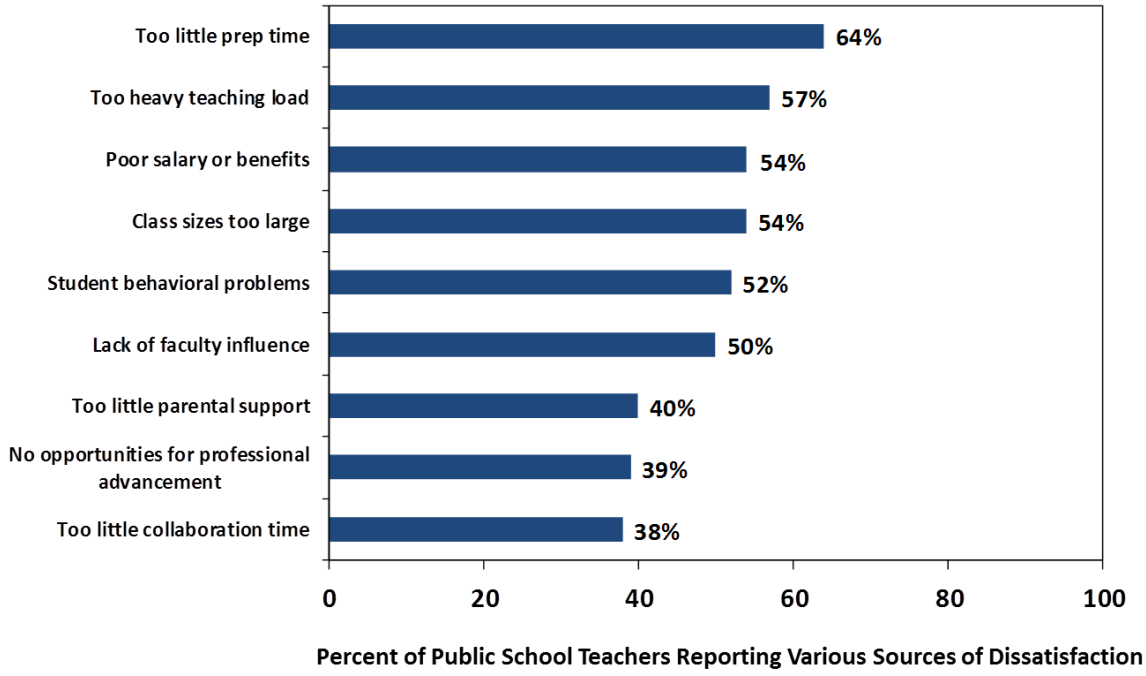
Structural barriers to forming relationships with peers, students, and parents

There are many structural barriers preventing teachers from interacting with peers, students, and parents in a meaningful way. First, many secondary schools are large, making it difficult for teachers to get to know their colleagues. Second, middle and high schools are structured so that students move from teacher to teacher for different subjects. A typical high school teacher will see 100 or 125 students per day, compared with 20 students per day for an elementary school teacher.[142] This volume of students can make it much harder for secondary teachers to get to know students and their families well. Third, since secondary teachers focus on a specific content area, they tend to work in isolation, focusing on their specific subject. Finally, tightly scheduled workdays, heavy teaching loads, and union contract restrictions on teacher work hours can make it difficult for teachers to find time to collaborate. In fact, one of the salient differences between teaching in the United States and teaching in countries with higher-performing education systems is the availability of common planning time: U.S. teachers spend an average of 80% of their total working time in the classroom versus an average of 60% for teachers in countries such as Japan.[143]

In teaching — as in other professions — the strength and quality of work relationships can either drive or impede performance. The quality of peers can be especially influential. Evidence from the health care field, for example, supports the importance of peer relationships: use of teams can improve clinical outcomes, although the context in which teams work also influences effectiveness.[144] In education, a recent study on peer effects found that, in addition to driving teacher satisfaction, collaboration with colleagues drives higher teacher performance. This improvement was found to be lasting. The study indicates that as much as 20% of a teacher's own effectiveness can be attributed to the quality of the colleagues with whom he or she has worked.[145] Strong relationships with colleagues also have a positive effect on teacher retention. A study in Chicago found that retention was higher when teachers believed that their colleagues shared a sense of collective responsibility for school outcomes and reported strong relationships with the principal and their colleagues.[146] In other words, teachers rub off on each other in a positive way, in terms of both hard skills and attitudes. Teachers' relationships with students and parents are

also important. According to research conducted by Richard Ingersoll and David Perda, a significant amount of teacher dissatisfaction relates to interactions with colleagues, students, and parents. (See Chart 4.)

Chart 4: Sources of Teacher Dissatisfaction (2000-2001)



SOURCE: Adapted from "Teacher Shortages and Teacher Retention", by R. M. Ingersoll, 2009, the Consortium for Policy Research in Education, University of Pennsylvania. Retrieved November 8, 2010, from http://www.vacte.org/VACTE%20Talk.ppt. Adapted with permission.

Lack of a professional culture and pay structure that reward performance

Lack of faculty influence over school decision making, low salaries, and lack of opportunities for advancement are also among the sources of dissatisfaction for teachers, according to the Ingersoll and Perda study. Numerous teacher surveys confirm their conclusions. One study found that a common thread among effective teachers who are likely to stay at their schools is that they feel they are held to high standards and that there is an atmosphere of mutual respect in their school.[147]

Although high pay is not generally a primary reason for becoming a teacher and is rarely the most important factor in teacher retention and satisfaction,[148] compensation reform (discussed in more detail on page 71) remains an important aspect of improving the environment for teachers.

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This is because compensating and rewarding teachers based on performance, rather than simply on tenure and credentials, can help create the performance-driven, professional culture in schools that many teachers, particularly younger ones, desire. Moreover, as mentioned in Part 1, a recent study by McKinsey & Company found that higher teacher compensation would be a key lever for attracting talented candidates into teaching.[149]

Unsafe physical environment and student behavioral problems

The environment for teachers working in high-need, low-performing middle and high schools can be especially daunting. Many schools serving high-need students do not provide the safe and supportive environment that research indicates is tremendously important to secondary teachers.[150] During the 2009-10 school year in Chicago, for example, almost 260 public school students were shot on their way to or from school.[151] Some teachers have themselves witnessed or experienced this kind of violence. Many more, though, must confront these challenges indirectly because of the emotional and behavioral repercussions for students who have been exposed to violence or other personal trauma. It is critical that schools have clear policies, programs, and procedures for dealing with students' emotional and behavioral issues. Such policies must involve real consequences for unruly students, as well as address students' varied needs.

Lack of leaders to lead high-need schools

Principals have arguably the most challenging job in high-need schools. As the school "CEO," a principal is responsible for improving the school's performance, which often means turning around longstanding patterns of failure and supporting staff in doing so. Next to teachers, principals are the most important in-school factor affecting student learning,[152] and principals play a key role in fostering effective instruction.

Finding great leaders to run high-need schools is difficult. One report found that 67% of principals and 72% of superintendents believe that traditional principal preparation programs are "out of touch with the realities" of running a school today.[153] Another report listed common problems with principals' training, including poorly structured curriculum, little focus on management thinking or techniques from outside education, and scant attention to key issues such as accountability, use of student data, or teacher dismissal.[154] Many traditional principal preparation programs suffer from problems similar to those that weaken conventional teacher preparation: they are not highly selective; any practical training experience they offer is usually short, undervalued, and disconnected from other course work; and they fail to differentiate training based on the type of school in which candidates plan to work.[155]

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"Leadership is not something that is developed in a lecture hall, but rather learned through the ongoing interactions with students, parents, teachers, and community members."

- Principal trained by New Leaders for New Schools, Baltimore, MD[156]

Principals, like teachers, also need support on the job. A recent study of educational leadership notes that secondary school principals tend to be overwhelmed by the multiple pressures of the job and find little time to engage with teachers on instructional matters. The report concludes that these principals are by and large not receiving the support they need.[157] Being a secondary school principal can be even more isolating than being a secondary school teacher, and so having support — including a network of peers — is critical.[158]

How donors can change the situation

Based on a combination of available evidence, expert advice, and practitioner experience, we recommend two high impact solutions for improving the teaching environment at the school level:

1. **Improving principal training and support.** Create a larger pool of effective principals willing to take on the challenges of high-need schools. Donors can do this by supporting programs that selectively recruit, train, or support principals. Pages 43-49
2. **Supporting effective whole-school reform models.** Support reform models that modify the overall school organization and that focus on enabling great teaching and improved student outcomes. Pages 50-66

Both solutions address the weaknesses in school environments that we just described, and both can be tailored to serve the highest-need students in the country.

Solution 1: Improving principal training and support

"If you get the principal piece right, the rest will fall into place.… An atmosphere of strong and effective leadership is critical in the neediest schools."

- Kevin North, assistant superintendent for human resources. Fairfax County, VA Public Schools[159]

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As mentioned earlier, principals are second only to teachers among in-school factors that influence student learning.[160] Some studies show that a good principal can have a particularly strong effect in a high-poverty school.[161] The "principal effect" on student achievement happens largely through an effective principal's positive influence on teachers' motivation and working conditions, rather than through direct influence on teachers' knowledge and skills.[162] Even in schools where the district, rather than the principal, controls teacher hiring decisions, the principal still makes decisions regarding classroom staffing, scheduling, professional development, student discipline, and a host of other matters that affect teachers' and students' daily school experience. Furthermore, as with effective leaders across all disciplines, strong principals attract and retain good staff. Consequently, donor investments in principal training and support produce a desirable multiplier effect.[163]

GREAT BANG FOR BUCK: IMPROVING PRINCIPAL TRAINING AND SUPPORT

For an estimated $170 per secondary student, high-quality principal training and support programs can result in the following impacts:

- Gains on standardized tests that are enough to move the average middle school student up 2.4 percentile points in math and 2.5 percentile points in reading. For high-need students, such accelerated annual growth is critical to closing achievement gaps.
- Approximately 2.5 times increase in the percent of middle schools where at least 90% of students are on track to perform at grade level within five to seven years. Such gains are significant in high-need schools, where students often enter several grade levels behind.
- 14% improvement in graduation rates over the district average, despite a higher-need student population.

(See Model in Practice for sources, and see the appendix for details on our calculations.)

What donors should look for

By supporting programs that address deficiencies in current principal preparation and support, donors can improve principals' effectiveness in fostering an environment that promotes high-quality teaching. Here is what donors should look for in a high impact principal training and support model:

1. **A rigorous process for choosing candidates,** if the program involves recruiting or selecting new principal candidates. This includes:
    - Screening for relevant professional experiences, such as teaching or prior leadership roles, as well as for personal qualities and values, such as persistence

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and a strong belief that all students can learn. As discussed in Part 1, both practitioner experience and emerging research point to these attributes as being tied to improved outcomes for high-need students.
    - Clear expectations of principal candidates and a process for dismissing participants who have not met them.
2. **An emphasis on practical, hands-on training, tailored to specific principal needs,** as evidenced by:
    - Training that covers general leadership concepts (e.g., inspirational leadership), content specific to principals (e.g., building a high performance culture in a school), and practical skills (e.g., how to gather and use data to inform management decisions).
    - Training tailored to the kind of school the candidates plan to lead. For example, principals leading secondary schools need training on how to build a team of teacher leaders and coaches within their school that can help teachers with subject-specific instructional needs. It is not feasible for one person to be familiar with high-level content in every subject area. In addition, candidates who aspire to lead high-need secondary schools need to know how to address the learning deficits, violence, and behavioral issues affecting adolescents in those schools.
    - Training that allows candidates to practice what they have learned and observe strong leadership in action. This can take a variety of formats, such as apprenticeships, opportunities to view and discuss videos of principals in action, role-plays, and seminars led by effective principals.
3. **Sustained support for principals, including access to a network of fellow principals and coaches.** Since principals often find themselves operating in isolation with little or no management support from the district, access to an individual coach, especially during the first few years, can be especially useful. A coach and a peer network can provide guidance on specific leadership challenges as they arise, such as how to effectively manage a tight school budget.

MODEL IN PRACTICE: PRINCIPAL TRAINING AND SUPPORT

To illustrate the attributes of a successful program to train and support principals, we provide an example of a national organization, New Leaders for New Schools, that recruits new principal candidates for high-need urban schools and provides them with intensive training and support. Following this Model in Practice, we provide information on other organizations implementing similar models.

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Model in Practice: Recruiting, training, and supporting new principals for high-need schools - New Leaders for New Schools

About the model: Effective principals can have a significant impact on students and teachers in high-need secondary schools, and on the system at large. In this Model in Practice, we profile New Leaders for New Schools, an organization that successfully addresses three critical components for ensuring strong leadership of high-need schools: selective recruitment of new principals, extensive training of candidates, and ongoing professional support once principals are placed in full-time school leadership positions.

Nonprofit agent: New Leaders for New Schools (NLNS) was founded in 2000 by five business and education graduate students who submitted an idea for the organization to the annual business plan competition at Harvard Business School. They were finalists in the competition, began receiving funding offers, and started the program. The organization has grown from an initial cohort of 13 aspiring principals in Chicago and New York City in 2001 to more than 700 New Leaders as of 2010.[164] The organization works with both district and charter schools in 12 geographic sites in the United States: Chicago, IL; New York City; Newark, NJ; Baltimore and Prince George's County, MD; Washington DC; the California Bay Area; Memphis, TN; Milwaukee, WI; Charlotte, NC; and New Orleans and Jefferson Parish, LA.

How it works: NLNS's work is characterized by carefully designed recruiting, training, and support structures for principals, as well as data-driven decision making. The organization also makes significant investments in evaluation and research, which not only help NLNS improve its own program, but also principal effectiveness more broadly through NLNS's influence on district policies and other principal development programs. Key features of the model are:

Highly selective recruiting process: Recruiters cast a wide net to identify outstanding candidates from diverse backgrounds who have teaching experience. NLNS aggressively recruits in communities where it works, and taps peer organizations like Teach for America and The New Teacher Project to help identify potential applicants. NLNS also relies heavily on its own alumni networks to nominate strong candidates. Applicants who pass the initial screening process participate in a set of intensive interviews, including case studies and role-modeling scenarios, designed to assess personal and instructional leadership qualities. The organization looks for leaders with relentless drive and a strong personal belief in every student's ability to succeed. Admission to the program is very competitive, with about 6% of applicants accepted each year.[165]

Six-year commitment: If selected, each participant makes a commitment to serve as a school leader for at least six years (including the first training year) in a particular geographic program site.[166]

Intensive, practical preparation for the principal position: Participants begin the first year —called the "Foundational Year" — with a four-week summer training program. The training is designed to develop instructional and organizational leadership skills and is heavily informed by NLNS's

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"Urban Excellence Framework," a set of principal practices and responsibilities based on lessons learned from urban public schools that have made significant gains in student achievement. The framework organizes principal responsibilities into five major categories: 1) student achievement-based learning and teaching, 2) achievement and belief-based school culture, 3) high-quality staff aligned to the school's vision, 4) systems and operations that drive learning and culture, and 5) personal leadership. For the first academic year, candidates are then placed in "Residencies" in urban public schools, in which they take on leadership roles and are paid by the district. As part of the Residency, the participant assumes real-world leadership responsibilities and is held accountable for helping the school improve student outcomes. Residents receive guidance from mentor principals and NLNS coaches and attend two one-week Foundations Seminars. Residents are evaluated throughout the year against a defined set of leadership competencies, with input provided by the mentor principal, NLNS coach, and NLNS local executive director. At the end of the Foundational Year, candidates are endorsed as principal candidates or assistant principal candidates, or are dismissed from the program. About 80% are recommended for full-time principal positions at the end of the Residency year. Remaining candidates complete a year as an assistant principal in order to demonstrate readiness for the principal role.[167]

Ongoing network of support: Once hired by a district and matched to a school, NLNS principals and assistant principals have continued access to a variety of professional resources from NLNS and receive intensive coaching support for one to two years. More general support continues beyond those two years through the larger network of NLNS-trained principals. Principals report that the network is an invaluable ongoing resource.[168]

Performance management systems and culture: NLNS is characterized by a data-driven culture and an unwavering focus on results for students. For example, NLNS has launched an intensive learning agenda to improve the performance of high schools led by NLNS-trained principals, which, despite some promising results, have not shown student test score gains comparable to those seen in elementary and middle schools (see Impact section below). NLNS conducted more than 30 visits to successful high schools inside and outside the NLNS network. Insights gained from that process have informed a revision of the Urban Excellence Framework and of the training curriculum for secondary school candidates. NLNS has also commissioned an evaluation of its entire program by the RAND Corporation.

Impact: In addition to the RAND evaluation, NLNS conducts ongoing internal assessments of impact. Results from both efforts confirm the strength of the organization's model.

Student outcomes: Given the indirect nature of the relationship between principals and students, NLNS results are impressive.

- Early results from RAND show that in K–8 schools led by NLNS-trained principals for three or more years, the average student gained 2.4 percentile points in math and 2.5 percentile points in reading on standardized tests, compared with similar students in the district.[169] Put another way, a student who was performing better than 20% of peers in

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math and reading ended up performing better than 22.4% of peers in math and 22.5% of peers in reading — meaning that the student's rate of learning accelerated. These results are statistically significant, which is especially compelling given the relatively small size of the current sample.

- Students' one year gains reflected a seven-fold improvement over average district gains in math and English language arts (ELA) test scores combined, according to internal assessments: NLNS-led schools gained 8% versus a 1% average for the district.[170]
- 18% of New Leader-led middle schools demonstrated "breakthrough gains" in math and ELA combined, versus only 5% of district schools, according to an NLNS internal assessment.[171] Making breakthrough gains means that the school is on track to have 90% or more students performing at grade level within five to seven years.[172] This represents a two and a half times improvement in the percent of schools making these gains.
- NLNS has found that high schools led by New Leaders have higher graduation rates than district averages. Early results from the RAND study point to graduation effects that grow with NLNS principals' exposure to their schools.[173] Internal assessments found that in 2009, the average graduation rate for a school led by an NLNS principal for two or more years was 74%, compared with a rate of 65% for district schools.[174] This represents a 14% improvement in graduation rates over the district average, despite the fact that NLNS principals work in the highest-need schools.

Placement, commitment, and reach of New Leaders: The percentage of graduates who go on to become principals is an important interim impact measure of a principal recruitment and training program. Here, NLNS outperforms traditional programs:

- Compared with traditional programs, a significantly larger share of NLNS graduates become principals in the first few years: 81% of NLNS graduates[175] compared with 20% – 30% nationally.[176]

Costs/resources required:[177] NLNS estimates the cost of recruiting and training a principal to be $112,000 per resident. This total includes staff and travel time devoted to recruitment and selection, the four-week summer training program, seminars throughout the Foundational Year, and a small stipend for mentor principals. The annual cost to support a practicing principal is about $13,000, which covers coaching, ongoing training and community-building efforts, and support tools such as school diagnostic instruments. NLNS generally receives about 10% of its funding from school districts, about 10% through federal funding, and about 80% from private sources.

Cost per impact: For an estimated $170 per secondary student in a school led by a New Leader, results include:

- *Improved student achievement*
  - Middle school students in schools with NLNS-trained principals for three or more years improved their standardized test scores by 2.4 percentile points in math and 2.5 percentile points in reading on average, as compared with similar students in the district, indicating accelerated learning.[178]

    - Middle school students' one year gains reflected a seven-fold improvement over average district gains in math and English language arts (ELA) test scores combined.[179]
    - New Leader-led middle schools outperformed district schools (by two and a half times) in terms of the percent of schools making breakthrough gains.[180]
- *Higher student graduation rates.* New Leader-led high schools showed a 14% improvement in graduation rates over the district average.[181]

[For detailed explanations of how we arrived at cost and impact estimates, see the appendix.]

Nonprofit contact: For more information, please contact Julie Horowitz, chief external affairs officer, at jhorowitz@nlns.org, or visit the NLNS Website at http://www.nlns.org/.

Beyond our Model in Practice: Other resources for donors

We have highlighted New Leaders for New Schools, which recruits, trains, and supports new principals for high-need urban schools. Other organizations and districts use similar models to improve preparation and support of new principals. Often with philanthropic support, some urban districts (New York, Atlanta, Chicago, and Denver among them) and charter management organizations have opted to train their own school leaders by establishing principal or leadership "academies." These training programs may be run by local nonprofits affiliated with or contracted to a district, established in collaboration with a local university, or run and funded entirely by a district itself. The Atlanta and Denver principal training programs are described in more detail in the district turnaround profiles on pages 77-81.

