ALLIANCE FOR EXCELLENT EDUCATION

PolicyBrief
April 2008

This policy brief was made possible with the generous support of MetLife Foundation.

Improving the Distribution of Teachers in Low-performing High Schools

Teacher quality is the school factor which makes the greatest impact on student achievement (Hanushek et al. 2005; Ferguson and Ladd 1996; Sanders and Rivers 1996), and consistent exposure to effective teachers can overcome obstacles to learning and even close achievement gaps (Babu and Mendro 2003; Rivkin et al. 2002). These facts were the driving force behind the development of federal law, in the No Child Left Behind Act, mandating that states ensure that 1) teachers of core subjects are "highly qualified" and 2) poor and minority children are not taught at higher rates than other children by inexperienced, unqualified, or out-of-field teachers.[1] The latter provision, known as the teacher equity clause, is an attempt by federal policy to rectify one of the major problems facing low-performing schools that serve large numbers of poor and minority students: the inequitable distribution of teachers. Frequently unable to attract and retain effective teachers, low-performing schools are generally staffed by teachers who lack the experience, qualifications, effectiveness, or retention rates needed to succeed in the classroom (Peske and Haycock 2006).

Inequitable distribution is a problem at all grade levels, but some aspects are more pronounced in high schools. The issues include higher rates of out-of-field teaching, a lack of time for teacher collaboration and professional development due to more complicated school schedules, and poor working conditions associated with large high schools that inhibit retention and effectiveness (Jerald 2002; Morton 1993; Center for Teaching Quality 2007a). Overall, the key to solving distribution problems is to act comprehensively, by significantly increasing the supply of teacher candidates where shortages exist, improving the recruitment and hiring process, and retaining effective teachers in low-performing high schools. Understanding the dynamics of the teacher labor market can ensure that strategies actually impact teachers' decisions concerning where to work and how long they stay. Although states and districts have the most influence over teacher policies, federal law can also help improve the distribution of teachers by supporting and encouraging good recruitment and retention practices at the state and local levels.

Defining the Problem

There are different ways of measuring teacher quality at the high school level (see Alliance for Excellent Education 2008a), but no matter what measurement is used, students in poorer high schools which primarily serve students of color are generally taught by lower-quality teachers. Teachers in these schools routinely lack experience, qualifications, and effectiveness—defined as teachers who consistently improve student achievement—compared to teachers in other high schools.

Experience

Students in high-poverty, high-minority schools are more likely to have inexperienced teachers than students in other schools (Peske and Haycock 2006; Jepsen and Rivkin 2002; NCES 2000). In Texas, for

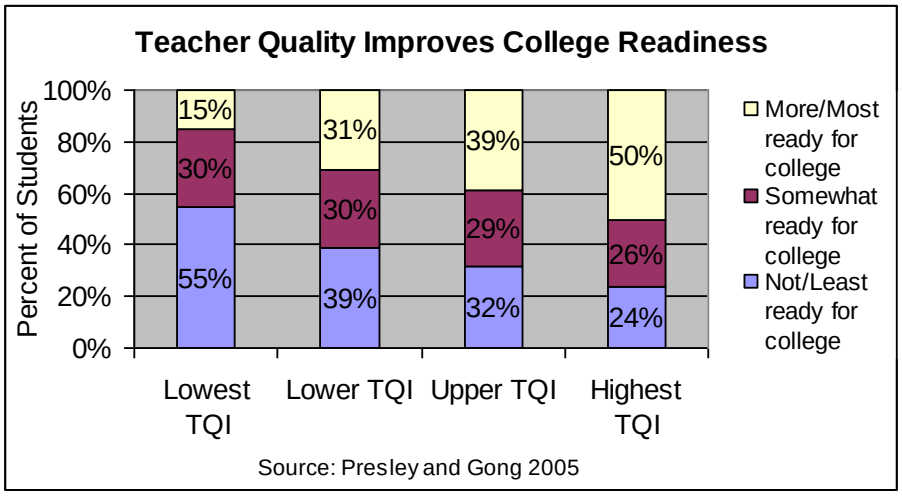
[1] See Public Law 107–110, Title I, Sec. 1119 and Title I, Sec. 1111(b)(8)(C).

instance, high schools with the highest levels of poverty have a greater percentage of teachers, 14.3 percent, with less than three years of experience compared to the lowest-poverty schools with 10.5 percent (Education Trust 2008). North Carolina faces a similar experience gap between high-poverty high schools (17.3 percent) and low-poverty high schools (13.5 percent) (Clotfelter et al. 2007b). Some districts have even higher gaps, such as in Austin, where high-poverty schools have a concentration of novice teachers almost three times higher than more affluent schools (Education Trust 2008). While experience is not always a guarantee that teachers are of high quality, especially later in their careers, it does significantly contribute to high school teacher effectiveness in the first few years an individual is in the profession (Clotfelter et al. 2007a; Gore 2007).