The NYC Leadership Academy is one notable district example. An independent nonprofit originally funded by philanthropic capital and focused exclusively on New York City, the organization is now supported primarily by fee-for-service public contracts with New York City's Department of Education. It offers several leadership development programs and services: an aspiring principals program; a preparation program for principals opening new schools; coaching support for first-year principals; an on-demand coaching program supported by school-based budgets; and strategic consulting to the New York City Department of Education. In addition, the organization has a national initiatives office that provides leadership development consulting, training, and technical support to other districts and state education departments that seek to establish, grow, and improve their leadership development programs. The organization is distinguished by its responsiveness to local context, a practice-based approach that emphasizes experiential learning and theories of adult development, and its results for students.[182] Read more about the NYC Leadership Academy at http://www.nycleadershipacademy.org/.

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Solution 2: Supporting effective whole-school reform models

An effective principal can have an enormous influence on teaching quality and the school environment. Nonetheless, there are limitations to a principal's decision-making power, and the job of making sure all aspects of a school's organizational model are working together to improve student outcomes is a difficult one. Whole-school reform models can facilitate a principal's managerial and leadership responsibilities if the school has been carefully designed to create an enabling environment for teacher and student success. This may include rethinking structures and decisions that are often out of a principal's control, such as restructuring teacher compensation, changing the curriculum, and lengthening the school day. Like so many aspects of the education system, these two pieces of the puzzle — strong leadership and whole-school reform efforts — are mutually reinforcing. Just as a principal's efforts can be impeded by existing school design, a strong whole-school reform model without an effective principal will have limited impact.

The phrase "whole-school reform" is a catch-all term for a host of different efforts to improve school environment and teaching quality simultaneously. In this guide, whole-school reform models are comprehensive approaches to reorganize school resources and improve instruction in order to accelerate student learning. Whole-school reform models characteristically try to address many of the problems plaguing high-need secondary schools through coordinated and interlocking strategies; these include making the curriculum more rigorous and engaging to students, unifying and articulating school expectations regarding student performance and behavior, and addressing human capital issues such as teacher recruitment, professional development, evaluation, career ladders and occasionally compensation.[183] Some models start with brand new schools, while others attempt to reform or turn around existing, struggling schools.

Examples of whole-school reform models include charter schools, district designs developed by nonprofits, and schools created or restructured by public school districts themselves. Many of the best-known whole-school reform models are charter schools. These schools tend to have more restructuring freedom than regular district schools, especially when it comes to human capital management and curriculum. There have been some great success stories, including the charter management organization we profile on pages 54-59. There have also been notable failures. Charter schools are a common topic of discussion and debate in education today, and we discuss them more on the next page.

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CHARTER SCHOOLS: A PRIMER

Over the last decade, a debate has raged between those who favor charter schools and those who oppose them. Proponents have argued that charter schools permit needed innovations that are impossible within the entrenched bureaucracy and union rules of the average school district. Opponents charge that charter schools cream off district funds and the best students, undermining public education. In truth, it is nearly impossible to generalize about charter schools because of significant variations in their design, location, strategy, and results. Here are the facts:

- Charter schools are public schools: they are authorized through state legislation, and they usually receive the same per-student allocation as other public schools in the district or state in which the charter is established.
- Charters often have more autonomy than regular district schools when it comes to hiring and firing, compensation, curriculum, and school structure.
- Most states set a cap on the number of charter schools that can be opened each year, although recent federal policy has put pressure on states to raise or remove such caps.
- Charter schools educate only a small fraction of K–12 students — currently fewer than 3%.[184]
- Charter schools can be operated as single schools or networks of schools run by a charter management organization (CMO).
- Several studies have shown that, in terms of student achievement, the average charter school is doing no better than the average public school.[185]
- It is becoming increasingly clear that not all charter schools are created equal; just as in the public school system, there are excellent charter schools, terrible charter schools, and everything in between.

What donors should look for

By supporting efforts to restructure schools around an explicit set of beliefs, expectations, and practices, donors can help make great teaching possible. Here are six things to look for in an effective whole-school reform model, or indeed, in any good school:

1. **Processes and structures that strengthen individual teacher skills**. These include:
    - Selective recruitment of new teachers
    - Clear teaching standards and a common language for what great teaching looks like
    - Ongoing professional development that is tied to classroom needs of students and teachers
2. **High performance expectations and the systems required to reach them.** These include:
    - For students, a school mission built around the belief that all students can succeed, stated expectations that students will attend college and/or go on to

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successful careers, and clear disciplinary policies enforced consistently by teachers and the principal
    - For teachers, a teacher evaluation system that uses multiple measures for assessing performance; opportunities for successful teachers to be recognized, advance professionally, and potentially be compensated accordingly; and a clear process for dismissing poor performers
3. **Mechanisms that allow teachers and administrators to know and keep track of all students.** These include:
    - Collaboration and joint decision making (e.g., through staffing in groups and teams organized by grade level or academic department)
    - Common planning time for teachers
    - Multiple channels for interacting with parents
4. **School day and school year that are scheduled to maximize learning time for teachers and students,** as evidenced by:
    - Extending the school day or school year in order to allow struggling students more time to catch up (or restructuring the school day and week if collective bargaining agreements prohibit extending school hours)
    - Careful planning to avoid overloading and burning out teachers
5. **Curriculum that is relevant and engaging to high-need secondary students**. This can include:
    - Making connections between curriculum and real-world experiences (e.g., through projects with real-world applications)
    - Career-focused class offerings
    - Opportunities to earn college credits in high school
    - Student input in designing assignments
    - Efforts to make learning fun (e.g., through use of technology)
6. **School performance management strategy,** as evidenced by:
    - Smart use of data (e.g., teachers' assessments of student skills, analyses of student work, and surveys of teachers and students) to inform improvements to school design
    - A track record of success, if the organization has been around for several years, as many whole-school models have been
    - An evaluation plan, using metrics such as student attendance, class progression, graduation rates, college attendance rates, and learning growth

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GREAT BANG FOR BUCK: SUPPORTING EFFECTIVE WHOLE-SCHOOL REFORM MODELS

The below analysis is based on the California-based organization Green Dot Public Schools:

For an average annual cost of $8,400 per student attending a new charter school, impacts for students include:

- Four times greater growth in learning as measured by a variety of academic measures, compared with other public high schools in the same neighborhood and district.
- 12% improvement in graduation rates for Green Dot schools over comparable schools.
- 86% of graduating students going on to attend two or four-year colleges, despite serving high-need student populations.

For an average annual cost of $9,800 per student, a school turnaround can result in the following impacts in the first two years:

- 50% decrease in the two-year student attrition rate.
- 48% – 75% increase in the number of high school students enrolled in courses required for college enrollment.

The below analysis is based on the New York-based organization Generation Schools:

In the school's initial start-up phase in New York, for approximately $15,000 per student, Generation Schools' model has resulted in the following impacts:

- 70% of students passing exams required for graduation, despite the fact that only 20% of students entered the school performing at grade level.
- More than a two-fold increase in the number of students on track to graduate on time.

(See the Models in Practice for sources, and see the appendix for details on our calculations.)

MODELS IN PRACTICE: WHOLE-SCHOOL REFORM

We profile two examples of whole-school reform in action below. One is a charter school model, and the other is an innovative, non-charter design that can be used to create a new district school. Following the Models in Practice, we provide guidance for donors wishing to identify other promising whole-school reform models.

The charter school example, Green Dot Public Schools, illustrates how a school can achieve strong student outcomes and a positive environment for staff despite longer working hours for

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teachers and the rigors of a turnaround situation. While there are many well-known national and regional charter schools with evidence of good results, we chose to highlight Green Dot for three reasons. First, unlike many charter school models, Green Dot focuses on high schools and has had proven success there, despite the fact that many we spoke to have found high schools to be particularly difficult to change. Second, Green Dot has experience both with starting new schools and turning around existing ones. Third, since its teachers — like the vast majority of public school teachers nationwide — are unionized, we felt its work might be more broadly applicable than that of other charter models.

While still relatively young, the non-charter example, Generation Schools, illustrates how innovation can take place within districts. It offers a practical example of how a regular public school can redesign the way things are done in order to improve teaching quality and, ultimately, student learning. Generation Schools is a particularly helpful example because its model reduces class size and extends learning time without adding personnel.

Model in Practice: Enhancing the quality of public high schools through an alternative charter school model - Green Dot Public Schools

About the model: Too many high-need secondary students are in public schools where expectations for students are low, discipline issues disrupt learning, curriculum is incoherent, teachers are ineffective, and parents are not engaged. Although there is wide variation in the quality of charter schools (see page 51), charter schools can be more aggressive and innovative in addressing such issues since their charters free them from some of the district bureaucracy and union contracts that can impede reform. Extending the school day, allowing teachers to give more time to struggling students, increasing pay for effective teachers, firing ineffective ones, and changing the curriculum are just a few examples of changes that can be easier for a charter school to implement. This Model in Practice provides an illustration of how one charter management organization (CMO) — Green Dot Public Schools — has used its ability to work outside the traditional system to improve the environment in which teachers teach and students learn.

Nonprofit agent: Green Dot Public Schools was founded in Los Angeles in 1999 in response to the failures of public high schools in the area. Since its inception, Green Dot has opened 17 charter high schools in the most vulnerable areas of Los Angeles. This number includes the turnaround of a large public high school that resulted in the creation of eight Green Dot schools. Green Dot serves primarily high-need students: 93% of its students qualify for free or reduced-price lunch, 25% are English language learners, 80% are Latino, and 19% are African-American.[186] According to the organization, "Green Dot envisions a public school system in Los Angeles made up of small, high-performing schools that each encompass a belief in the potential of *all* students, foster teacher creativity, encourage parental involvement, and ultimately prepare students for college, leadership, and life."[187]

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How it works: Green Dot leaders, like those of many of the best known charter school management organizations, describe doing "whatever it takes" to improve student learning. For Green Dot this has included:

Engaging unions for change: Unlike many charter organizations, Green Dot employs unionized teachers, and the union was involved in designing the school model.[188] Green Dot teachers have a voice in school policy and curriculum and work hours that are not constrained by a set number of minutes as specified in most union contracts.

Selective recruitment of teachers: Green Dot teachers tend to be fairly young, with an average age of 28 years and average teaching experience of 4.5 years.[189] The organization selects candidates carefully, emphasizing characteristics of humility, reflective practice, and willingness to learn and improve.[190] Teacher recruitment involves several interview rounds and a written test that screens for values aligned with Green Dot's culture and readiness to work in urban schools.[191]

Performance management tied to standards: All schools are required to use interim assessments to gauge student progress throughout the year, as well as to offer students a longer school day, catch-up opportunities, and "college knowledge" programming. All schools offer the core courses required by the state of California for high school graduation and college entry. Green Dot has also adopted a reading program and a rubric aligned with The California Writing Project to scale up student writing to a college level over the four years of high school. Schools with promising student outcomes are allowed more leeway in choosing curriculum and teacher professional development; struggling schools are subject to increased intervention from the Green Dot parent organization.[192] Green Dot has recently received a Bill & Melinda Gates Foundation grant to redesign its approach to teacher evaluation and compensation, possibly to include consideration of student performance in salary determinations. The teachers' union is an active partner in this process.

School-based professional development: The Green Dot model stresses professional development for both principals and teachers. Principals participate in a full day of professional learning each month; assistant principals are included in order to build the organization's leadership pipeline. Principal training emphasizes data collection and analysis, including how to communicate results both internally and externally.[193] Professional development for teachers is mostly organized by and within individual schools, although all new teachers receive two days of orientation training facilitated by Green Dot's director of teacher induction. Some schools pair new teachers with experienced teachers, who serve as mentors; Green Dot has gotten particularly good results from these coaching and mentoring arrangements.[194] Common planning time for teachers across subjects creates congruence across the curriculum and helps foster a collegial school community.[195]

Impact: Green Dot has not been subject to rigorous external evaluation, but the organization has tracked its own progress through multiple measures of impact on students and teachers. One analysis looked at data from before and after the turnaround of Locke Senior High School, a large,

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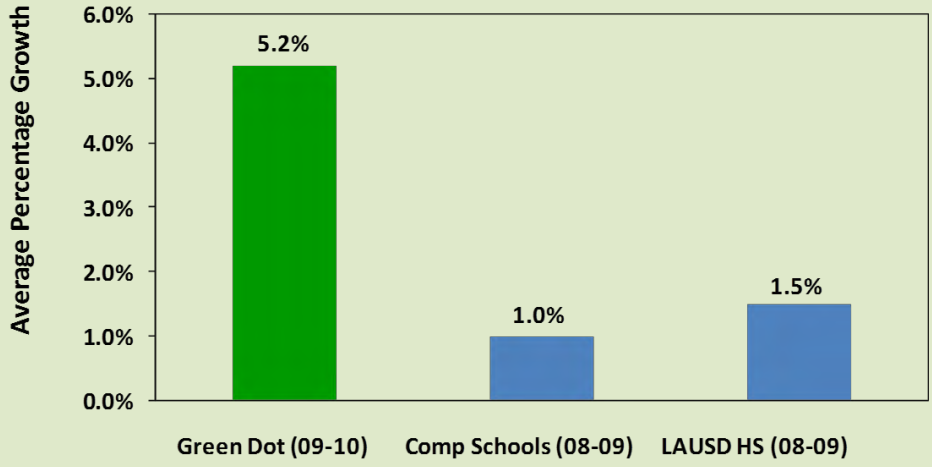
chronically failing high school. The Locke results address some donor concerns about selection bias in charter schools, since Green Dot took over an existing school (and its students) and therefore did not select for families motivated to enter a lottery for admission. Below, we first analyze results from Green Dot's network of new charter schools; we then consider results from the eight charter schools that are the product of Green Dot's turnaround of Locke.

Student outcomes for new Green Dot schools:[196]

- Green Dot schools showed growth on the Academic Performance Indicator (API, a measure of school improvement that involves a variety of academic measures, including standardized tests) that represented approximately a four-fold improvement over other public schools: 5.2% growth for Green Dot, compared with 1% growth for comparable schools, and 1.5% growth for the average high school in the Los Angeles Unified School District (LAUSD). (See Chart 5.)
- Green Dot graduation rates showed a 12% improvement over comparable district schools in the neighborhood (83% versus 74%). As of 2010, this would translate into roughly 340 more students entering 9th grade and successfully graduating. (See Chart 6.)
- Among graduating seniors, 86% went on to attend two- or four-year colleges. This is especially impressive since Green Dot serves the highest-need students. Only about 72% of American public schools — wealthy or poor — send more than half their graduates to two- or four-year colleges.[197]
- Nine out of ten (90%) of students in Green Dot's founding five schools fulfill California's rigorous A-G curriculum, which is required to enroll in the University of California university system, compared with only 26% of LAUSD students.[198]

Chart 5: Student Learning Growth as Measured by the Academic Performance Indicator (API)



SOURCE: Adapted from information provided by Cristina de Jesus, Chief Academic Officer of Green Dot, September 2, 2010. Adapted with permission.

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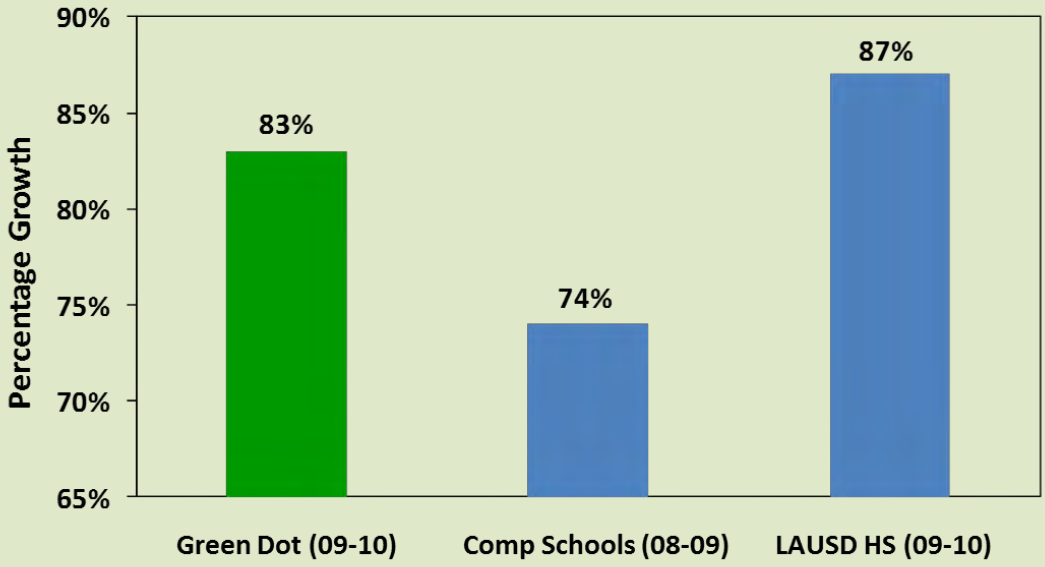
Chart 6: Graduation Rates



SOURCE: Adapted from information provided by Cristina de Jesus, Chief Academic Officer of Green Dot, September 2, 2010. Adapted with permission.

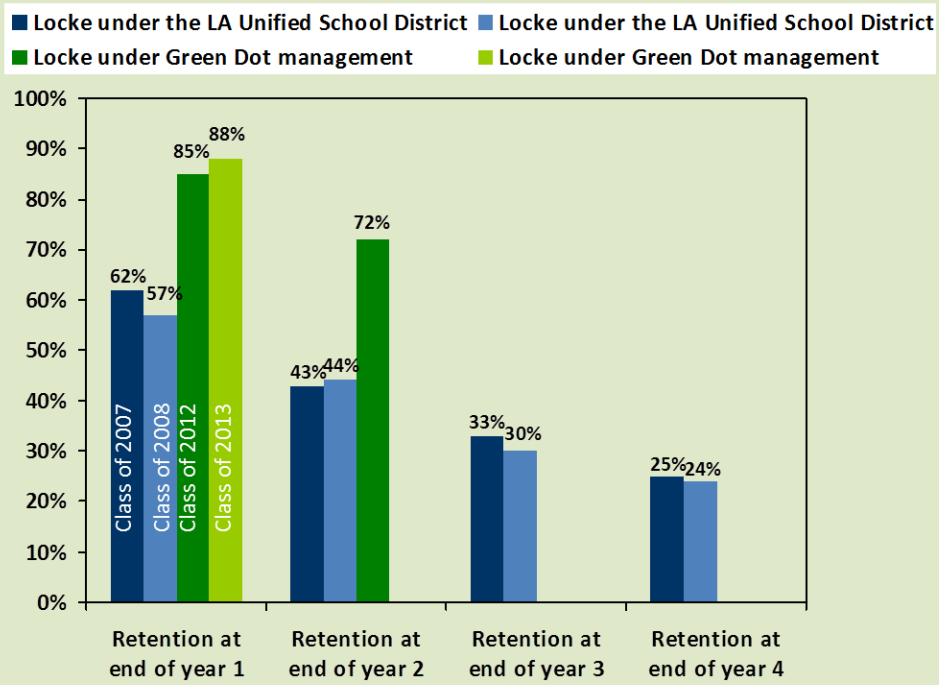
Note: For charts 5 and 6 above, "Comp Schools" refers to to district-run high schools in the same neighorhoods as Green Dot's high schools. "LAUSD HS" refers to the average of all LAUSD high schools.