Qualifications

Further exacerbating the distribution problem, high schools that are high poverty, high minority, and low performing have a far greater number of less-qualified teachers—ones with lower pass rates on certification exams, lower academic strengths (e.g., college GPAs), and who are teaching out-of-field (outside the subject they are trained and certified to teach). Classes in high-poverty schools are 77 percent more likely to be assigned to an out-of-field teacher than classes in low-poverty schools, and one in four core academic subjects in all secondary schools is taught by a teacher lacking even a college minor in their subject (Jerald 2002). In Texas high schools that serve the highest percentages of low-income students, more than one in three teachers lack full certification in the subjects they are teaching (Education Trust 2008). Compared with other developed countries, the United States has a greater problem with out-of-field teaching. For example, whereas a third of secondary math teachers in the United States did not major in math or related disciplines, Japan has virtually no out-of-field teachers (Ingersoll 2007a).

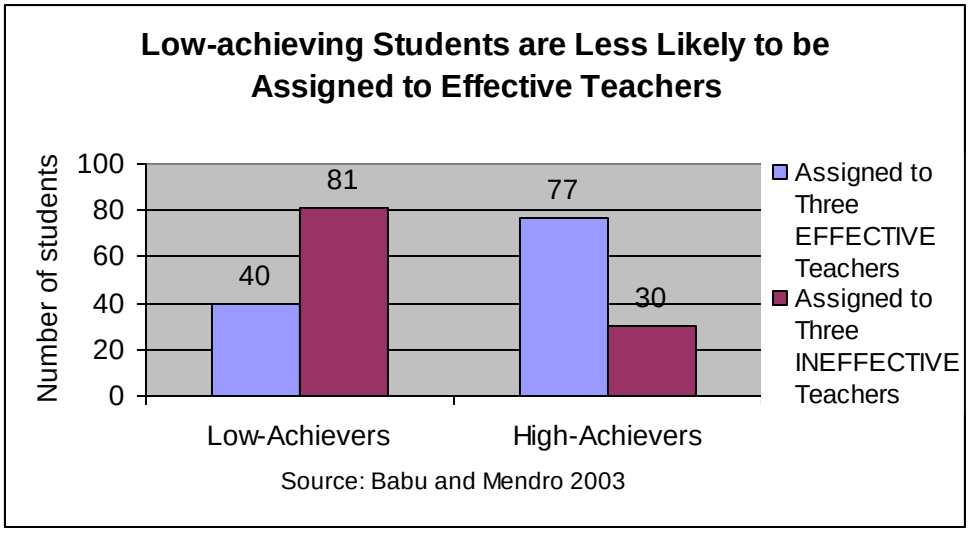
Additionally, the teachers who are hired into and who stay at low-performing schools tend to be those who scored lower on their teaching certification exams. This disparity starts at hiring and worsens year after year, as the more-qualified teachers leave for better schools or leave the teaching profession altogether (Levin and Quinn 2003). In the lowest-achieving schools, 28 percent of new teachers had scored in the lowest quartile on the state certification exam; of those remaining in the school five years later, 44 percent of them had done so (Boyd et. al 2005a). Researchers in Illinois looked at high school teacher qualifications in the aggregate to determine a Teacher Quality Index (TQI), which included teachers' average ACT score, ACT English scores, pass rate on the Basic Skills Test, average college competitiveness ranking, and whether or not teachers held an emergency license. They have found that schools at the top of the TQI are much more likely to prepare students for college, even when other factors, such as course-taking patterns, are taken into account (Presley and Gong 2005). Research has shown that taking rigorous high school courses is the biggest predictor of college success (Adelman 1999), but the TQI indicates that teaching quality within those courses also influences student outcomes.



Effectiveness

Perhaps most important among issues related to teacher distribution is a great disparity in terms of which schools—and which students within schools—end up with effective teachers. Using value-added analysis,[2] researchers in Dallas found that low-achieving students are assigned less effective teachers at more than double the rate of high-achieving students (Babu and Mendro 2003). The effectiveness gap is not only large among students but also among schools. Students in high-poverty, high-minority schools in Tennessee are more likely to be taught by the least-effective teachers, whereas students in low-poverty, low-minority schools are more likely to be taught by effective teachers (Tennessee Department of Education 2007).[3]

The impact of the unequal distribution of effective teachers is significant. Having an ineffective teacher, versus an effective one, in a single academic year can equate to a loss of more than a full year of standardized achievement (Hanushek 1992). On the other hand, having several effective teachers in a row could repair past damage and substantially increase student achievement (Sanders and Horn 1998). Researchers in Tennessee find that students given the most-effective teachers for three years in a row made over twice the gains of comparable students assigned to the least-effective teachers (Sanders and Rivers 1996).



Understanding the Problem: Teacher Labor Markets

Understanding the dynamics of the teacher labor market is critical for policymakers considering ways to improve teacher distribution. Closing the distribution gap is not as simple as forcing good teachers into low-performing high schools, though some districts have contemplated forced transfers when other incentives have failed to work (see Helms 2008). Instead, the main policy task is to leverage incentives attuned to the current labor market; to produce more and better candidates; to recruit teachers into struggling high schools; and to keep them there long enough to make a difference. Salary, distance from home, and working conditions are a few of the many labor market realities that affect a person's decision of whether or not to become a teacher, where to work, and how long to stay. These factors are particularly important for improving high school teacher distribution because teachers in the upper grades have more options to work in other fields; their subject-specific knowledge and training in areas such as mathematics or biology, versus those of teachers who hold elementary education degrees, put them in a better position to choose alternate careers.

[2] Value-added is a complex statistical method for determining the impact a teacher—versus other factors such as family contribution, income level, prior achievement, and school characteristics—makes on student achievement.
[3] In the Dallas study, "effective teachers" are those who rank in the top two fifths in terms of student achievement, while "ineffective" teachers rank in the bottom two-fifths. In Tennessee, "effective teachers" produced positive effect scores, while "ineffective teachers" produced negative effect scores.

Inadequate Supply of Teacher Candidates

The status quo simply isn't working when it comes to supplying the teacher applicant pool with enough good candidates, particularly in subjects at the high school level such as math, chemistry and physics (Ingersoll 2004). Currently, the majority of new teachers are hired after completing traditional teacher preparation programs, and some colleges and universities are not producing enough candidates. For example, each year public and private universities in North Carolina produce four thousand new teachers, yet each year nine thousand teachers across the state leave the classroom (University of North Carolina Tomorrow Commission 2007). In a period of four years, the sixteen-campus University of North Carolina system produced only three high school physics teachers, though fifteen of those campuses have teacher preparation programs (Bililign and Stone 2006). A few states have become known for exporting their teacher candidates to other states because they produce more than enough graduates. But on the whole, in shortage subjects such as secondary math and science, preparation programs are not adequately supplying the field with sufficient numbers of candidates.

Further exacerbating the problem, many education reformers argue that candidates who graduate from preparation programs have lower academic strengths compared to other college graduates or that they lack skills for working specifically in low-performing high schools. Little research exists to document the first assertion, and two studies find that the academic quality of secondary teacher candidates is comparable to other fields (Lee et al. 2001; Gitomer 2007). One study shows that the grade point averages of teacher candidates have actually risen over time and that almost all secondary teachers who pass their licensing exams have above-average SAT verbal scores (Gitomer 2007). That said, the field widely agrees that, regardless of their starting point, teachers must improve their skills still more in order to raise student achievement. Plus, high-performing teachers themselves want more and better training for work in low-performing schools (Berry 2007).

Lackluster Recruitment and Cumbersome Hiring Processes

Compounding the supply issue, low-performing school districts have particular difficulty recruiting and hiring good candidates. Most public school teachers take their first job close to their hometowns or where they attended college. In New York state, 72 percent of teachers take jobs within forty miles of their hometowns, and 34 percent of new teachers take their first job in the school district in which they attended high school (Boyd et al. 2005a). This preference challenges large districts, which have more slots than can be filled by candidates coming from their region. One extreme example is Clark County, NV, which must recruit 75 percent of its teacher candidates from out of state (see below). For recruitment purposes, such districts have to overcome geographic location preferences *in addition* to a desire for greater salaries and better working conditions.

When challenged districts *are* able to attract strong candidates, they often lose them during what is typically a lengthy, bureaucratic hiring process (Levin and Quinn 2003). A 2003 study of four representative urban districts of differing sizes from across the country, finds that districts lost 30 to 60 percent of their applicants due to a delay in hiring, and that the applicants who withdrew from consideration were more qualified than those who waited out the process (Levin and Quinn 2003). Similar practices occur in most urban districts due to the timing of budgets, which force schools to wait until later in the year—when they know how much money they have to hire teachers, but well after superlative candidates have found other jobs. Some teacher contracts and district policies also inhibit timely hiring for two primary reasons. First, veteran teachers have a long period of time to apply for positions before they are publicly announced. Second, leaving teachers may not be required to notify administrators that they are exiting until late in the year (Levin et al. 2005). For all these reasons, hiring occurs late and drives out quality candidates. An analysis of Portland Public Schools finds that a large

number of quality candidates from across the country applied for open positions. But the district did not review external candidates until May, by which time many applicants accepted positions in other districts or dropped out of the process altogether. Ultimately, only 5 percent of those who had applied by April were hired, and those hired afterward were of significantly lower quality (New Teacher Project 2007a).