Student outcomes for Green Dot takeover of Locke: In 2008, Green Dot took over the management of Locke Senior High School, a chronically underperforming school in Los Angeles. Since then, students have performed significantly better on state tests that measure content mastery, fewer students have dropped out, and more students are taking college preparatory courses. Specifically, improvements include:

- Higher scores on the California Standards Test (CST), a standardized test measuring subject mastery, administered statewide in grades 2 – 11.[199] In 2010:
  - 74% (145 students) more scored at the advanced or proficient level in English language arts
  - 295% (109 students) more scored at the advanced or proficient level in math
  - 32% (73 students) more scored at the advanced or proficient level in science
  - 359% (176 students) more scored at the advanced or proficient level in history
- Higher scores on the California High School Exit Examination (CAHSEE) for 10th graders. In 2010 (compared with before the Green Dot takeover):[200]
  - 54% (140 students) more passed the math section
  - 53% (143 students) more passed the English language arts section

- 50% lower attrition rates: in the first two years under Green Dot management, Locke has retained 72% of students who were freshmen in 2008 (28% attrition rate). Under LAUSD leadership, Locke retained only 43% - 44% of freshmen after two years (56% - 57% attrition rate), and only 25% of incoming students ever graduated (see Chart 7).[201]
- Depending on the subject, between 48% and 75% higher rates of taking A-G courses, indicating increased academic rigor and interest in college, since the A-G curriculum is required for admission into the University of California system.[202]

Chart 7: Locke Senior High School - Proportion of Initial Freshman Cohort[1] Retained at End of Each Year



1- "Initial freshman cohort" refers to the 9th graders enrolled at Locke as of October 1st of the starting year

SOURCE: Adapted from "Locke High School Students Show Impressive Gains in all Subjects on CST and CAHSEE Tests", by Green Dot, 2010, retrieved October 1, 2010, from http://www.greendot.org/locke_high_school_students_show_impressive_gains_in_all_subjects_on_cst_and_cahsee_tests. Adapted with permission.

Teacher outcomes: To achieve these results, teachers are held to high standards and work long hours. Despite significant professional demands, staff surveys indicate that Green Dot teachers are generally positive about their work environment. In a recent survey, 79% of teachers agreed or strongly agreed with the statement "I would recommend Green Dot as an employer." In last year's staff surveys, 94% of respondents noted that staff members treat one another with respect, and 90% cited a clear understanding of when and how they are expected to motivate/encourage students.[203] Additionally, strong student results do not seem to be coming at the cost of higher staff burnout rates; Green Dot's teacher retention rates over the past three years are slighter better than national averages in high-need public schools, ranging from 76% to 91%.[204]

Cost/resources required: [205] Across its 17 schools, Green Dot reports an annual average cost per student of about $8,400 in FY11. Of that amount, $7,800 (93%) comes from public funding. Charter schools in California receive less public funding than traditional public schools, so Green Dot must raise private funds to be on par with the district. By comparison, average per-student spending in FY08 was $11,357 in LAUSD and $10,259 nationally.[206]

At Locke High School, Green Dot spends more than it does at startup charter schools, since taking over and operating a struggling school required Green Dot to incur higher expenses. Additional expenses included salaries for a planning team, building renovations and repairs, and extra spending on security and special education. Overall, Green Dot has spent about $9,800 per student per year during the first three years of running Locke (FY09-11),[207] less than LAUSD's average per student spending of approximately $10,500 over the same period[208] and even less than LAUSD spends on its average *high school* student.[209] In year four, Green Dot's spending at Locke will stabilize at around $9,000 per student, which furthers its cost advantage over LAUSD.[210]

Since public revenues were not sufficient to cover per-student costs at the beginning, Green Dot raised an average of $750,000 per year in federal startup grants and $3 million per year in private philanthropic capital for the first four years of the Locke turnaround. Locke enrolls more than 3,000 students, so private sources have provided about $1,000 per student per year toward startup expenses.[211]

Cost per impact:

For an average annual cost of $8,400 per student attending a new Green Dot charter school,[212] impacts for students include:

- Four times greater growth in learning as measured by a variety of academic measures, compared with other public high schools in the same neighborhood and district.[213]
- 12% improvement in graduation rates for Green Dot over comparable schools.[214]
- 86% of graduating students going on to attend two or four-year colleges, despite serving high-need student populations.[215]

For an average annual cost of $9,800 per Locke student,[216] Green Dot's school transformation has resulted in the following impacts in the first two years:

- 50% decrease in the two-year student attrition rate.[217]
- Significant increase in the number of high school students enrolled in courses required for college enrollment: a 48% – 75% increase, or approximately 750 more students than before the turnaround.[218]
- An average of 125 more students scoring advanced or proficient on California Standards Tests (CST) across all subjects, and an average of 140 more students passing the California High School Exit Examination (CAHSEE).[219]

Nonprofit contact: Douglas Weston, communications, at douglas.weston@greendot.org, or visit the Green Dot Website at http://www.greendot.org/.

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Model in Practice: Redesigning district schools to improve the learning environment for students and teachers - Generation Schools

About the model: Efforts to improve the learning environment for teachers and students at the secondary level are frequently hampered by structural and financial barriers. Teachers tend to work in isolation and sometimes see more than a hundred students in a day, making it difficult to get to know any one student well. Union contracts often prohibit adding more time to teachers' schedules for activities that can boost student achievement, such as common planning time. In response to these challenges, many whole-school reform models include efforts to restructure school schedules to maximize both student instructional time and professional development time for teachers without adding drastically to costs. Generation Schools represents one such model. While new, it offers an example of how a public, non-charter network can reallocate existing school resources to improve teaching quality and, ultimately, student outcomes.

Nonprofit agent: Generation Schools is the brainchild of founders Furman Brown and Jonathan Spear, who developed the model in 2001 with the idea that schools could get better results by reallocating time and other resources more effectively. Brown and Spear faced an uphill battle to convince funders and district leaders that the model could work in practice. A prize from the Echoing Green Foundation proved critical in establishing credibility for the model, and early support from the Blue Ridge Foundation provided important start-up resources. Currently, the organization operates one pilot school in New York City, Brooklyn Generation School, a public high school.

Brooklyn Generation School opened in 2007 with a class of 65 students and has grown by one grade per year since then. There are now approximately 310 students in grades 9 –12. The first class of seniors will graduate in June 2011, and it is anticipated that middle school grades will be added over the next several years.[220] Generation Schools has recently attracted significant financial and organizational support for a planned expansion of the model and expects to create additional schools in at least two regions — New York and Colorado — over the next five years. Joel Klein, the former chancellor of the New York City Department of Education, asked Generation Schools to establish six new schools by 2012, with the goal of having 11 Generation Schools and 10-11 affiliate schools (schools that adopt key aspects of the model, with some support from Generation Schools) operating in New York City by 2014.[221]

How it works: Rather than setting up shop outside the rules and regulations of the local district bureaucracy, Generation Schools has painstakingly worked with the New York City district and teachers' union to rethink public schooling. Its model is designed to use people and time strategically, focusing on two main goals: recruiting more talented people into the teaching profession, and improving incentives and opportunities for existing teachers to help students thrive and learn.[222] Generation Schools operate on a schedule that reorganizes the use of time throughout the day and year to increase learning for students, reduce class size for core academic subjects, and promote teacher collaboration and satisfaction. The model attempts to address organizational barriers that prevent teachers from delivering effective instruction to their students

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and from building rewarding, successful careers for themselves. This reorganization is accomplished without adding personnel. Below, we describe key features of the model, and Chart 8 summarizes how the Generation Schools model compares with current practice in most public schools.

Teachers in teams: Teachers work in grade- and subject-based teams, blending different expertise. Small core classes allow teachers to get to know students well, while common planning time lets them learn from each other and collaborate. Teachers also use the planning time to collect, analyze, and respond to data on student performance. Professional development includes a two-week staff conference before each year begins and weeklong grade-level conferences twice annually.

Restructured school year to increase both student learning time and teacher planning time: The model extends the school year to 200 days (the national average is 180 days) without increasing the length of the teacher work year, thereby helping to prevent teacher burnout. Teachers' vacation and professional development time is staggered to allow each team to get a four-week break (three weeks to rest and one week to meet, plan, and observe colleagues) twice a year. While one group of teachers is on break, another team steps in to teach their students intensive month-long courses focused on careers and college planning.

Rethinking standard class periods: The teaching day begins with two 90-minute academic classes (called foundation courses). These courses, required for all students, are strategically sequenced over the four years of high school and are geared toward meeting graduation requirements and preparing students for college. Foundation courses are small; at a school's full enrollment, the average student-to-teacher ratio in foundation courses is 14 to 1. Afternoons are divided into shorter, larger elective courses and two hours of daily planning for teachers. This reorganization is possible because all teachers cover at least one core area plus an elective (art, music, gym, and others). Many teachers have dual certification.

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Chart 8: Generation Schools Model vs. Conventional Public School Model

Key Levers	Generation Schools	Conventional Model
1. Learning time	200 days per year	180 days per year
2. Student load for teachers	50 or fewer students daily	150 students daily
3. Course load for teachers	3 classes per day	5 classes per day
4. Class size for key courses	14 – 16	28 – 30
5. Common planning time	2 hours every day	45 minutes per week
6. Professional development	22 or more days per year	2 days per year
7. College and career guidance	1,100 hours per student	1 – 2 hours per student
Yearly cost per pupil	**$12,476**	**$12,432**

SOURCE: Adapted from "Generation Schools Chart", provided by Furman Brown, Founder of Generation Schools, March 16, 2010. Adapted with permission.

Impact: Although Brooklyn Generation School is still quite new, early performance indicators are promising.

Student outcomes: Brooklyn Generation School has done well compared with a comparison group of 40 "peer schools" selected by the New York City Department of Education. The peer schools serve student populations from similar socio-economic backgrounds and with similar incoming academic achievement levels. Brooklyn Generation School has outperformed the peer group on two critical student achievement measures: pass rates on state exams and credit accumulation. Additionally, despite sharing space with other small schools on the former campus of a notoriously dangerous large high school, the school has succeeded in attracting students and today has exceeded its enrollment goals for incoming freshman.[223]

- *Pass rates on state exams.* In this category, Brooklyn Generation School ranked first among the 40 schools in the comparison group,[224] with approximately 70% of students passing state exams required for graduation, despite the fact that only 20% entered the school performing at grade level. (See chart 9.)
- *Credit accumulation.* Approximately 78% of students are on track to have enough credits to graduate on time, more than a two-fold increase. Historically, the South Shore High School campus on which Brooklyn Generation School is located had a 33% on-time graduation rate.[225]

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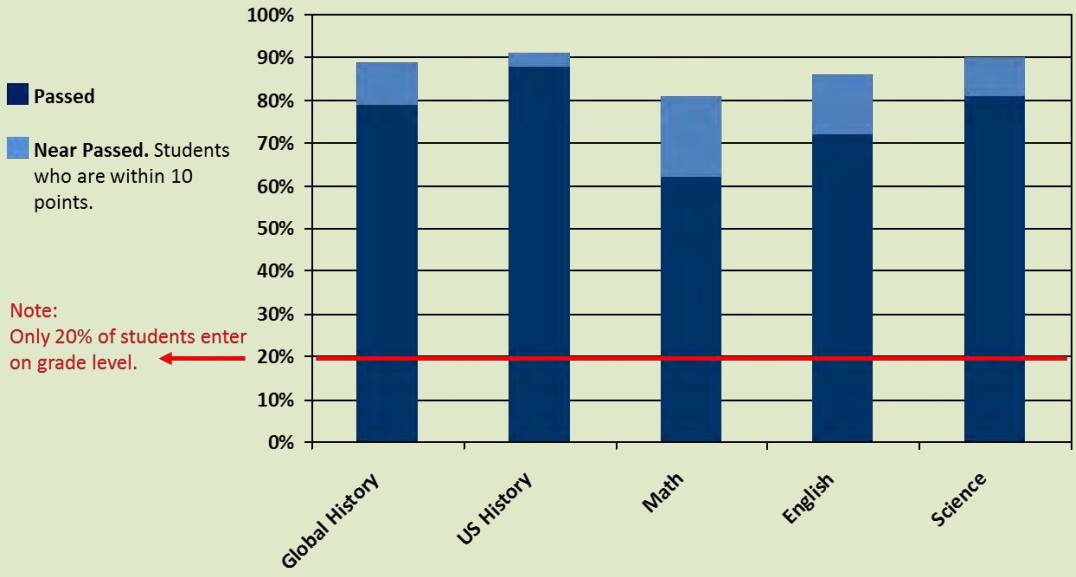
Chart 9: Pass Rates for New York State Exams by Brooklyn Generation School Students*



*Results for seniors in the class of 2011, as of September 2010

SOURCE: Adapted from Generation Schools Internal Document, provided by Furman Brown, Founder of Generation Schools, March 16, 2010. Adapted with permission.

Teacher outcomes: In the first three years, teacher retention at Brooklyn Generation School has been relatively high, with nearly two-thirds of its original staff still working in the school since its founding.[226] Annual turnover rates in urban public schools nationally range from 19% to 26%,[227] so 33% over three years is promising. It is also important to note that some turnover is necessary in any school to weed out low-performing staff.

Cost/resources required: The Generation Schools model is designed to operate on the same public per-student allocation as a regular public school, currently approximately $12,500 per student per year in New York City.[228] That per-pupil allocation, however, does not include start-up costs.

For Brooklyn Generation School, start-up costs included training and technical assistance in areas such as instruction, leadership/management, and operations, provided by the parent organization. Also, because the school began with less than full enrollment, public per-student allocations were insufficient to cover fixed costs (e.g., physical space) in the first couple of years. Generation Schools raised $1.2M for operations during the first three years. During the start-up phase, the annual cost per student was approximately $15,000,[229] about 20% higher than the district average.[230] The additional start-up costs (in percent terms) are similar to Green Dot's costs for the turnaround of Locke High School (see page 59).

As Brooklyn Generation School moves beyond the start-up phase and attains full enrollment, the per-student expenditure is forecast to decline to $12,476 per year, consistent with district per-

pupil spending. This amount will vary for future Generation Schools, since per pupil spending varies significantly by district and state. Additionally, opening schools at full enrollment will decrease start-up costs.[231]

Cost per impact: For an estimated $15,000 per student per year during the start-up years (with lower costs expected after year three), a Generation School in New York can result in the following impacts for students:[232]

- Approximately 70% of students passing exams required for graduation, the highest pass rates among a comparison group of schools serving similar populations, and despite the fact that only 20% of students entered the school performing at grade level.[233]
- More than a two-fold increase in the number of students on track to graduate on time.[234]

[Note: at full enrollment and after year three, this cost will be consistent with the district average of approximately $12,500.][235]

Nonprofit contact: Furman Brown at (347) 417-5323 or furman@generationschools.org, or visit the Generation Schools Website at http://www.generationschools.org/.

Beyond our Models in Practice: Other resources for donors

Other organizations implementing similar models

In our Models in Practice, we profiled two examples of whole-school reform models — Green Dot Public Schools and Generation Schools. However, there are numerous whole-school reform efforts underway across the country. The list below is by no means comprehensive, but all of the organizations mentioned have at least preliminary evaluation data showing improvement in student outcomes.

Other charter schools and school management organizations that have started or restructured schools around a set of core beliefs and principles that generally align with the checklist on pages 51-52 include **Achievement First, Uncommon Schools, Aspire Public Schools, Big Picture Learning,** the **Knowledge is Power Program (KIPP)**, and **Mastery Charter Schools.**

There are also examples of secondary school reform designs developed by the private sector or nonprofits that are generally aimed at districts and district-run schools. These include **First Things First, Talent Development, Career Academies,** and **Early College High Schools.**

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Resources for identifying organizations implementing similar models

Donors can leverage existing due diligence efforts to identify promising whole-school models. For example, some organizations rank, fund, or otherwise single out successful schools. The best-known list is probably U.S. News & World Report's annual high school rankings, but most schools profiled on that list do not serve high-need student populations. The U.S. Department of Education awards **"Blue Ribbon" status** to high-performing schools, including some that have made dramatic gains in serving high-need students. **The National Association of Secondary School Principals** works to identify key practices in high-performing public secondary schools serving high-need students through its **"Breakthrough High Schools" initiative** (http://www.principals.org/tabid/2066/default.aspx). **The National Forum to Accelerate Middle-Grades Reform** sponsors a **"Schools to Watch" initiative** that highlights high-performing middle schools (http://www.schoolstowatch.org/).

Social venture capital firms such as the **NewSchools Venture Fund** and **SeaChange Capital Partners** invest in promising charter management organizations and education programs, providing opportunities for donors to benefit from the firms' extensive investment research.

Allan R. Odden, an education finance specialist, has long maintained that schools can achieve much more educationally with the same amount of money if they use resources more intelligently and creatively, as Generation Schools is doing. In the book *Reallocating Resources: How to Boost Student Achievement Without Asking for More*, Odden and coauthor Sarah J. Archibald profile a number of schools and districts that have taken this advice to heart.[236]

The Effective Practice Incentive Community

The Effective Practice Incentive Community **(EPIC)** gives monetary awards to urban schools that have made dramatic gains in learning achievement. EPIC's work highlights individual schools rather than designs or models per se, but it may be helpful for identifying successful models.

Founded in 2006 by New Leaders for New Schools (see profile on page 46), the Effective Practice Incentive Community (EPIC) identifies schools where students have made significant learning gains and provides financial rewards and recognition to principals, teachers, and other school personnel in exchange for their sharing effective practices. EPIC was created in recognition of the fact that many educators and schools across the country face similar challenges and could benefit from learning from others who have achieved significant student achievement gains. EPIC has three main activities: 1) developing value-added models to measure student achievement and identify schools making the greatest gains; 2) acknowledging and rewarding

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highly effective educators; and 3) compiling and sharing effective practices with participating schools and districts through an online network.[237] The organization also bestows yearly awards on schools that have made the greatest gains in student achievement.

Content for the EPIC Knowledge System, the online platform where best practices are shared, is developed collaboratively by EPIC and its partner schools. To participate, educators from a high performing school begin by reflecting among themselves to identify their most effective practices and areas where they feel they could still improve. Although reflection alone is not the goal, participating schools have noted that this step is perhaps the most valuable for improving school practices and culture.[238] Next, EPIC works with the school to condense these reflections into practice profiles and case studies, which include narrative descriptions of important routines and practices, video modules, school artifacts, and interview transcripts. Educators in the network can log on to EPIC's password-protected Knowledge System and gain access to resources on effective practices from across the country. Partner schools therefore both contribute to and draw from a network of schools.

EPIC currently operates in the following school districts and partner schools: EPIC National Charter School Consortium, Memphis City Schools, Prince George's County, MD, Public School System, Denver Public Schools, and District of Columbia Public Schools. EPIC is made possible mainly through a multiyear grant from the U. S. Department of Education's Teacher Incentive Fund (TIF). Other funds come from partner schools and philanthropic donations. During its first three years in operation (2007-2010), EPIC awarded over 12 million dollars in incentives to more than 4,000 educators in over 160 schools.[239]

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PART 3: WHAT DONORS SHOULD KNOW ABOUT THE BROADER POLICY ENVIRONMENT

Just as the school environment affects the quality of the teaching that takes place within schools, a broad array of federal, state, and district policies and circumstances affect teachers and efforts to improve teaching quality. Although it may be beyond the purview of many individual donors to directly influence policy at the district and state levels, understanding the policy context is important for making solid judgments about the lasting value of investments and their potential impact.

For donors, here are three questions to consider:

1. How will the broader environment limit my options and the impact I can have?
2. How will the broader environment expand my options or leverage my potential impact?
3. How will the broader environment sustain the impact of my philanthropy?

Limitations to philanthropic impact

Because the majority of teachers and education programs operate within the public system, stakeholders — including nonprofit organizations that work with schools, and even donors — may need to work closely with districts to design programs and ensure buy-in. For example, an investment in comprehensive in-school mentoring for new teachers is unlikely to succeed unless the district is fully committed to the program. Mentoring requires that time be set aside for interactions between mentors and new teachers; if school and district leaders do not allot that time, and if the principal does not value the program, it will almost certainly fail. Pre-service training programs for teachers and principals also require district commitment and collaboration, especially those that involve apprenticeships in district schools. When it comes to whole-school models, it is significantly more difficult to establish a charter school in a state that maintains a cap on the number of charters that can be opened. On an even broader scale, it is likely to be difficult to recruit and retain large numbers of top-performing college students into teaching if starting teacher salaries, which are generally set by districts, remain at current levels.[240]

Leverage for philanthropic impact

On the other hand, the broader environment can also enhance the impact of a particular investment, as the adoption of effective practices are mutually reinforcing on many different levels. For example, a new teacher mentorship program can benefit from the adoption of excellent curriculum standards at the state level: mentors and mentees will have a better

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understanding of what to teach, and the existence of the mentorship program can help integrate the new standards into teacher practice. Furthermore, a graduate of a residency program may be more likely to stay in a high-need urban school beyond the required time commitment if the district has also invested in principal development and support, or if it offers financial incentives for excellent teachers to stay in high-need posts. Education is full of such synergies. As an investor, it is important to look at the environment for philanthropic investment in much the same way you would look at the business climate for a commercial investment.

Sustaining philanthropic impact

A final consideration for donors is how the broader environment might ultimately affect the sustainability of an investment. One way to think about sustainability is simply to ask: "Does my investment create lasting effects?" If you help train teachers to be more effective in the classroom, and those teachers go on to do a better job with their students over the course of their careers, those effects are lasting — even if the training program itself disappears tomorrow. But those individual teachers will eventually retire or leave the profession; if teacher training has not improved, the overall field has not changed.

Some donors may be willing to take on a philanthropic commitment to a particular school, district, or program for a sustained period of time. Others, however, may want to fund the start-up costs of a promising model and not tie up their funds indefinitely. For donors in the latter group, the large role of government in education provision and financing becomes particularly important when developing a viable exit strategy. To give an example, philanthropic capital helped start the NYC Leadership Academy, which trains principals (see page 49). Today, most of the funding comes from public sources, through a contract with the New York City Department of Education and fee-for-service work to other districts and schools.[241]

Hot topics

In this section, we briefly highlight some hot topics in the broader policy environment that affect teaching quality as well as the overall field of education. These topics include the federal Race to the Top competition, the role of unions, the adoption of national common core curriculum standards, teacher compensation reform, and teacher evaluation. For added context, we present a quick overview of the role of different government actors in education.

In the United States, districts, states, and the federal government play large roles in education. School districts have the primary responsibility for funding and running public schools. Districts vary in the amount of autonomy they afford to individual schools, but many districts are responsible for adopting curriculum, hiring principals, recruiting teachers, setting evaluation and

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discipline guidelines for students, teachers, and principals, negotiating teacher contracts, and organizing professional development for teachers and principals. States are generally not involved in the day-to-day running of schools. However, they do play a critical regulatory and financing role that affects teaching quality, as does the federal government (e.g., by requiring states to adopt standards through the No Child Left Behind Act of 2001, also known as the Elementary and Secondary Education Act). Although federal funding accounts for only about 7% - 10% of elementary and secondary education spending overall,[242] it plays an important role in bolstering funds for low-income schools through the Title I program as well as in funding education research. Federal funds are also often used as an incentive to promote policy changes. One example is the Teacher Incentive Fund (TIF), which helps to support initiatives to alter teacher compensation structures (discussed further below). Another example is the federal distribution of economic stimulus money for education through the Race to the Top competition.

Race to the Top: Through the Race to the Top competition, the U.S. Department of Education has prodded states to redesign their education strategies with particular attention to the issue of teaching quality. For example, in order to be eligible to compete for a portion of the $4.35 billion funding initiative, states had to remove any legal or regulatory barriers to linking student achievement data to teachers and principals for the purposes of evaluation.[243] Teacher effectiveness received heavy emphasis in competition grading, worth 138 points out of a potential 500.[244] As described in the Department of Education introduction of the program, the five main themes around which state proposals for funding were to be built were:[245]

- **Designing and implementing rigorous standards and high-quality assessments** by working jointly toward a system of common academic standards that builds toward college and career readiness and that includes improved assessments designed to measure critical knowledge and higher-order thinking skills (for more on the common core standards see below)
- **Attracting and keeping great teachers and leaders** by expanding effective support to teachers and principals; reforming and improving teacher preparation; revising teacher evaluation, compensation, and retention policies to encourage and reward effectiveness; and working to ensure that the most talented teachers are placed in the schools and subjects where they are needed the most
- **Supporting data systems that inform decisions and improve instruction** by fully implementing a statewide longitudinal data system, assessing and using data to drive instruction, and making data more accessible to key stakeholders
- **Using innovation and effective approaches to turn around struggling schools** by making the transformation of persistently low-performing schools a top priority
- **Demonstrating and sustaining education reform** by promoting collaborations between business leaders, educators, and other stakeholders to raise student achievement and close

> achievement gaps, and by expanding support for high-performing public charter schools, reinvigorating math and science education, and promoting other conditions favorable to innovation and reform

Although the rules, rating system, and awards for the competition have been hotly contended, Race to the Top has indisputably re-energized the ongoing debate about how to improve teaching quality and promoted considerable policy shifts at the state and district levels. Because points were awarded to states for collaboration with districts and unions, the competition also provided incentives for those stakeholders to work together and negotiate more effectively than in the past. For example, as part of Illinois' application, 12 local districts and their teachers' unions agreed to waive collective bargaining agreements and begin implementing a teacher evaluation system that takes student performance into account before the state plan to adopt such a system goes into effect during the 2012-13 school year.[246] (Illinois did not win funding in the first two competition rounds.) Near universal buy-in to state plans from unions and school districts was cited as an important factor in the selection of Delaware and Tennessee as winners in phase 1 of the competition.[247]

To date, only 12 states have been awarded Race to the Top funding; 34 other states submitted reform proposals in either phase 1 or phase 2 of the competition. Therefore, for donors interested in supporting state- or district-level reform, reviewing an unfunded (or underfunded) Race to the Top proposal can be a good place to start. For donors trying to determine if the climate is favorable for a particular teaching quality investment, Race to the Top proposals are also invaluable sources of information.

Unions: Most teachers work in public schools, and a significant portion of those teachers are unionized. According to a recent Bureau of Labor Statistics survey, the rate of unionization in 2009 among individuals age 16 and older in the education, training, and library fields was 38%. By comparison, the national unionization rate was 12.3%.[248] The largest unions representing teachers are the National Education Association (NEA), which claims 3.2 million members,[249] and the American Federation of Teachers (AFT), which claims 1.5 million members.[250] The size of these two organizations gives them considerable political and economic clout.

While unions and collective bargaining agreements have been blamed for blocking education reform efforts, it is difficult to generalize about their role. Academic research is not conclusive. For example, one study, by Caroline Hoxby, found that increased unionization and the adoption of collective bargaining agreements increased school resources but reduced productivity and had a negative impact on student performance.[251] A more recent study on whether teachers' unions hinder educational performance as measured by state SAT and ACT scores found that higher unionization levels were associated with slightly better performance.[252] While there are certainly instances where unions have blocked education reform efforts, unions have also played key roles

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in developing educational reforms, such as the "ProComp" teacher compensation program in Denver (see discussion of teacher compensation on the following page, and the Denver profile on page 79) and Peer Assessment and Review programs (see Teacher Evaluation, page 73). As discussed above, cooperation between districts, states, and unions is also evident in many of the state Race to the Top proposals.

For donors, the relevant question is not "Are unions good or bad?" but "Can all players, including the unions, work together in a particular situation to solve this problem?" Investments in reform made in the face of significant union opposition may be worthwhile in and of themselves, but they may be less likely to be sustained over time compared with reforms that begin with a broad foundation of support. In some instances, a donor may be able to help the relevant parties achieve a consensus by acting as an arbiter while holding out philanthropic support as an incentive to reach agreement. At a minimum, donors should consider local relations with unions when assessing the climate for investment.

Common core curriculum standards: Unlike many countries, the United States does not have a centrally determined or commonly agreed upon core curriculum. Instead, curriculum is often adopted at the district or state level and is supposed to reflect curriculum and performance standards established by states during the last decade as part of the No Child Left Behind Act. Because there is no agreement regarding basic student knowledge or competencies, there is no consensus as to what teachers should be teaching and, in turn, little guidance for teacher training programs about how teachers should best be prepared. As discussed in Part 1, many of the best pre-service programs compensate for this lack of specificity and guidance by collaborating with the districts in which many of their teachers are placed in order to develop programs that are tailored to the local curriculum. For teachers who do not end up teaching in those districts, of course, the connection proves less relevant.

The difficulties associated with the U.S. approach to curriculum have long been recognized by education experts,[253] but efforts to alter the situation have historically met with opposition from advocates of states' rights and local control. More recently, opposition appears to be diminishing. Under the auspices of the National Governors Association, state education chiefs, and key national partners, the Common Core State Standards Initiative released grade-by-grade common academic standards in mathematics and English language arts in June 2010 after a careful process of development and public review.[254] To date, the standards have been adopted by all but 10 states, and implementation has begun.[255] When implemented, the common standards could affect donors' investments in several ways, most notably by helping to unify and improve the curriculum for pre-service training programs. The adoption of rigorous common standards would also create a need for professional development programs for current teachers of all experience levels, which donors could help support.

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Teacher compensation: Most public school teachers are paid by their districts according to a single salary scale, with pay increasing with seniority and as teachers accumulate credentials such as master's degrees. This approach, arguably outdated and completely divorced from impact on student outcomes, is virtually unheard of in other industries. Many education reformers and policymakers argue that compensation should be tied to teacher effectiveness and that financial incentives should be used to attract and retain teachers in high-need schools and subjects.

The United States spends a lot on education, especially compared with other developed countries. (The United States spends about 7.4 percent of gross domestic product, compared with an OECD average of 5.7 percent.[256]) Yet teacher salaries are quite low.[257] Average starting salaries for teachers dropped between 1940 and 2000 relative to salaries for other college graduates. The fact that the drop was more drastic for women than for men, while other opportunities have become available to women, has most likely affected teacher quality overall.[258]

Given current economic conditions, it is unlikely that the United States, as a nation, will soon begin investing more in teacher salaries. Instead, districts, states, charter school operators, and partner organizations are choosing to address salary issues through innovations in incentives, performance-based pay, teacher career ladders, and salary schedules.[259] The federal government has encouraged experimentation with teacher compensation through programs like the Teacher Incentive Fund (TIF). Those eligible to apply for TIF grants include state education agencies, districts, and nonprofits, including charter schools.[260]

Some charter school organizations, such as Mastery Charter Schools, have already adopted performance-based pay. Others, like Green Dot (profiled on page 54), are studying the issue. The nonprofit **Teacher Advancement Program (TAP)** works with networks of district schools to implement a reform model that aligns teacher professional development, evaluation, and performance-based pay while introducing multiple career roles for teachers. At the district and state levels, the politics around performance-based pay can be divisive; however, many recent district-level experiments have been designed with cooperation from local teachers' unions. There is also evidence that younger, incoming teachers are more open to performance- and role-based salary structures than were earlier generations of teachers.[261]

The jury is still out regarding the effectiveness of performance-based pay and salary incentives in improving teacher quality and retention. Not surprisingly, both program design and implementation appear to affect results. For example, a preliminary evaluation of Denver's ProComp program indicates that participating teachers have better retention rates and higher achieving students.[262] A teacher compensation program in North Carolina that awarded bonuses for teachers in subject-shortage areas and high-poverty schools reduced teacher turnover by

17%.[263] On the other hand, an evaluation of a $300 million merit pay program in Texas found no evidence of impact on either teacher retention or student achievement.[264]

A recent review of incentive and performance pay programs by Susan Moore Johnson and John Papay at the Harvard Graduate School of Education suggests that programs work best when:

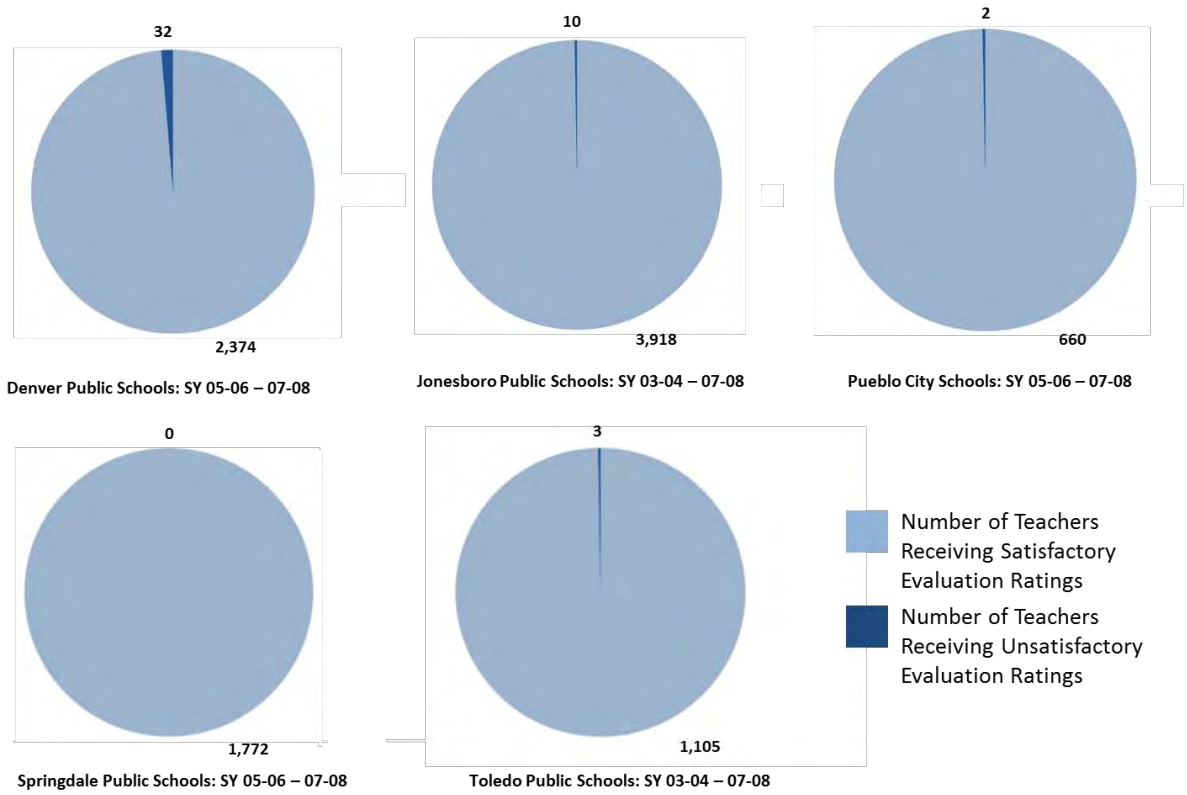
- The "lines of sight" between behavior and reward are transparent.
- Individual incentives do not discourage the very teacher collaboration that has been shown to improve instruction. In other words, school-level rewards may work best.
- Incentives are embedded in a larger compensation system or strategy, as opposed to "one-shot" bonuses that cease to motivate teachers once they have been awarded and are easily cut in times of tight budgets.[265]

Many education experts argue that performance incentive programs *by themselves* are unlikely to make a big difference unless other pieces of the human resources management system are also realigned.[266] When it comes to improving the value proposition for teachers, especially in high-need schools, donors should keep in mind that money alone appears to be insufficient to recruit, retain, and improve teachers. As discussed in Part 2, it takes a strong enabling environment overall.

Teacher evaluation: Evaluating teachers' job performance has become a hotly debated topic in education circles. Recent research has documented what many have long understood: hiring, firing, and evaluation decisions are almost never based on teacher effectiveness.[267] Additionally, the majority of teacher evaluations are based on brief, infrequent classroom observations that almost always result in a "satisfactory" rating.[268] As we discussed earlier, salary scales in education tend to be uniform, with teachers' pay raises based on seniority or the earning of additional credentials, with no rewards tied to classroom performance. The New Teacher Project has dubbed this phenomenon "The Widget Effect" — the tendency to treat all teachers as if they were uniform cogs in an education machine.

There are several factors at work that produce this so-called widget effect. One is the sector's high level of unionization: collective bargaining agreements make firing difficult, even for consistently poor performance. Perhaps more important, the lack of universally accepted standards of effectiveness and reliable and valid evaluation tools contribute to the widget effect. Classroom teachers agree that evaluation shortcomings are real: surveys show that teachers judge roughly 5% – 10% of their peers to be "incompetent."[269] Frustration with this situation has sparked a number of reactions and initiatives.

Chart 10: Evaluation Ratings for Tenured Teachers in Districts with Binary Rating Systems



SOURCE: From "The Widget Effect" (p.11), by D. Weisberg, S. Sexton, J. Mulhern, and D. Keeling, 2009, Brooklyn, NY: The New Teacher Project. Retrieved November 15, 2010, from http://widgeteffect.org/downloads/TheWidgetEffect.pdf. Copyright 2009 by the New Teacher Project. Adapted with permission.

Some say that teacher evaluations should be based partly or entirely on how students perform on standardized tests, using value-added analysis. Value-added statistical approaches attempt to isolate the learning gains students make over the course of a year and compare those gains with the past performance of those students. This approach can be used to assess the effect that particular teachers have on their students; teachers whose students achieve at levels higher or lower than expected are considered, respectively, more or less effective. A number of districts have experimented over the last few years with integrating value-added measures into compensation agreements for schools, principals, and, in some cases, individual teachers.

However, many researchers, educators, and policymakers urge caution regarding the use of value-added analysis due to the inherent limitations of standardized testing and justified fear that schools and teachers will respond by narrowing instruction — a phenomenon known as "teaching to the test."[270] Additionally, there are significant limitations to the value-added statistical modeling approaches that can lead to errors and inaccuracies.[271] Most agree that while value-added analysis can be a helpful tool, it should be used in conjunction with other evaluation methods such as classroom observations and analysis of student work.

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Several districts (notably Toledo, Ohio, Rochester, New York, and Montgomery County, Maryland) have instituted versions of Peer Assistance and Review (PAR) programs. Often designed with the participation and support of local unions, PAR programs are intended to offer support to new and struggling teachers as well as to broaden and professionalize tenure and retention decisions. While PAR is potentially promising, the evidence base regarding its effectiveness is not yet well developed.[272]

Other experiments are taking place around the country. The Bill & Melinda Gates Foundation, for example, is helping to fund a number of district efforts to improve evaluation and human resource management systems while simultaneously supporting a very large, multiyear study to determine teacher practices and evaluation instruments that contribute to higher student achievement. Preliminary results will be available in the fall of 2010, with final results scheduled for release in the winter of 2011-12. Other researchers, such as Michael Strong at the University of California Santa Cruz and a team at the University of Chicago Urban Education Institute, are working on tightening the connections between evaluation instruments and student achievement. All of these efforts can help schools and districts better evaluate their teachers so that they can make decisions accordingly about promotion, dismissal, and professional development needs.

For donors interested in supporting the development of teacher evaluation tools, funding research is a great opportunity. There is still significant work to be done to develop reliable tools, methods, and policies that enable districts and schools to do a better job of assessing, and upgrading, the quality of teaching.

Resources for donors on the broader policy environment

One strategy for increasing impact is to support a nonprofit that itself is engaged in improving the broader environment for teaching quality. Examples include New Leaders for New Schools, whose policy and consulting teams leverage the organization's research and evaluation to influence district policies and other principal development programs. (Read more about New Leaders for New Schools in the Model in Practice on page 46). Similarly, the New Teacher Center has established a policy division as part of its core mission to become the nation's premier resource for policymakers and educators interested in establishing and funding high-quality induction programs.[273] (Read more about the New Teacher Center in the Model in Practice on page 28). A third example is The New Teacher Project, whose policy work on teacher evaluation we mention on page 73. Once recognized primarily as a teacher recruitment and training organization through its Teaching Fellows programs, The New Teacher Project is increasingly getting involved in the policy arena, helping districts and states diagnose and overcome the

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policy obstacles that hamper their efforts to improve teacher effectiveness. These organizations are attentive to policy and relationships within the broader environment for the same reason any investor should be: they wish to protect and maximize their investments.

Some donors may also wish to get involved with policy change directly, by supporting either a district or a state initiative. This guide provides examples of philanthropic contributions to an overall district strategy in the profiles of Duval County, Florida, on page 36 and of turnaround efforts in Atlanta and Denver below. Donors may want to collaborate with other individuals or foundations to gain greater influence and perhaps push together for policy change, where needed. In a smaller district, even individual philanthropic gifts can help shape district policy.

Donors who want to support a district or state initiative should ask:

- Does the state or district have a coherent strategy for addressing teaching quality issues? If so, what are the main initiatives and are there any barriers to change?
- Do I agree with the district's assessment of the problems and proposed solutions? Is there room for discussion?
- If I give money to a particular initiative, how will its impact be evaluated?
- What is the likely extent of my commitment, and how can the benefits of my investment be sustained? What is my exit strategy?

Several organizations track and publish commentary on innovative reform efforts by states and districts. These include:

1. The Strategic Management of Human Capital initiative at the University of Wisconsin, which has interesting, readable profiles of efforts by selected states and districts trying to improve teaching quality (http://www.smhc-cpre.org/resources/)
2. Annenberg Institute for School Reform (http://www.participedia.net/wiki/Annenberg_Institute_for_School_Reform)
3. Center for Reinventing Public Education at the University of Washington (http://www.crpe.org/cs/crpe/print/csr_docs/home.htm)

Bringing it all together: District turnaround profiles

In the following profiles, we highlight two districts that have incorporated many of the best practices discussed in this guide into holistic district reform efforts. Atlanta, Georgia, and Denver, Colorado, are two examples of large urban school districts serving thousands of high-need students that have made significant improvements in student achievement over the last several years, largely by focusing on improving teaching quality. In each example, the district has

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employed multiple strategies to recruit, train, develop, and support teachers and principals, which have led to positive outcomes for all involved. Philanthropic capital played a key role in both districts. Individual and institutional donors have contributed to improvement efforts by funding research, developing evaluation tools, supporting partner organizations, and cultivating overall district reform.

Atlanta, Georgia

Atlanta has managed to make major improvements in student outcomes through a variety of strategic initiatives, many focused on improving teaching quality. When Beverly L. Hall took over as superintendent in 1999, statistics on student learning, graduation and dropout rates, and teacher retention were extremely poor. Today, Atlanta is one of the country's most improved public school districts. Philanthropy played a role in Atlanta reforms from the very beginning — from developing initial human capital strategies to supporting the ETEC and SABLE programs discussed below.

The Atlanta Public School district enrolls approximately 48,000 students, who attend 96 schools. The student population is approximately 80% African-American and 4% Hispanic/Latino. More than three-quarters (78%) of students qualify for free or reduced-price lunch.[274]

School improvement incentives: Hall began the turnaround with a clear focus on teaching and learning. She introduced an incentive system that gave each school a target for improvement in student achievement and the promise of a financial reward if the target was reached. Each school was able to choose to continue its current strategy or adopt one of several district-approved whole-school reform models. Progress was monitored relentlessly, and schools were strongly encouraged to use data to guide instructional decisions. If a school reached 70% or better of its target, everyone in the school received a salary bonus.

Changes in human resource management: With volunteer help from a retired BellSouth executive, the Atlanta human resources department undertook a complete reorganization and developed a comprehensive strategy for teacher and principal recruitment and development. The strategy included raising initial teacher pay to the level of surrounding school districts; working more closely with local schools of education to recruit the best new teachers and give feedback on preparation programs; establishing an Internet portal to make it easier for principals, teacher candidates, and teachers to monitor hiring and other human resources processes; collaborating with Teach for America (TFA) to train and place TFA teachers; working with The New Teacher Project (TNTP) to establish the Atlanta Plus program for training special education teachers; and working with the Consortium on Reading Excellence (CORE) to train literacy coaches within the district.

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The district spends a large amount of money on teacher professional development — about $700,000 per year from district funds, plus additional monies from foundation grants (including support to strengthen math and science teaching[275]) and federal Title I funding (supplemental funding targeted toward closing achievement gaps). The Effective Teacher in Every Classroom (ETEC) Initiative, which aims to recruit, prepare, place, and support effective teachers throughout the district, has been critical to the Atlanta turnaround. The Bill & Melinda Gates Foundation has provided much of the funding for ETEC, including a $10 million grant to support the next phase of the program. Plans for the next phase include developing a system for evaluating teachers based on student achievement and growth, a compensation structure that takes student achievement into account, and a new teacher residency program.[276]

Principal development: The Atlanta strategy also focused on improving systems for recruitment, preparation, selection, and evaluation of principals. The district partnered with The Wallace Foundation to create the Superintendent's Academy for Building Leaders in Education (SABLE), a two-year training program for new principals offering seminars, practical experience, and expert coaching.[277] The program emphasizes personal exploration, data-driven decision making, distributed leadership, and building school culture. The program has trained 146 individuals since 2001, and 75% of program costs are now covered by the Atlanta budget.[278] All new principals also go through a district-sponsored principal induction program.

Successes: Millicent Few, superintendent for human resources in the district, believes that Atlanta's success is largely attributable to its having been strategic about what it takes on and careful not to take everything on at once.[279] The results are impressive. Over the last ten years, Atlanta has seen major improvements in student achievement and teacher retention. Scores have improved significantly on state-mandated tests for students in grades 4, 6, and 8. For example, 88% of 8th graders met or exceeded standards in reading in 2009, up from 60% in 2000.[280] The district still struggles in math: in 2010, only 65% of 8th grade students met or exceeded standards, but the figure represents significant progress from the 36% who met standards in 2000.[281] Graduation rates have also climbed, although the dropout rate remains a problem.[282] Teacher turnover has decreased over the past ten years, from 37% of teachers leaving annually just a few years ago to 13.5% today.[283]

A caution: Allegations that some educators in the district tampered with answer forms on the state achievement test have created some controversy.[284] Such incidents are disturbingly common in districts around the country and perhaps should even be expected: when teachers and principals are under intense pressure to perform, there are likely to be some who seek shortcuts. But the preponderance of the evidence seems to indicate that Atlanta's successes are indeed real: an investigation revealed that cheating was not as widespread as originally thought,[285] and the district sought independent verification of student achievement gains by participating in the

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National Assessment of Academic Progress (NAEP) tests, which are independently administered and therefore far less subject to cheating. NAEP has issued a statement confirming that Atlanta has made significant gains in student achievement.[286]

Denver, Colorado

Since 2005, Denver Public Schools (DPS) has been implementing a reform program aimed at reducing achievement gaps and improving overall student outcomes. Although the district still has a lot of work to do, significant improvements have been made by focusing on teachers and the strategic management of human capital. Many of the changes have been made in collaboration with other institutions, including the local teachers' union and universities. Philanthropy played a role in developing evaluation tools to better measure teacher effectiveness in the classroom and also has supported the efforts of partner organizations, such as teacher residency programs.

DPS is an ethnically diverse urban district: 54% of students are Hispanic, 16% are African-American, and 3.5% are Asian or Pacific Islander. 70% of students are eligible for free or reduced-price lunch,[287] compared with the Colorado state average of 39%.[288]

Changes in teacher and principal recruitment, preparation, and support: DPS has taken several steps to improve the efficiency and coherence of its human capital systems and practices. For example, it shifted budget and staffing cycles to allow new teachers to be hired earlier in the year, when the market for candidates is most competitive. To expand the pipeline of new teachers, the district collaborated in the creation of the Denver Teacher Residency (part of the UTRU network; see Model in Practice on page 19) and has partnered with The New Teacher Project and Teach for America. In addition, DPS is working with traditional university teacher preparation programs to provide feedback on the placement and performance of student teachers and graduates in order to improve the programs. A new data system is being put in place to improve the collection and reporting of information about teacher preparation and performance. DPS has an aspiring principals program, which is managed by the same university as the Denver Teacher Residency, facilitating continuity of philosophy between the two programs. DPS has also launched a Teacher Leadership Academy to develop existing teacher talent and establish distributed leadership models that enable teacher leaders and administrators to work together to improve their schools.

DPS has created support structures for new teachers. Colorado law mandates that each new teacher be assigned a mentor; the district funds four half-day release periods to give new teachers and mentors common work time and is currently restructuring the mentoring tracking system to focus on accountability rather than hours. Summer professional development has been

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restructured so that all new teachers work with their principals for 1–2 weeks prior to the start of school. New teachers are also invited to attend summer academies for the district's English language learners, where they can teach alongside DPS master educators and learn firsthand about strategies for working with this diverse population.

Changes in compensation and incentives: To recognize and reward educators who achieve improved student outcomes, DPS and the teachers' union collaborated in the design and implementation of ProComp, a nationally recognized teacher and principal performance compensation system. ProComp links compensation to student learning gains and provides incentives for serving in the district's highest-poverty schools. The program, compulsory for all teachers hired after January 2006, offers several ways of achieving a salary increase, including working in a high-need school, receiving a positive evaluation, teaching in a needed subject area, or achieving significant growth with students as measured by test scores.[289] The district provided an average 15% increase in teacher salaries through ProComp in 2008-09, the largest one-year raise in state history.[290]

Focus on performance and evaluation: DPS has implemented a number of initiatives to cut low-performing staff. Although the first step is to offer support, the district has recognized that some staff must be removed. The district has replaced principals who fail to drive sufficient student growth and worked with the teachers' union to eliminate loopholes in collective bargaining agreements that allow teachers to avoid remediation and potential dismissal.[291]

The Bill & Melinda Gates Foundation has provided grant money to DPS to design a new teacher evaluation system which will use multiple measures, including student outcomes, student perceptions, peer observations, principal evaluations, and contribution to school and team. The evaluations will be designed to identify teachers' development needs, which can then be addressed through targeted professional development offerings.

Funding reforms: To support its improvement agenda, DPS now spends more per capita than the state does.[292] This has largely been made possible by philanthropic capital. The district has enjoyed strong community support for bond issues to fund ProComp and other initiatives, and has received support from national foundations, including the Bill & Melinda Gates Foundation, the Eli and Edythe Broad Foundation, and the Dell Foundation. Local donors, such as The Janus Foundation, The Rose Foundation, and The Daniels Fund have also played a key role, especially in funding teacher residency programs and human capital strategies.[293] Many of DPS's teacher recruitment, professional development, evaluation, and retention initiatives have benefitted from federal stimulus funding. According to Jennifer Stern, executive director of teacher performance management, the district strategically uses philanthropic capital and federal grants to fund these innovative programs through their initial development and start-up years.[294]

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Successes: DPS has made considerable progress since 2005. Student dropout rates have decreased by a third, and more students are graduating from high school.[295] Student test scores have also increased; in the four years between 2005 and 2009, DPS has shown more academic growth on Colorado state assessments than the rest of the state and has demonstrated greater achievement progress than any other major school district in Colorado.[296] Enrollment has also been growing. Nonetheless, large achievement gaps remain. In a district with almost 80% students of color, a 35 point achievement gap persists between African-American and Latino students and their white and Asian-American peers.[297] The district continues to develop strategies to address these disparities and implement effective strategies more widely. A newly announced comprehensive "2010 Plan" builds on the district's "2005 Plan" and includes new efforts to recruit the best teachers and principals, retain and empower highly effective educators, and reward district staff members who contribute to improved student achievement.[298]

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CONCLUSION

Teaching — like any endeavor — undoubtedly comes more easily to some people than to others. But for far too long, too many have bought into the belief that great teachers are born, not made. Such a belief can easily lead to futile searches for natural talent or, worse, to fatalistic excuses for our failure to improve teaching quality.

The need to improve teaching quality is urgent and clear. Over the past twenty years, despite increases in per-pupil spending, drop-out rates remain alarmingly high, achievement gaps persist, and U.S. students rank behind their peers in many other countries.

What our nation needs is not a few great teachers. What we need is an army of great teachers and great leaders to ensure that the growing ranks of high-need students across the country have an opportunity to learn. The insidious opportunity gap that exists today not only limits the life prospects of high-need students but threatens the strength of our communities, our economy, and our national security.

What this guide presents are concrete ways for donors to close that gap. The models we describe show how donors can accelerate the effectiveness of new teachers, retain and leverage the experience of our most dedicated and high-performing veteran teachers, and remake even the most chronically failing schools into institutions of learning.

Each model has the potential to make a meaningful difference in the lives of high-need students. Combined, these models are mutually reinforcing. In fact, all of the nonprofits in our Models in Practice are engaged in partnerships with organizations delivering other high impact strategies. For donors, the more these models are combined, the greater the likelihood of impact.

The contents of this guide are the result of a year of searching for and analyzing high impact models to improve teaching quality for high-need secondary students. Our multi-disciplinary team has reviewed the academic research; met with policymakers; reviewed program and financial data; conducted site visits; asked questions of students, teachers, and principals; and interviewed dozens of people involved in efforts to improve teaching quality. We have done what would be near impossible for any one donor to do on his or her own. By doing this legwork, our aim is to move donors more quickly and confidently from concern and good intentions to action and impact.

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APPENDIX: COST AND IMPACT CALCULATIONS

Key inputs and assumptions used throughout

- Average national class size in a secondary school is 23.3,[299] or 20-25 students per class. Teachers tend to teach 3-5 sections (classes) of students per year.[300] (Note: We used this national figure as a benchmark against which to evaluate assumptions and figures provided by the nonprofits. Since class size and structure vary by districts, so too do the nonprofit class size figures below).
- Teachers get a new class of students each year.

Inputs and assumptions for specific Models in Practice

Urban Teacher Residency United

Cost Assumptions:

- Cost per resident is $37,000 – $84,000 (as reported by the nonprofit).
- Per teacher cost of turnover in Chicago is estimated to be $18,000.[301]

Impact Assumptions:

- Each teacher remains in the profession for five years. We feel this is a reasonable assumption given the higher than average retention numbers of teacher residency programs. This may in fact be a conservative estimate given that the majority of teachers in the UTRU founding programs are still teaching after five years.
- Each teacher has five sections of 25 students each year, and therefore each secondary teacher reaches about 125 students per year (based on information from nonprofit). Our team confirmed that this is a reasonable assumption because the average class size in the U.S. is 23.3 students.[302]

Our Calculations:

- *For $60 – $134 per secondary student, Urban Teacher Residencies can lead to the impact mentioned in the Model in Practice:* 125 students * 5 years teaching = 625 students reached. $37,000 / 625 = ~$60. $84,000 / 625 = ~ $134.
- *For a group of 100 teachers in Chicago, five-year retention rates that are 151% higher could result in savings to the district of $900,000 over five years:* 83% five-year retention for UTRU vs. 33% five-year retention for the district is a 50 percentage point difference. 50% of 100 = 50 teachers. 50 teachers * $18,000 (cost of turnover) per teacher = $900,000.

New Teacher Center

Cost Assumptions:

- Total program costs of $12,000 – $14,000 per teacher (as reported by the nonprofit).

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Impact Assumptions

- Each teacher remains in the profession for five years, a somewhat conservative estimate given the 88% six-year retention rate found for the CA programs.
- Each teacher has five sections of about 23.5 students (based on the average class size in the U.S)[303] each year, and therefore reaches about 118 students per year.
- Impact occurs starting in year three (after completing the two-year NTC program).

Our Calculations:

- *For an estimated $34 – $40 per secondary student, NTC's comprehensive induction programs can result in the impact mentioned in the Model in Practice:* 118 students per year * 3 years of impact = roughly 350 students affected (five-year teaching career, but with impact starting in year three). $12,000 / 350 = ~$34. $14,000 / 350 = ~$40.

New Leaders for New Schools

Cost Assumptions

- Cost to recruit and train each aspiring principal is $112,030 (as reported by the nonprofit).
- The annual cost to support a principal is $13,249 (as reported by the nonprofit).

Impact Assumptions

- 81% of participants are placed as principals (as reported by the nonprofit).
- Over a principal's five-year tenure, the number of secondary students affected is 1,200 (as reported by the nonprofit). We think this is a reasonable estimate because the average secondary school size in the U.S. is approximately 800,[304] with new students entering and graduating each year.
- According to the RAND study, in K– 8 schools led by New Leaders for three or more years, the average student gained 2.4 percentile points in math and 2.5 percentile points in reading on standardized tests, as compared to similar students in the district.[305]
- RAND impact estimates are pooled across grades 3-8; CHIP cost per impact analysis assumes these impacts are generally consistent between elementary and middle school grades.

Our Calculations:

- *For an estimated $170 per secondary student in a school led by a New Leader, results include those mentioned in the Model in Practice:* $112,030 / 0.81 = $138,309 (actual cost to prepare a principal). $13,249 (annual cost to support a principal) * 5 years = $66,245. $66,245 + $138,309 = $204,554 (cost to prepare and support a principal throughout 5 year tenure). $204,554 /1200 = ~ $170.

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Green Dot Public Schools

Impact Assumptions (all from impact data from the nonprofit)

- 3,041 students have enrolled in Green Dot high schools since 2006.
- The graduation rate for Green Dot schools is 83%, with 33% of graduates attending four-year colleges and 39% of graduates attending two-year colleges (as reported by the nonprofit).
- 48% – 75% higher rates of students taking A-G courses (range comes from impact data provided by the nonprofit: English language arts 48% higher, science 51% higher, math 56% higher, history 75% higher).

Our Calculations:

- *An additional 340 students entered 9th grade and successfully graduated:* 83% vs. 74% graduation rate represents a 9 percentage point improvement for Green Dot. 3041 / 4 = 760 seniors per year since 2006. 760 * .09 = 68.4. 68.4* 5 years = 342, or roughly 340 additional graduates.
- *86% of graduating seniors attend two- or four-year colleges:* 33% to 4-year colleges + 39% to 2-year colleges = 72% going to two- or four-year colleges. 72% / 83% (graduation rate) = 86% of *graduating seniors* who go on to either a two-year college or a four-year college.
- *An average of 125 more students scored at advanced or proficient level on California Standards Tests (CST) across all subjects, and an average of 140 more students have passed the California High School Exit Examination (CAHSEE) since the turnaround:* For CST Tests: Average = (145 more students in ELA + 109 more students in math + 73 more students in science +173 more students in history) / 4 = 125 more students. For CAHSEE: (143 more students in ELA + 140 more students in math) / 2 = 141.5 (rounded to 140) more students.

Generation Schools

Cost Assumptions

- Costs are 20% higher in first couple years due to additional start-up costs and revenue gaps (as reported by the nonprofit).
- Once the school is out of the start-up phase and operating at full enrollment, per-pupil costs decrease to be in line with the district average ($12,476 in the case of Brooklyn Generation School) (as reported by the nonprofit).

Our Calculations:

- *For an estimated $15,000 per student per year, attending a Generation School in New York in the school's start-up years can result in the impacts mentioned in the profile:* 20% of 12,500 (12,476 rounded) = 2500. 12,500 + 2500 = $15,000.

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NONPROFITS PROFILED IN OUR MODELS IN PRACTICE

NAME	WHERE THEY WORK	CONTACT INFO	PAGE NO.
Urban Teacher Residency United (UTRU)	UTRU partner programs, as of summer 2010: Academy for Urban School Leadership, Chicago, IL Boettcher Teachers Program, Denver metro-area, CO Denver Teacher Residency Boston Teacher Residency Philadelphia Teacher Residency Memphis Teacher Residency I-START, New York City, NY New Visions for Public Schools-Hunter College Urban Teacher Residency, New York City, NY University of Chicago Urban Teacher Education Program, Chicago, IL Aspire Urban Teacher Residency, Oakland, CA Indianapolis Urban Teacher Residency Los Angeles Math and Science Residency Teach/Here, Chattanooga and Knoxville, TN Atlanta Teacher Residency Pittsburgh Residency Program Richmond Teacher Residency Twin Cities Teacher Collaborative, Minneapolis and St. Paul, MN	Anissa Listak, executive director (312) 397-8878 x114 www.utrunited.org Founding programs: AUSL: www.ausl-chicago.org BTR: www.bostonteacherresidency.org Boettcher: www.boettcherteachers.org	19-25
New Teacher Center (NTC)	Based in Santa Cruz, CA School mentoring programs in 30 U.S. school districts e-Mentoring for Student Success (eMSS) available nationally	Brian H. Kaplan, vice president of development (650) 265-7675 www.newteachercenter.org	28-31, 75

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NONPROFITS PROFILED IN OUR MODELS IN PRACTICE (CONTINUED)

NAME	WHERE THEY WORK	CONTACT INFO	PAGE NO.
New Leaders for New Schools (NLNS)	NLNS works with district schools and charter schools in: Chicago, IL New York City Newark, NJ Baltimore and Prince George's County, Maryland Washington DC The California Bay Area Memphis, TN Milwaukee, WI Charlotte, NC New Orleans and Jefferson Parish, LA	Julie Horowitz, chief external affairs officer jhorowitz@nlns.org www.nlns.org	46-49, 75
Green Dot Public Schools	Los Angeles, CA	Douglas Weston, communications douglas.weston@greendot.org www.greendot.org	53-60, 72
Generation Schools	New York City, NY (as of Dec 2010), with plans for expansion to Colorado	Furman Brown, founder (347) 417-5323 furman@generationschools.org www.generationschools.org	53, 60-64, 65

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OTHER NONPROFITS/DISTRICTS WHOSE WORK WE DESCRIBE

NAME	WEBSITE	PAGE NO.
Woodrow Wilson Teaching Fellows Program	www.wwteachingfellowship.org	26
Educational Testing Service (ETS)	www.ets.org/pathwise	32
Teacher U	www.teacheru.org	27, 32-33
The New Teacher Project (TNTP)	www.tntp.org	27, 33-34, 46, 73, 75, 77, 79
Duval County Public Schools and The Schultz Center for Teaching and Leadership	www.duvalschools.org schultzcenter.org	35-37, 76
NYC Leadership Academy	www.nycleadershipacademy.org	49, 68
Effective Practice Incentive Community (EPIC)	http://epic.nlns.org	65-66
Atlanta Public Schools	www.atlanta.k12.ga.us/atlantaps/site/default.asp	49, 76-78
Denver Public Schools	www.dpsk12.org	49, 66, 70, 72, 76, 79-81

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ADDITIONAL ORGANIZATIONS MENTIONED

NAME	WEBSITE	PAGE NO.
Teach for America (TFA)	www.teachforamerica.org	13, 46, 77, 79
Dallas Baptist University	www.dbu.edu	25
Southern Methodist University	www.smu.edu	25
The University of Texas—Pan-American	www.utpa.edu	25
The University of Texas at Austin	www.utexas.edu	25
Alverno College	www.alverno.edu	26
Emporia State University (ESU) Teachers College	www.emporia.edu/teach	26
The University of Virginia Curry School of Education	curry.virginia.edu	26
Stanford University's Teacher Education Program	suse-step.stanford.edu	26
Achievement First	www.achievementfirst.org	64
Uncommon Schools	www.uncommonschools.org	33, 64
Aspire Public Schools	www.aspirepublicschools.org	64
Big Picture Public Schools	www.bigpicture.org	64
Knowledge is Power Program (KIPP)	www.kipp.org	64
Mastery Charter Schools	www.masterycharter.org	64, 72
First Things First	www.irre.org/about-first-things-first	64
Talent Development	web.jhu.edu/CSOS/tdhs/index.html	64
Career Academies	www.mdrc.org/project_29_1.html	64
Early College High Schools	www.earlycolleges.org	64
Teacher Advancement Program (TAP)	www.tapsystem.org	72

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OTHER RESOURCES FOR INFORMATION RELEVANT TO TEACHING QUALITY

NAME	WEBSITE	PAGE NO.
National Council on Teacher Quality	www.nctq.org/p	6, 25
Learning Forward	www.learningforward.org/index.cfm	37
National Commission on Teaching and America's Future	www.nctaf.org/resources/related_links/teacher_education	37
National Board for Professional Teaching Standards	www.nbpts.org	37
The U.S. Department of Education "Blue Ribbon" status awards	www2.ed.gov/programs/nclbbrs/index.html	64-65
National Association of Secondary School Principals "Breakthrough High Schools" initiative	www.principals.org/tabid/2066/default.aspx	65
National Forum to Accelerate Middle-Grades Reform "Schools to Watch" initiative	www.schoolstowatch.org	65
NewSchools Venture Fund	newschools.org	65
SeaChange Capital Partners	www.seachangecap.org	65
The Strategic Management of Human Capital initiative at the University of Wisconsin	www.smhc-cpre.org/resources	76
Annenberg Institute for School Reform	www.participedia.net/wiki/Annenberg_Institute_for_School_Reform	76
Center for Reinventing Public Education at the University of Washington	www.crpe.org/cs/crpe/print/csr_docs/home.htm	76

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REFERENCES

[1] Swanson, C. B. (2010). Progress postponed: Graduation rate continues decline. *Education Week, Diplomas Count 2010, Graduation by the Numbers: Putting Data to Work for Student Success,* 29(34), 22-30.

[2] Greene, J. P. & Forster, G. (2003). *Public high school graduation and college readiness rates in the United States.* New York: Center for Civic Innovation, Manhattan Institute. Retrieved October 5, 2010, from http://www.manhattan-institute.org/pdf/ewp_03.pdf.

[3] Parsad, B., Lewis, L., & Greene, B. (2003, November). *Remedial education at degree- granting postsecondary institutions in fall 2000: Statistical analysis report.* Washington, DC: U.S. Department of Education, National Center for Education Statistics, NCES 2004-010. Retrieved October 6, 2010, from http://nces.ed.gov/pubs2004/2004010.pdf.

[4] Baum, S., & Ma, J. (2007). *Education pays: The benefits of higher educations for individuals and society.* Washington, DC: College Board. Retrieved January 26, 2010, from http://www.collegeboard.com/prod_downloads/about/news_info/trends/ed_pays_2007.pdf; McKinsey & Company. (2009, April). *The economic impact of the achievement gap in America's schools.* Retrieved January 26, 2010, from http://www.mckinsey.com/App_Media/Images/Page_Images/Offices/SocialSector/PDF/achievement_gap_report.pdf; Lochner, L. J., & Moretti, E. (2001, November). *The effect of education on crime: Evidence from prison inmates, arrests, and self-reports.* National Bureau of Economic Research. Working Paper 8605. Cambridge, MA. Retrieved September 27, 2010, from http://www.nber.org/papers/w8605.pdf; Wallace, W. S. Commanding General. (2008, October). *An imminent and menacing threat to national security.* TRADOC Information Pamphlet. U.S. Army Training and Doctrine Command. http://www.tradoc.army.mil/PAO/TNSarchives/June%202008/060208-1.html.

[5] Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1), 1-44. Retrieved August 11, 2008, from http://epaa.asu.edu/ojs/article/view/392/515; Nye, B., Konstantopoulos, S., & Hedges, L.V. (2004). How large are teacher effects? *Educational Evaluation and Policy Analysis*, 26(3), 237-257; Rivkin, S.G., Hanushek, E. A., & Kain, J. E. (2005, March). Teachers, schools, and academic achievement. *Econometrica*, 73(2), 417-458. Retrieved January 25, 2010, from http://www.econ.ucsb.edu/~jon/Econ230C/HanushekRivkin.pdf.

[6] Marzano, R. J. (2000). *A new era of school reform: Going where the research takes us.* Prepared for Mid-Continent Research for Education and Learning (McREL). Retrieved August 26, 2010, from http://www.mcrel.org/PDF/SchoolImprovementReform/5002RR_NewEraSchoolReform.pdf; Rivkin, S.G., Hanushek, E. A., & Kain, J. E. (2005, March). Teachers, schools, and academic achievement. *Econometrica*, 73(2), 417-458; Sanders, W. L. & J.C. Rivers. (1996). *Research project report: Cumulative and residual effects of teachers on future student academic achievement.* Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center. Retrieved July 31, 2009, from http://www.mccsc.edu/~curriculum/cumulative and residual effects of teachers.pdf.

[7] Nye, B., Konstantopoulos, S., & Hedges, L.V. (2004). How large are teacher effects? *Educational Evaluation and Policy Analysis, 26*(3), 237-257.

[8] Sanders, W. L. & J.C. Rivers. (1996). *Research project report: Cumulative and residual effects of teachers on future student academic achievement.* Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center. Retrieved July 31, 2009, from http://www.mccsc.edu/~curriculum/cumulative and residual effects of teachers.pdf.

[9] Goe, L., Bell, C., & Little, O. (2008, June). *Approaches to evaluating teacher effectiveness: A research synthesis.* Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved September 28, 2010, from http://www.tqsource.org/publications/EvaluatingTeachEffectiveness.pdf; Tucker, P. D., & Stronge, J. H. (2005). *Linking teacher evaluation and student learning.* Alexandria, VA: Association for Supervision and Curriculum Development.

[10] Camara, W. J., & Echternacht, G. (2000). *The SAT I and high school grades: Utility in predicting success in college.* The College Board. Retrieved September 28, 2010, from http://professionals.collegeboard.com/profdownload/pdf/rn10_10755.pdf; Kuncel, N., & Hezlett, S. A. (2007). Standardized tests predict graduate students' success. *Science,* 315, 1080-1081; Silver, D., Saunders, M., & Zarate, E. (2008). *What factors predict high school graduation in the Los Angeles unified school district?* California Dropout Research Project Report #14. Retrieved September 28, 2010, from http://www.hewlett.org/uploads/files/WhatFactorsPredict.pdf.

[11] Allensworth, E., Ponisciak, S., & Mazzeo, C. (2009, June). *The schools teachers leave: Teacher mobility in Chicago public schools.* Con-sortium on Chicago School Research. Urban Education Institute at The University of Chicago. Retrieved September 28, 2010, from http://ccsr.uchicago.edu/publications/CCSR_Teacher_Mobility.pdf; Futernick, K. (2007). *A possible dream: Retaining California teachers so all students learn.* The Center for Teaching Quality. Sacramento: The California State University. Retrieved September 28, 2010, from http://www.calstate.edu/teacherquality/documents/possible_dream_exec.pdf; Ingersoll, R.M. (2004). *Why do high-poverty schools have difficulty staffing their classrooms with qualified teachers?* Washington, DC: Center for American Progress. Retrieved September 28, 2010,

Pre-release: Do not cite or circulate without the permission of the authors.

from http://www.americanprogress.org/kf/ingersoll-final.pdf; Ingersoll, R., & Perda, D. (2009). *The mathematics and science teacher shortage: Fact and myth*. CPRE Research Report #RR-62. Consortium for Policy Research in Education, University of Pennsylvania. Retrieved October 7, 2010, from http://www.cpre.org/images/stories/cpre_pdfs/math%20science%20shortage%20paper%20march%202009%20final.pdf.

[12] Ingersoll, R. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal,* 38(3), 499-534.

[13] Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1), 1-44. Retrieved August 11, 2008, from http://epaa.asu.edu/ojs/article/view/392/515; Goe, L. (2007, October). *The link between teacher quality and student outcomes: A research synthesis*. National Comprehensive Center for Teacher Quality: Washington, D. C. Retrieved December 15, 2009, from http://www.tqsource.org/publications/LinkBetweenTQandStudentOutcomes.pdf; Rice, J. K. (2003). *Teacher quality: Understanding the effectiveness of teacher attributes*. Washington, DC: Economic Policy Institute. Retrieved from ERIC database. (ED 480858).

[14] "Pedagogy" is the art or method of teaching.

[15] Mayer, D. P., Mullens, J. E., Moore, M. T., & Ralph, J. (2000). *Monitoring school quality: An indicators report.* Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved October 7, 2010, from http://nces.ed.gov/pubs2001/2001030.pdf.

[16] Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, 8(1), 1-44. Retrieved August 11, 2008, from http://epaa.asu.edu/ojs/article/view/392/515; Goe, L. (2007, October). *The link between teacher quality and student outcomes: A research synthesis*. National Comprehensive Center for Teacher Quality: Washington, D. C. Retrieved December 15, 2009, from http://www.tqsource.org/publications/LinkBetweenTQandStudentOutcomes.pdf; Hanushek, E. A., Kain, J. F., O'Brien, D. M., & Rivkin, S. G. (2005). *The market for teacher quality*: NBER Working Paper No. 11154. Retrieved from ERIC database. (ED 490863); Kane, T. J., Rockoff, J. E., & Staiger, D. O. (2006). *What does certification tell us about teacher effectiveness? Evidence from New York City*. NBER Working Paper No. 12155. New York: National Bureau of Economic Research. Retrieved November 4, 2010, from http://www.dartmouth.edu/~dstaiger/Papers/nyc%20fellows%20march%202006.pdf; Rice, J. K. (2003). *Teacher quality: Understanding the effectiveness of teacher attributes*. Washington, DC: Economic Policy Institute. Retrieved from ERIC database. (ED 480858); Rivkin, S. G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica,* 73(2), 417-458.

[17] Hanushek, E. A., Kain, J. F., O'Brien, D. M., & Rivkin, S. G. (2005). *The market for teacher quality*: NBER Working Paper No. 11154. Retrieved from ERIC database. (ED 490863).

[18] Ingersoll, R. M. (2003, September). *Is there really a teacher shortage? A research report.* Center for the Study of Teaching and Policy. Retrieved September 27, 2010, from http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf.

[19] Ingersoll, R. M. (2009). *Teacher shortages and teacher retention*. The Consortium for Policy Research in Education, University of Pennsylvania. Retrieved November 8, 2010, from http://www.vacte.org/VACTE%20Talk.ppt.

[20] Barnes, G., Crowe, E., & Schaefer, B. (2007, June). *The cost of teacher turnover in five school districts: A pilot study*. National Commission on Teaching and America's Future. Retrieved October 2, 2010, from http://www.nctaf.org/resources/demonstration_projects/turnover/documents/CTTFullReportfinal.pdf.

[21] Auguste, B., Kihn, P., Miller, M. (2010, September). *Closing the talent gap: Attracting and retaining top-third graduates to careers in teaching: An international and market research-based perspective*. McKinsey & Company. Retrieved September 29, 2010, from http://www.mckinsey.com/clientservice/Social_Sector/our_practices/Education/Knowledge_Highlights/~/media/Reports/SSO/Closing_the_talent_gap.ashx.

[22] Hanushek, E. A., & Rivkin, S. G. (2003). How to improve the supply of high quality teachers. *Brookings Papers on Education Policy*. Washington, D.C.: The Brookings Institution.

[23] Lakdawalla, D. (2001). *The declining quality of teachers*. Working Paper 8263, Cambridge, MA: National Bureau of Economic Research. Retrieved November 8, 2010, from http://www.nber.org/papers/w8263.pdf.

[24] Flyer, F., & Rosen, S. (1997). The new economics of teachers and education. *Journal of Labor Economics,* 15 (1), S104-S139.

[25] Ferguson, R. F., & Ladd, H. F. (1996). How and why money matters: An analysis of Alabama schools. In H.F. Ladd (Ed.), *Holding schools accountable: Performance based reform in education*. Washington, DC: Brookings Institution Press; Rice, J. K. (2003). *Teacher quality: Understanding the effectiveness of teacher attributes*. Washington, DC: Economic Policy Institute. Retrieved from ERIC database. (ED 480858); Wayne, A. & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, 73(1), 89-122.

[26] McKinsey & Company. (2007). *How the world's best-performing school systems come out on top*. Retrieved November 8, 2010, from http://www.mckinsey.com/App_Media/Reports/SSO/Worlds_School_Systems_Final.pdf.

[27] See reference 21.

[28] Teach for America. (2009). *Alumni social impact report – 2009*. Retrieved November 8, 2010, from: http://www.teachforamerica.org/mission/documents/2009_ASIR_Final.pdf.

[29] Heilig, J. V., & Jez, S. J. (2010). *Teach for America: A review of the evidence*. East Lansing, MI: The Great Lakes Center for Education Research & Practice. Retrieved November 8, 2010, from: http://greatlakescenter.org/docs/Policy_Briefs/Heilig_TeachForAmerica.pdf.

Pre-release: Do not cite or circulate without the permission of the authors.

[30] Committee on the Study of Teacher Preparation Programs in the United States. National Research Council. (2010). *Preparing teachers: Building evidence for sound policy.* Washington, DC: The National Academies Press. Retrieved August 18. 2010, from http://www.nap.edu/catalog.php?record_id=12882#toc.

[31] Levine, A. (2006). *Educating school teachers.* The Education Schools Project. Retrieved September 29, 2010, http://www.stanford.edu/group/step/new-step-website/FrontPgFiles_otherSupportingDocs/Educating_Teachers_Report_ArtLevine.pdf; Zeichner, K. (2002). Beyond traditional structures of student teaching. *Teacher Education Quarterly*, Spring 2002, 59-64; Zeichner, K. (2010). Rethinking the connections between campus courses and field experiences in college-and university-based teacher education. *Journal of Teacher Education*, 61, 89-99.

[32] Personal communications with teachers and nonprofit leaders.

[33] Levine, A. (2006). *Educating school teachers.* The Education Schools Project. Retrieved September 29, 2010, http://www.stanford.edu/group/step/new-step-website/FrontPgFiles_otherSupportingDocs/Educating_Teachers_Report_ArtLevine.pdf.

[34] Green, M., & Ellis, P. (1997). Impact of an evidence-based medicine curriculum based on adult learning theory. *Journal of General Internal Medicine*, 12, 742-750; Knowles, M. (1984). Introduction: The art and science of helping adults learn. In M. Knowles and associates (Eds.), *Andragogy in Action: Applying Modern Principles of Adult Learning* (pp. 1-22). San Francisco: Jossey-Bass Publishers.

[35] See reference 33. (Page 41).

[36] See reference 18.

[37] Ingersoll, R. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal,* 38(3), 499-534; Ingersoll, R., & Perda, D. (2009). *The mathematics and science teacher shortage: Fact and myth.* CPRE Research Report #RR-62. Consortium for Policy Research in Education, University of Pennsylvania. Retrieved October 7, 2010, from http://www.cpre.org/images/stories/cpre_pdfs/math%20science%20shortage%20paper%20march%202009%20final.pdf; MetLife, Inc. (2004-2005). *The MetLife survey of the American teacher: Transitions and the role of supportive relationships.* New York: Metropolitan Life Insurance Company. Retrieved May 7, 2010, from http://www.eric.ed.gov/PDFS/ED488837.pdf; MetLife, Inc. (2006). *The MetLife survey of the American teacher: Expectations and Experiences.* New York: Metropolitan Life Insurance Company. Retrieved May 7, 2010, from http://www.eric.ed.gov/PDFS/ED496558.pdf.

[38] See reference 11.

[39] Laschinger, S., & Heather, K. (2008). Effect of empowerment on professional practice environments, work satisfaction, and patient care quality: Further testing the nursing worklife model. *Journal of Nursing Care Quality*, 23 (4), 322-330.

[40] Agho, A. O., Mueller, C. W., & Price, J. L. (1993). Determinants of employee job satisfaction: An empirical test of a causal model. *Human Relations*, 46 (8), 1007-1027.

[41] Personal communication with new teachers in CA, June 23, 2010.

[42] Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad.* Washington, D.C. National Staff Development Council. Retrieved September 29, 2010, from http://www.srnleads.org/resources/publications/pdf/nsdc_profdev_short_report.pdf

[43] Ibid.

[44] Knight, J. (2000). *Another damn thing we've got to do: Teacher perception of professional development.* Paper presented at the annual meeting of the American Educational Research Association at New Orleans, LA, April 24-28, 2000. Retrieved from ERIC database. (ED444969).

[45] Longenecker, C. O. (2007). The training practices of results-oriented leaders. *Industrial and Commercial Training*, 39(7), 361-367; Longenecker, C. O., & Ariss, S. S. (2005). Why service organizations fail to get desired results: The front line managers' perspective. *International Journal of Effective Management*, 2(1), 6-16.

[46] Weisberg, D., Sexton, S., Mulhern, J., & Keeling, D. (2009). *The widget effect.* Brooklyn, NY: The New Teacher Project. Retrieved September 20, 2010, from http://widgeteffect.org/downloads/TheWidgetEffect.pdf

[47] Aguinis, H., & Kraiger, K. (2009). Benefits of training and development for individuals and teams, organizations, and society. *Annual Review of Psychology*, 60, 451–474. Also available online at http://www.annualreviews.org/doi/pdf/10.1146/annurev.psych.60.110707.163505.

[48] Mason, L. (1999). Lead the way to increased productivity. *Outlook*, *3*, 50–55; Peterson, A. (1999). Reap the benefits of creative training solutions. *Credit Union Magazine*, 65(10), 29–30.

[49] Dee, T. S. (2004). Teachers, race, and student achievement in a randomized experiment. *The Review of Economics and Statistics*, 86(1), 195-210; Dilworth, M. E. (Ed.). (1992). *Diversity in teacher education: New expectations*. San Francisco: Jossey-Bass; Fenwick, L. T. (2001). *Patterns of excellence: Policy perspectives on diversity in teaching and school leadership.* Atlanta, GA: The Southern Education Foundation. Retrieved September 8, 2010, from http://www.sefatl.org/pdf/Patterns%20or%20Excellence1.pdf.

[50] Ibid.

[51] Dee, T. S. (2006). Teachers and the gender gaps in student achievement. *Journal of Human Resources,* XLII(3), 528-554. Also available online at http://www.swarthmore.edu/Documents/academics/economics/dee_jhr2007.pdf.

[52] National Center for Education Statistics. (2010). *Characteristics of public, private, and bureau of Indian education elementary and secondary school teachers in the United States: Results from the 2007-08 schools and staffing survey: Table 3: Percentage distribution of school teachers by age category, average and median age of teachers, and percentage distribution of teachers, by sex, school type, and selected school characteristics: 2007-08.* Retrieved November 16, 2010, from http://nces.ed.gov/pubs2009/2009324/tables/sass0708_2009324_t12n_03.asp.

Pre-release: Do not cite or circulate without the permission of the authors.

[53] Ingersoll, R., & Perda, D. (2009). *The mathematics and science teacher shortage: Fact and myth.* CPRE Research Report #RR-62. Consortium for Policy Research in Education, University of Pennsylvania. Retrieved October 7, 2010, from http://www.cpre.org/images/stories/cpre_pdfs/math%20science%20shortage%20paper%20march%202009%20final.pdf.

[54] Personal communications with Ben Fenton from New Leaders New Schools, September 2010; Cristina De Jesus from Green Dot, August 2010; Mark Mannella from KIPP, May 2010.

[55] Duckworth, A. L., Quinn, P.D., & Seligman M. (2009) Positive predictors of teacher effectiveness. *Journal of Positive Psychology,* 4(6), 540-547.

[56] Alliance for Excellent Education. (2009, February). *Fact sheet: Adolescent literacy.* Retrieved September 8, 2010, from http://www.all4ed.org/files/AdolescentLiteracyFactSheet.pdf; Brettschneider, A. (2009). Collaborative learning within & between disciplines: A hybrid professional learning community. In I. Gibson et al. (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2009* (pp. 2746-2753). Chesapeake, VA: AACE. Retrieved August 10, 2010, from http://www.editlib.org/p/31055.

[57] Corcoran, T., & Silander, M. (2009). Instruction in high schools: The evidence and the challenge. *The Future of Children*, 19 (1), 157-183.

[58] Uncommon Schools. (2006). *Without great teachers, nothing else matters.* Retrieved November 8, 2010, from http://www.uncommonschools.org/usi/aboutUs/taxonomy.php.

[59] See reference 33. (Page 28).

[60] Depending on the residency program, obtaining the master's degree may be done in the same year as the school-based residency, or may be a two-year program, with the degree granted after the teacher's first full year as teacher of record.

[61] Presentation from *Residency for Residencies Program.* Chicago, May 25-26, 2010.

[62] Personal communication with former Boettcher Resident, July 2010.

[63] Boettcher Teachers Program impact data is from an evaluation conducted by the Evaluation Center of the University of Denver's School of Education and Human Development. Data received through personal communications with Anissa Listak, March-April 2010.

[64] Ibid.

[65] Barnes, G., Crowe, E., & Schaefer, B. (2007, June). *The cost of teacher turnover in five school districts: A pilot study.* National Commission on Teaching and America's Future. Retrieved October 2, 2010, from http://www.nctaf.org/resources/demonstration_projects/turnover/documents/CTTFullReportfinal.pdf; Ingersoll, R. M. (2003, September). *Is there really a teacher shortage? A research report.* Center for the Study of Teaching and Policy. Retrieved September 27, 2010, from http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf.

[66] Personal communication with Sonia Mathew, August 5, 2010.

[67] Five year retention rates for founding programs come from personal communication with Anissa Listak, October 5, 2010.

[68] See reference 18.

[69] Allensworth, E., Ponisciak, S., & Mazzeo, C. (2009, June).*The schools teachers leave: Teacher mobility in Chicago public schools.* Consortium on Chicago School Research. Urban Education Institute at the University of Chicago. Retrieved September 28, 2010, from http://ccsr.uchicago.edu/publications/CCSR_Teacher_Mobility.pdf

[70] Boston teacher's retention rate comes from Boston Municipal Research Bureau. (2006). *BPS teacher retention faces challenges: Strategies focusing on collaboration and support show early success.* Retrieved November 8, 2010, http://www.bmrb.org/content/upload/Teachers.pdf.

[71] Three-year retention rate derived from 84% one-year retention rate, which comes from: Reichardt, R. (2008). *Teacher attrition and teacher diversity in Colorado.* State of Teaching in Colorado. Retrieved November 8, 2010, from http://www.qualityteaching.org/Documents/3_teacher_attrition_diversity.pdf.

[72] Berry, B., Montgomery, D., Curtis, R., Hernandez, M., Wurtzel, J., & Snyder, J. (2008, August). *Creating and sustaining Urban Teacher Residencies: A new way to recruit, prepare, and retain effective teachers in high-needs districts.* Retrieved September 30, 2010, from http://www.utrunited.org/EE_assets/docs/UTR_Aspen_CTQ_Final_8-19-08.pdf.

[73] Personal communication with Anissa Listak, September 23, 2010.

[74] Personal communications with Anissa Listak and Sonia Mathew, May-June 2010.

[75] Ibid.

[76] See reference 72.

[77] See reference 63.

[78] Retention numbers and principal satisfaction data come from personal communications with Sonia Mathew, August 5, 2010; Anissa Listak, November, 5, 2010.

[79] National five-year retention rates from Ingersoll, R. M. (2003, September). *Is there really a teacher shortage? A research report.* Center for the Study of Teaching and Policy. Retrieved September 27, 2010, from http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf.

[80] See reference 20.

[81] Five year retention rates from founding programs come from personal communication with Anissa Listak, October 5, 2010.

[82] See reference 30.

[83] Ibid.

[84] Personal communication with Kate Walsh, November 17, 2010.

Pre-release: Do not cite or circulate without the permission of the authors.

[85] Personal communications with Connie Bond, Spring 2010.

[86] Ibid.

[87] Ibid.

[88] Beder, H. W., & Darkenwald, G. G. (1982). Differences between teaching adults and pre-adults: Some propositions and findings. *Adult Education*, 32 (2), 142-155. Retrieved from ERIC database. (EJ 262 809); Gorham, J. (1985). Differences between teaching adults and pre-adults: A closer look. *Adult Education Quarterly*, 35 (4), 194-209. Retrieved from ERIC database. (EJ 317 833); Knowles, M. (1984). Introduction: The art and science of helping adults learn. In M. Knowles and associates (Eds.), *Andragogy in Action: Applying Modern Principles of Adult Learning* (pp. 1-22*)*. San Francisco: Jossey-Bass Publishers.

[89] Personal communications with New Teacher Center staff, June-July 2010.

[90] Celano, S. M. (2010). The relationship between mentor-mentee trust and self-perceptions of efficacy among first year teachers. *Dissertation Abstracts International Section A: Humanities and Social Sciences,* 71(1-A), pp. 33; Conchie, S. M., & Donald, I. J. (2008). The functions and development of safety-specific trust and distrust. *Safety Science,* 46, 92-103; Edmondson, A. C. (2004). Psychological safety, trust, and learning in organizations: A group-level lens. In R. M. Kramer & K. S. Cook. (Eds.), *Trust and distrust in organizations: Dilemmas and approaches.* The Russell Sage Foundation series on trust (pp. 239-272). New York, NY, US: Russell Sage Foundation.

[91] Glazerman, S., Isenberg, E., Dolfin, S., Bleeker, M., Johnson, A., Grider, M., & Jacobus, M. (2010, June). *Impacts of comprehensive teacher induction: Final results from a randomized controlled study* (NCEE 2010-4027). Prepared by Mathematica Policy Research for the Institute of Education Sciences (IES). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved September 20, 2010, from http://ies.ed.gov/ncee/pubs/20104027/pdf/20104027.pdf.

[92] Personal communications with Ellen Moir, June 2010.

[93] New Teacher Center. (2010). *New Teacher Center launching the next generation.* Retrieved November 8, 2010, from http://ronny-dwijayanto-web-proxy.appspot.com/www.newteachercenter.org/index.php.

[94] Personal communications with New Teacher Center staff, June 2010.

[95] See reference 96.

[96] Villar, A., & Strong, M. (2007). Is mentoring worth the money? A benefit-cost analysis and five-year rate of return of a comprehensive mentoring program for beginning teachers. *ERS Spectrum*, 25(3), 1-17. Also note that since all new teachers went through the program, there was no control group; the new teachers were therefore compared with 4th year teachers, given data showing that more experienced teachers are normally more effective than new teachers.

[97] See reference 15.

[98] Villar, A., & Strong, M. (2007). Is mentoring worth the money? A benefit-cost analysis and five-year rate of return of a comprehensive mentoring program for beginning teachers. *ERS Spectrum*, 25(3), 1-17.

[99] See reference 91.

[100] See references 18 and 20.

[101] See reference 98.

[102] See reference 18.

[103] As discussed in the intro, we feel the longer timeframe is more relevant because 1) it reduces the influence of business cycles such as the recent recession, and 2) it better matches the time frame over which research indicates teachers reach peak effectiveness.

[104] Smith, T., & Ingersoll, R. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal*, 41(3), 681-714.

[105] Sources of cost data include 1) site visits in June and July, and 2) cost benefit study from Villar, A., & Strong, M. (2007). Is mentoring worth the money? A benefit-cost analysis and five-year rate of return of a comprehensive mentoring program for beginning teachers. *ERS Spectrum*, 25(3), 1-17.

[106] See reference 98.

[107] See reference 91.

[108] See reference 98.

[109] See reference 18.

[110] See reference 98.

[111] Personal communication with Norman Atkins, April 9, 2010.

[112] Personal communication with Stephanie Lo, October 15, 2010.

[113] Personal communication with Stephanie Lo, November 16, 2010.

[114] The New Teacher Project. (2010). *Our services: Training & certification.* Retrieved November 8, 2010, from http://www.tntp.org/index.php/services/training-and-certification/#Certification.

[115] The New Teacher Project. (2008). *Certification with an impact: The Louisiana practitioner teacher program.* Presentation at NCEI / NCAC Annual Conference. Retrieved November 8, 2010, from http://www.teach- now.org/Lin.ppt

[116] Personal communication with Amy Etten, November 16, 2010.

[117] Danielson, C., & McGreal, T. L. (2000). *Teacher evaluation to enhance professional practice.* Princeton, NJ: Educational Testing Service; Goe, L., Bell, C., & Little, O. (2008). *Approaches to evaluating teacher effectiveness: A research synthesis.* Washington, DC: National

Pre-release: Do not cite or circulate without the permission of the authors.

Comprehensive Center for Teacher Quality. Retrieved November 7, 2010, from http://www.tqsource.org/publications/EvaluatingTeachEffectiveness.pdf.

[118] Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., & Orphanos, S. (2009).*Professional learning in the learning profession: A status report on teache development in the United States and abroad*. National Staff Development Council. Retrieved November 7, 2010, from http://www.srnleads.org/resources/publications/pdf/nsdc_profdev_short_report.pdf; Porter, A. C., Garet, M. S., Desimone, L. M., & Birman, B. F. (2003). Providing effective professional development: Lessons from the Eisenhower program. *Science Educator*, 12(1), 23-40.

[119] Broomfield, R. (1996). A quasi-experimental research to investigate the retention of basic cardiopulmonary resuscitation skills and knowledge by qualified nurses following a course in professional development. *Journal of Advanced Nursing,* 23(5), 1016-1023.

[120] See reference 42.

[121] See reference 118.

[122] Jackson, C. K., & Bruegmann, E. (2009). Teaching students and teaching each other: The importance of peer learning for teachers. *American Economic Journal: Applied Economics,* 1(4), 85–108

[123] Porter, A. C., Garet, M. S., Desimone, L. M., & Birman, B. F. (2003). Providing effective professional development: Lessons from the Eisenhower program. *Science Educator*, 12(1), 23-40.

[124] Schultz Center for Teaching and Leadership. (2010). *Questions & answers about the Schultz Center.* Retrieved October 4, 2010, from http://www.schultzcenter.org/history.shtml.

[125] Schultz Center for Teaching and Leadership. (2010). *Professional development programs*. Retrieved November 9, 2010, from http://www.schultzcenter.org/trainingprograms.shtml.

[126] Personal communication with Dawn Wilson, April 15, 2010.

[127] Community Training and Assistance Center. (2008, January). *Focus on literacy: Professional development audit.* Retrieved October 4, 2010, from http://www.ctacusa.com/PDFs/Rpt-FocusOnLiteracy-2008.pdf.

[128] Personal communication with Dawn Wilson and Nicole Welsh, November 16, 2010.

[129] MetLife, Inc. (2004-2005). *The MetLife survey of the American teacher: Transitions and the role of supportive relationships*. New York: Metropolitan Life Insurance Company. Retrieved May 7, 2010, from http://www.eric.ed.gov/PDFS/ED488837.pdf; MetLife, Inc. (2006). *The MetLife survey of the American teacher: Expectations and Experiences*. New York: Metropolitan Life Insurance Company. Retrieved May 7, 2010, from http://www.eric.ed.gov/PDFS/ED496558.pdf.

[130] See reference 40.

[131] Constable J. F., & Russell, D.W. (1986). The effect of social support and the work environment upon burnout among nurses. *Journal of Human Stress,* 12(1), 20-26.

[132] Tracey, J. B., Tannenbaum, S.I., & Kavanagh, M. J. (1995). Applying trained skills on the job: The importance of the work environment. *Journal of Applied Psychology*, 80, 239–252.

[133] Johnson, S. M. (2009). *How best to add value? Strike a balance between the individual and the organization in school reform*. Economic Policy Institute Briefing Paper #249. Retrieved, October 7, 2010, from http://epi.3cdn.net/ac6b7edc2991703d0c_kcm6bnu94.pdf (page 5).

[134] See reference 18.

[135] See reference 53.

[136] See reference 12.

[137] See reference 19.

[138] See reference 20.

[139] Ibid.

[140] Ibid.

[141] See reference 18. (Pages 12-13).

[142] Estimations made based on average class size found from National Center for Education Statistics. (2010). *Schools and Staffing Survey (SASS): Table 8: Average class size for public school teachers in elementary schools, secondary schools, and schools with combined grades, by classroom type and state: 2007-08.* Retrieved November 8, 2010, from http://nces.ed.gov/surveys/sass/tables/sass0708_2009324_t1s_08.asp.

[143] See reference 42.

[144] Lemieux-Charles, L., & McGuire, W. L. (2006). What do we know about health care team effectiveness? A review of the literature. *Medical Care Research and Review*, 63(3), 263-300.

[145] See reference 122.

[146] See reference 69.

[147] Jackson, C. K. (2010). *Match quality, worker productivity and worker mobility: Direct evidence from teachers*. National Bureau of Economic Research. NBER Working Paper No. 15990. Retrieved from ERIC database. (ED 509801).

[148] Coggshall, J. G., Ott, A., & Lasagna, M. (2009). *Retaining teacher talent: Convergence and contradictions in teachers'*

Pre-release: Do not cite or circulate without the permission of the authors.

perceptions of policy reform ideas. Learning Point Associates and Public Agenda. Retrieved from ERIC database. (ED508143); MetLife, Inc. (2004-2005). *The MetLife survey of the American teacher: Transitions and the role of supportive relationships*. New York: Metropolitan Life Insurance Company. Retrieved May 7, 2010, from http://www.eric.ed.gov/PDFS/ED488837.pdf; MetLife. (2006). *The MetLife survey of the American teacher: Expectations and Experiences*. New York: Metropolitan Life Insurance Company. Retrieved May 7, 2010, from http://www.eric.ed.gov/PDFS/ED496558.pdf.

[149] See reference 21.

[150] See reference 69.

[151] Saulny, S. (2010, July 1). Graduation is the goal, staying alive the prize. *The New York Times*. Retrieved October 7, 2010, from http://www.nytimes.com/2010/07/02/us/02chicago.html?_r=1&pagewanted=1.

[152] Louis, K. S., Leithwood, K., Wahlstrom, K. L., Anderson, S. E., Michlin, M., Mascall, B., Gordon, M., Strauss, T., Thomas, E., & Moore, S. (2010). *Learning from leadership: Investigating the links to improved student learning.* Final report of research findings to the Wallace Foundation. Retrieved September 7, 2010, from http://www.cehd.umn.edu/CAREI/Leadership/Learning-from-Leadership_Final-Research-Report_July-2010.pdf.

[153] Farkas, S., Johnson, J., & Duffett, A. (2003). *Rolling up their sleeves: Superintendents and principals talk about what's needed to fix public schools*. New York: Public Agenda. Retrieved October 11, 2010, from http://www.wallacefoundation.org/SiteCollectionDocuments/WF/Knowledge%20Center/Attachments/PDF/rolling_up_their_sleeves.pdf. (Page 39).

[154] Hess, F. M., & Kelly, A. P. (2007). Learning to lead: What gets taught in principal-preparation programs. *Teachers College Record*, 109(1), 244-274.

[155] See reference 152.

[156] Personal communication with NLNS graduate, October 13, 2010.

[157] See reference 153.

[158] Personal communications with principals during NLNS site visits, May-June 2010.

[159] Personal communication with Kevin North, March 12, 2010.

[160] See reference 152.

[161] Branch, G.F., Hanushek, E.A., & Rivkin, S.G. (2009). *Estimating principal effectiveness*. Working Paper 32. National Center for Analysis of Longitudinal Data in Education Research. Retrieved September 21, 2010, from http://www.caldercenter.org/upload/CALDER-Working-Paper-32_FINAL.pdf.

[162] See reference 152.

[163] Hirsch, E. (2005). *Listening to the experts: A report on the 2004 South Carolina teacher working conditions survey.* Chapel Hill, NC: Southeast Center for Teaching Quality. Retrieved September 28, 2009, from http://www.teachingquality.org/pdfs/TWC_SCFinalReport.pdf; Wynn, S. R., Carboni, L. W., & Patall, E. A. (2007). Beginning teachers' perceptions of mentoring, climate, and leadership: Promoting retention through a learning communities perspective. *Leadership and Policy in Schools,* 6 (3), 209-229.

[164] Personal communications with NLNS staff, October 2010.

[165] Personal communication with NLNS staff, November 2, 2010.

[166] New Leaders for New Schools. (2010). *Become a new leader: Frequently asked questions*. Retrieved October 12, 2010, from http://www.nlns.org/Faq.jsp.

[167] Personal communications with Ben Fenton, November 2010.

[168] Personal communications with NLNS staff, May-July 2010.

[169] Martorell, F., Heaton, P., Gates, S. M., & Hamilton, L. S. (2010, February). *Preliminary findings from the New Leaders for New Schools evaluation*. RAND working paper WR-739-NLNS. Retrieved October 12, 2010, from http://www.rand.org/pubs/working_papers/2010/RAND_WR739.pdf.

[170] Personal communications with NLNS staff August-September 2010.

[171] Personal communication with NLNS staff, September 20, 2010.

[172] Personal communication with Ben Fenton and Julie Horowitz, September 29, 2010.

[173] Internal report from RAND to New Leaders for New Schools: Martorell, F., Heaton, P., Gates, S.M., & Hamilton, L.S. (2010). *Preliminary findings through school-year 2009*. Santa Monica, CA: RAND, DRR-5226-NLNS. Based on graduation data from Chicago. These high school non-test outcomes differ for each NLNS site and therefore cannot be aggregated nationally.

[174] Personal communication with NLNS staff, September 20, 2010.

[175] Personal communication with Ben Fenton, November 2, 2010.

[176] Darling-Hammond, L., LaPointe, M., Meyerson, D., Orr. M. T., & Cohen, C. (2007). *Preparing school leaders for a changing world: Lessons from exemplary leadership development programs*. Stanford, CA: Stanford University, Stanford Educational Leadership Institute.

[177] Personal communication with Julie Horowitz, August 25, 2010.

[178] See reference 169. Note: RAND impact estimates are pooled across grades 3-8; internal cost per impact analysis

Pre-release: Do not cite or circulate without the permission of the authors.

assumes these impacts are generally consistent between elementary and middle school grades.

[179] Personal communications with NLNS staff, August - September 2010.

[180] Personal communications with NLNS staff, August - September 2010.

[181] Personal communications with NLNS staff, August - September 2010.

[182] Personal communications with Sandra Stein, April 15, 2010 and November 15, 2010.

[183] For a short, helpful definition and discussion of whole school reform see Tucci, T. N. (2009). *Whole school reform: Transforming the nation's low performing schools.* Alliance for Excellent Education Policy Brief. Retrieved November 9, 2010, from http://www.all4ed.org/files/PolicyBriefWholeSchoolReform.pdf.

[184] The Center for Education Reform (2009, February). *National charter school and enrollment statistics 2009.* Retrieved August 27, 2010, from http://www.edreform.com/_upload/CER_charter_numbers.pdf; National Center for Education Statistics (2008). *Digest of education statistics 2008: Enrollment in educational institutions, by level and control of institution: Selected years, fall 1980 through fall 2008.* Retrieved August 27, 2010, from http://nces.ed.gov/programs/digest/d08/tables/dt08_002.asp.

[185] Center for Research on Education Outcomes (CREDO). (2009). *Multiple choice: Charter school performance in 16 state*s. Stanford, CA: Stanford University. Retrieved October 12, 2010, from http://credo.stanford.edu/reports/MULTIPLE_CHOICE_CREDO.pdf; Gleason, P., Clark, M., Tuttle, C. C., & Dwoyer, E. (2010, June). *The evaluation of charter school impacts: Final report.* National Center for Education Evaluation and Regional Assistance (NCEE 2010-4029), Institute of Education Sciences, U.S., Department of Education. Retrieved October 12, 2010, from http://ies.ed.gov/ncee/pubs/20104029/pdf/20104029.pdf; National Assessment of Educational Progress. (2004). *America's charter schools: Results from the NAEP 2003 pilot study.* U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, NCES 2005-456. Retrieved October 12, 2010, from http://nces.ed.gov/nationsreportcard/pdf/studies/2005456.pdf.

[186] Personal communication with Cristina De Jesus, November 15, 2010.

[187] Green Dot. (2010). *About us: The Green Dot mission and vision.* Retrieved October 13, 2010, from http://www.greendot.org/about_us/about_us.

[188] The Green Dot union is the Associación de Maestros Unidos (AMU), a CTA/NEA affiliate. The main teacher's union in LAUSD is the United Teachers of Los Angeles (UTLA).

[189] Personal communications with Cristina De Jesus and other Green Dot staff, August 24, 2010.

[190] Personal communication with Cristina De Jesus, May 24, 2010.

[191] Personal communication with Zachary Levine, November 16, 2010.

[192] Personal communications with Cristina De Jesus and other Green Dot staff, August 24, 2010.

[193] Personal communication with Cristina De Jesus, May 24, 2010.

[194] Personal communication with Cristina De Jesus, May 24, 2010.

[195] Personal communication with Green Dot board chair, May 20, 2010.

[196] Personal communication with Cristina De Jesus, September 2, 2010.

[197] National Center for Education Statistics. (2010). *Schools and staffing survey (SASS): Table 9: Number and percentage of schools that had any 12th-grade students, graduation status and college participation, by school type and selected school characteristics: 2003-04.* Retrieved November 19, 2010, from http://nces.ed.gov/surveys/sass/tables/sass_2004_09.asp.

[198] Green Dot. (2010). *School results.* Retrieved November 17, 2010, from http://www.greendot.org/results/school_results.

[199] Green Dot Public Schools. (2010, August 16). *Locke high school students show impressive gains in all subjects on CST and CAHSEE tests.* Retrieved November 9, 2010, from http://www.greendot.org/locke_high_school_students_show_impressive_gains_in_all_subjects_on_cst_and_cahsee_tests.

[200] Ibid.

[201] Ibid.

[202] Ibid.

[203] Personal communication with Kevin Keelen, November 15, 2010.

[204] Personal communication with Kevin Keelen November 16, 2010.

[205] Personal communication with Zachary Levine, November 16, 2010.

[206] U.S. Census Bureau. (2010, June). *Public education finances 2008.* Retrieved October 14, 2010, from http://www2.census.gov/govs/school/08f33pub.pdf.

[207] Personal communication with Zachary Levine, November 17, 2010.

[208] Personal communication with Zachary Levine, November 16, 2010. (Official public data for LAUSD spend in FY09-11 is not available. However, Green Dot estimated LAUSD's spend from FY09-11 by starting with the FY08 spend per student of $11,357 and assuming LAUSD's public revenue decreased by the same rate as Green Dot's public revenue from FY08 to FY11 – and the spend decreased proportionally).

[209] Personal communication with Zachary Levine, November 16, 2010. (LAUSD's published per student spending is based

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on an average of elementary, middle, and high schools; elementary and middle schools spend less per student, so average per-student high school spending is higher than the overall average).

[210] Personal communication with Zachary Levine, November 16, 2010.

[211] Personal communication with Zachary Levine, November 16, 2010.

[212] Personal communication with Zachary Levine, November 16, 2010.

[213] Personal communication with Cristina De Jesus, September 2, 2010.

[214] Personal communication with Cristina De Jesus, September 2, 2010.

[215] Personal communication with Cristina De Jesus, September 2, 2010.

[216] Personal communication with Zachary Levine, November 17, 2010.

[217] See reference 199.

[218] Ibid.

[219] Ibid.

[220] Personal communication with Furman Brown, September 30, 2010.

[221] Personal communication with Furman Brown, March 11, 2010.

[222] Silva, E. (2009, October). *Teachers at work: Improving teacher quality through school design*. Washington, DC: Education Sector. Retrieved October 14, 2010, from http://www.educationsector.org/sites/default/files/publications/Teachers_at_Work.pdf.

[223] Personal communication with Furman Brown, November 16, 2010.

[224] Generation Schools. (n.d.). *Pilot: Our pilot school: Brooklyn Generation School is recruiting staff and students as it grows.* Retrieved October 14, 2010, from http://www.generationschools.org/pilot/.

[225] Personal communication with Furman Brown, November 16, 2010.

[226] Personal communication with Furman Brown, September 30, 2010.

[227] See reference 19.

[228] Personal communication with Furman Brown, March 16, 2010.

[229] Personal communication with Furman Brown, November 17, 2010.

[230] Personal communication with Furman Brown, November 17, 2010.

[231] Personal communication with Furman Brown, November 17, 2010.

[232] Personal communication with Furman Brown, September 30, 2010.

[233] Personal communication with Furman Brown, September 30, 2010.

[234] Personal communication with Furman Brown, November 16, 2010.

[235] Personal communication with Furman Brown, November 17, 2010

[236] Odden, A., & Archibald, S. (2000). *Reallocating resources: How to boost student achievement without asking for more.* Thousand Oaks, CA: Corwin Press, Inc.

[237] New Leaders for New Schools. (2010). *EPIC/ the effective practice incentive community: Reward, learn from and celebrate public school teachers*. Retrieved October 14, 2010, from http://www.nlns.org/epic.jsp.

[238] Personal communication with Dianne Houghton, March 22, 2010.

[239] Personal communication with John Lent, November 16, 2010.

[240] See reference 21.

[241] Personal communication with Sandra Stein, April 15, 2010.

[242] Synder, T. D.; & Dillow, S. A. (2010, April) *Digest of education statistics 2009*. U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, NCES 2010-013. Retrieved December 7, 2010, from http://nces.ed.gov/pubs2010/2010013.pdf.

[243] U.S. Department of Education. (2009, July 29). Race to the Top Fund. *Federal Register,* 74(144), 37804-37837. Retrieved November 11, 2010, from http://www2.ed.gov/legislation/FedRegister/proprule/2009-3/072909d.pdf.

[244] U.S. Department of Education. (2010). *Appendix B. scoring rubric*. Retrieved November 11, 2010, from http://www2.ed.gov/programs/racetothetop/scoringrubric.pdf.

[245] The White House. (2009). *Promoting innovation, reform, and excellence in America's public schools*. Retrieved November 11, 2010, from http://www.whitehouse.gov/the-press-office/fact-sheet-race-top.

[246] Sawchuk, S., & Maxwell, L. A. (2010, January 26). States vie to stand out in Race to Top proposals: States' aggressive grant bids must run reviewer gantlet. *Education Week*. Retrieved November 11, 2010, from http://www.edweek.org/ew/articles/2010/01/27/19rtt_ep-2.h29.html. .

[247] Maxwell, L. A. & McNeil, M. (2010, April 2). $3.4 billion is left in Race to Top aid: Grants to Del., Tenn. Set dynamic for round 2. *Education Week*. Retrieved November 11, 2010, from http://www.edweek.org/ew/articles/2010/04/02/28stim-rtt_ep.h29.html.

[248] Bureau of Labor Statistics, United States Department of Labor. (2010, January 22). *Economic news release: Union members summary*. Retrieved November 11, 2010, from http://www.bls.gov/news.release/union2.nr0.htm.

[249] McCabe, C. (2010). *NEA members on blueprint: Where is the collaboration?* National Education Association. Retrieved November 11, 2010, from http://hin.nea.org/home/38608.htm.

Pre-release: Do not cite or circulate without the permission of the authors.

[250] A Union of Professionals. (n.d.). *American federation of teachers: AFL-CIO*. Retrieved November 11, 2010, from http://www.aft.org/about/.

[251] Hoxby, C. M. (1996). How teacher's unions affect education production. *The Quarterly Journal of Economics*, 111(3), 617-718.

[252] Steelman, L. C., Powell, B., & Carini, R. M. (2000). Do teacher unions hinder educational performance? Lessons learned from state SAT and ACT scores. *Harvard Educational Review*, 70 (4), 437-466.

[253] For example: Porter, A. C. (1989). External standards and good teaching: The pros and cons of telling teachers what to do. *Educational Evaluation and Policy Analysis,* 11(4), 343-356.

[254] Common Core State Standards Initiative. (2010). *National governors association and state education chiefs launch common state academic standards*. Retrieved December 7, 2010, from http://www.corestandards.org/articles/8- national-governors-association-and-state-education-chiefs-launch-.

[255] Common Core State Standards Initiative. (2010). *In the states*. Retrieved December 7, 2010, from http://www.corestandards.org/in-the-states.

[256] OECD. (2009). Indicator B2: What proportion of national wealth is spent on education? In OECD, *Education at a Glance 2009: OECD Indicators*, (pp. 208-221). OECD Publishing. Retrieved November 9, 2010, from http://www.oecd.org/dataoecd/41/25/43636332.pdf.

[257] OECD. (2009). Indicator D3: How much are teachers paid? In OECD, *Education at a Glance 2009: OECD Indicators*, (pp. 388-403). OECD Publishing. Retrieved November 9, 2010, from http://www.oecd.org/dataoecd/41/25/43636332.pdf.

[258] Hanushek, E. A., & Rivkin, S. G. (2003). *How to improve the supply of high quality teachers*. Brookings Papers on Education Policy. Washington, D.C.: The Brookings Institution. Retrieved November 9, 2010, from http://edpro.stanford.edu/Hanushek/admin/pages/files/uploads/Teacher%20quality.Brookings.pdf.

[259] For a very useful discussion of the incentive effects of shifting salary scales tied to career ladders, see Aldeman, C. (2009, April 20). Ladders of success: Keeping teacher pay on schedule. *Education Sector*. Retrieved November 9, 2010, from http://www.educationsector.org/sites/default/files/publications/CYCT_Teacher_Pay.pdf.

[260] More information on the Teacher Incentive Fund is available at: http://www2.ed.gov/programs/teacherincentive/applicant.html.

[261] Coggshall, J.G., Ott, A., Behrstock, E., & Lasagna, M. (2009). *Retaining teacher talent: The view from Generation Y*. Learning Points Associates and Public Agenda. Retrieved October 7, 2010, from http://www.learningpt.org/expertise/educatorquality/genY/Gen%20Y%20report.pdf.

[262] Wiley, E. W., Spindler, E. R., & Subert, A. N. (2010). *Denver ProComp: An outcomes evaluation of Denver's alternative teacher compensation system*. Denver Public Schools Professional Compensation System for Teachers. Retrieved October 8, 2010, from http://static.dpsk12.org/gems/newprocomp/ProCompOutcomesEvaluationApril2010final.pdf.

[263] Clotfelter, C. T., Glennie, E., Ladd, H., & Vigdor, J. (2008).Would higher salaries keep teachers in high-poverty schools? Evidence from a policy intervention in North Carolina. *Journal of Public Economics,* 92, 1352–1370.

[264] Springer, M. G., Lewis, J. L., Podgursky, M. J., Ehlert, M. W., Gronbert, T. J., Hamilton, L.S., Jansen, D. W., Stecher, B. M., Taylor, L. L., Lopez, O., & Peng, A. (2009). *Texas Educator Excellence Grant (TEEG) program: Year three evaluation report.* Austin, TX: National Center on Performance Incentives Policy Evaluation Report. Retrieved October 10, 2010, from http://www.performanceincentives.org/data/files/news/BooksNews/TEEG_Year_Three_Report.pdf.

[265] Johnson, S. M., & Papay, J. P. (2009). *Redesigning teacher pay: A system for the next generation of educators*. Washington, DC: Economic Policy Institute.

[266] Jerald, C. (2009, July). *Aligned by design: How teacher compensation reform can support and reinforce other educational reforms*. Center for American Progress. Retrieved October 11, 2010, from http://www.americanprogress.org/issues/2009/07/pdf/teacher_alignment.pdf. .

[267] See reference 46.

[268] Ibid.

[269] American Federation of Teachers/National Education Association (1998). *Peer assistance & peer review: An AFT/NEA handbook*. Prepared for Shaping The Profession That Shapes The Future: An AFT/NEA Conference on Teacher Quality. Retrieved October 6, 2010, from http://www.aft.org/pdfs/teachers/paprhandbook0998.pdf; Lavely, C. (1992). Actual incidence of incompetent teachers. *Educational Research Quarterly*, 15(2), 11-14; Sykes, G., & Winchell, S. (2010). Assessing for teacher tenure. In M. Kennedy (Ed.), *Teacher assessment and the quest for teacher quality: A handbook, (pp. 201-224)*. San Francisco, CA: John Wiley & Sons, Inc.

[270] Baker, E. L., Barton, P. E., Darling-Hammond, L., Haertel, E., Ladd, H. F., Linn, R. L., Ravitch, D., Rothstein, R., Shavelson, R. J., & Shepard, L. A. (2010, August 29). *Problems with the use of student test scores to evaluate teachers.* EPI Briefing Paper # 278. Economic Policy Institute. Retrieved September 1, 2010, from http://epi.3cdn.net/b9667271ee6c154195_t9m6iij8k.pdf.

[271] Baker, E. L., Barton, P. E., Darling-Hammond, L., Haertel, E., Ladd, H. F., Linn, R. L., Ravitch, D., Rothstein, R., Shavelson, R. J., & Shepard, L. A. (2010, August 29). *Problems with the use of student test scores to evaluate teachers.* EPI Briefing

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Paper # 278. Economic Policy Institute. Retrieved September 1, 2010, from http://epi.3cdn.net/b9667271ee6c154195_t9m6iij8k.pdf; Schochet, P. Z., & Chiang, H. S. (2010). *Error rates in measuring teachers and school performance based on student test score gains.* Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, U. S. Department of Education. NCEE 2010-4004. Retrieved November 9, 2010, from http://ies.ed.gov/ncee/pubs/20104004/pdf/20104004.pdf.

[272] Koppich, J. E. (2009). *Toledo: Peer Assistance and Review (PAR).* Strategic Management of Human Capital. Retrieved November 9, 2010, from http://www.smhc-cpre.org/download/85/; Weisberg, D., Sexton, S., Mulhern, J., & Keeling, D. (2009). *The widget effect.* Brooklyn, NY: The New Teacher Project. Retrieved September 20, 2010, from http://widgeteffect.org/downloads/TheWidgetEffect.pdf.

[273] New Teacher Center (2010). *Policy overview.* Retrieved December 7 2010, from http://www.newteachercenter.org/policy_overview.php.

[274] Atlanta Public Schools. (2010). *Inside APS: Fast facts.* Retrieved October 14, 2010, from http://www.atlantapublicschools.us/18611010817620610/blank/browse.asp?A=383&BMDRN=2000&BCOB=0&C=55206.

[275] Personal communication with Millicent Few, March 18, 2010.

[276] Atlanta Public Schools. (2010). *ETEC: Effective teacher in every classroom.* Retrieved October 18, 2010, from http://www.atlantapublicschools.us/18611012814496713/site/default.asp.

[277] Personal communication with Millicent Few, March 18, 2010.

[278] Personal communication with Millicent Few, March 18, 2010.

[279] Personal communication with Millicent Few, March 18, 2010.

[280] Atlanta Public Schools. (2009). *Atlanta public schools journey to excellence.* Retrieved October 18, 2010, from http://www.atlanta.k12.ga.us/18611010817124023/lib/18611010817124023/APS_highlights_brochure_-_general_-_11-30-09.pdf.

[281] Ibid.

[282] Exactly how much progress in dropout and graduation rates has been made is the subject of a current debate. Calculation of these numbers depends on correct classification of students as either "transfers" to another district or "dropouts". See Judd, A., & Vogell, H. (2010, August 15). Atlanta grad rate doesn't add up. *The Atlanta Journal-Constitution.* Retrieved October 18, 2010, from http://www.ajc.com/news/atlanta/atlanta-grad-rate-doesnt-592340.html.

[283] Personal communication with Millicent Few, March 18, 2010.

[284] For example: Judd, A. (2010, August 7). High CRCT test scores trumped honesty. *The Atlanta Journal-Constitution.* Retrieved October 18, 2010, from http://www.ajc.com/news/high-crct-test-scores-587272.html.

[285] Torres, K. (2010, August 16). Atlanta school board accepts cheating report amid other controversy. *The Atlanta Journal-Constitution.* Retrieved October 18, 2010, from http://www.ajc.com/news/atlanta/atlanta-school-board-accepts-593448.html.

[286] Downey, M. (2010, May 20). *New NAEP reading scores released for Atlanta: Shows gains in grade 8.* Retrieved November 12, 2010, from http://blogs.ajc.com/get-schooled-blog/2010/05/20/new-naep-reading-scores-released-for-atlanta-shows-gains-in-grade-8/.

[287] Denver Public Schools. (2010). *Facts and figures.* Retrieved October 18, 2010, from http://communications.dpsk12.org/newsroom/73/55/.

[288] The Colorado Department of Education. (2010). *Fall 2009 pupil membership: K-12 free and reduced lunch eligibility by county, and district.* Colorado Education Statistics. Retrieved October 19, 2010, from http://www.cde.state.co.us/cdereval/download/PDF/2009PM/FreeandReducedlunchforK12bycountyanddistrict09.pdf.

[289] Wiley, E. W., Spindler, E. R., & Subert, A. N. (2010). *Denver ProComp: An outcomes evaluation of Denver's alternative teacher compensation system: 2010 report.* Retrieved October 19. 2010, from http://static.dpsk12.org/gems/newprocomp/ProCompOutcomesEvaluationApril2010final.pdf.

[290] Denver Public Schools. (2010). *2010 Denver plan: Strategic vision and action plan.* Retrieved October 19, 2010, from http://2010denverplan.dpsk12.org/pdf/Final2010Denver%20Plan.pdf.

[291] Ibid.

[292] U.S. Census Bureau. (2010, June). *Public education finances 2008.* Retrieved October 14, 2010, from http://www2.census.gov/govs/school/08f33pub.pdf.

[293] Personal communications with Jennifer Stern, April 21, 2010 and November 14, 2010.

[294] Personal communications with Jennifer Stern, April 21, 2010 and November 14, 2010.

[295] Meyer, J. P. (2009, May 22). DPS grad, dropout rates dip. *The Denver Post.* Retrieved November 9, 2010, from http://www.denverpost.com/news/ci_12426174.

[296] See reference 290.

[297] Ibid.

[298] Ibid.

[299] See reference 142.

[300] Personal communications with Teacher U and Urban Teacher Residency United staffs, June-July 2010.

[301] See reference 20.

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[302] See reference 142.

[303] Ibid.

[304] National Center for Education Statistics. (2010). *Schools and Staffing Survey (SASS): Table 96: Public secondary schools, by grade span, average school size, and state or jurisdiction: 2005-06*. Retrieved November 12, 2010, from http://nces.ed.gov/programs/digest/d07/tables/dt07_096.asp.

[305] See reference 169.

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