Poor Working Conditions that Turn Teachers Away

Even when effective teachers choose to work in low-performing schools, poor working conditions drive some of them away after only a few years (Alliance for Excellent Education 2008b; DeAngelis and Pressley 2007; Berry et al. 2006). Working conditions are those aspects of school environment and culture that affect the quality of teaching, such as safety, availability of resources, appropriate teaching assignments, time for collaboration, ongoing professional development, and positive relationships with principals and school leaders (Johnson 2006; Center for Teaching Quality 2007). The reasons that teachers leave include a desire to make more money or to retire. But just as many teachers, if not more, depart because of lack of support from administrators, a negative environment, or inadequate school leadership (NCES 2006).

Interestingly, recent research has found that effective teachers who begin teaching in challenging schools generally tend to stay in them; however, as teachers become more effective, they are increasingly likely to move away from the *most* challenging schools and into ones with relatively lower concentrations of poverty and higher performance levels (Goldhaber et al. 2007; Boyd et al. 2005a). Confirming such research, a comprehensive survey of teachers finds that those "at-risk" of leaving the profession are concentrated in urban, low-income schools with high concentrations of minority students (MetLife 2005).

As policymakers and educators have identified teacher turnover as a problem, they have begun to focus their attention on improving working conditions. A study by the Center for Teaching Quality looked specifically at high schools and has found a correlation between better-quality working conditions and decreased teacher turnover. They have also found a link between better working conditions and better student achievement (Center for Teaching Quality 2007). Related to improving working conditions, policymakers have also turned their attention to ensuring that new teachers participate in induction programs to stem their turnover and to improve their practice. Induction is a package of supports, professional development, and evaluation provided to teachers during their first, formative years in the classroom in order to improve their skills (Alliance for Excellent Education 2004). Unfortunately, less than 1 percent of teachers participate in the comprehensive induction programs that can cut turnover in half, and high school teachers are less likely to receive induction supports than teachers of earlier grades (Smith and Ingersoll 2004; Ingersoll 2007b). Even where induction programs exist, they are sometimes implemented inadequately (Kapadia et al. 2007). For example, a recent survey in Arizona finds that 41 percent of mentors receive no training, and only 19 percent report having common planning time to work with mentees (Hirsch and Emerick 2006b).

Getting the Most Effective Teachers into Low-performing High Schools

At its core, the high school teacher distribution challenge will only be resolved through two complementary strategies: getting the most effective teachers into the highest-need high schools, and retaining them once there. As with any education reform, no one strategy will work on its own; these tactics need to be considered as parts of a comprehensive package (Center on Education Policy 2007a).

Increasing the Supply of Effective Teachers: Teacher Preparation

Since a majority of new teachers emerge from teacher education programs, the bulk of work in increasing the supply of teaching candidates falls to preparation programs. To increase the number and quality of teaching candidates, these institutions should start by recruiting students with academic promise more aggressively into education programs. Given the shortage of science, technology, engineering, and math (STEM) teachers, students majoring in those subjects are ripe for recruitment, and teacher preparation programs have begun to enhance their offerings in the STEM fields (AACTE 2007). However, preparation programs must also be rigorous to ensure that their graduates are effective. Programs could begin by deepening subject-specific course work for high school candidates and by providing rigorous clinical experiences in actual low-performing high schools (Darling-Hammond 2007). For example, future high school math teachers, who will one day work with low-performing students, need specific training in the content and teaching methods that are relevant to their eventual work. This approach is different from most preparation programs, which require several math courses (that may be irrelevant for teaching) and little training in how to teach math to struggling students. As an effective alternative, urban teacher academies recruit academically promising candidates, prepare them in a "residency" setting in an actual school, and follow that year with induction support (National Commission on Teaching and America's Future 2008). Increasing rigor and standards might discourage some from becoming teachers; but a recent study finds the quality of teacher candidates has risen over time following the raising of standards through federal and state policies (Gitomer 2007).

Since education programs, on the whole, generate significant revenue, universities may not be eager to revise admissions policies, course requirements, or tenure practices. Thus policymakers may need to structure accountability policies to explicitly encourage such changes. Currently, the federal Higher Education Act requires schools of education to document the success rate (i.e., pass rates on state certification exams) of their students. But future thinking on accountability may need to consider requiring teacher preparation programs to set measurable goals for producing more and stronger candidates in high-need subjects and for low-performing high schools. Accountability policy may also need to encourage universities to follow their graduates into the classroom to track their progress and success, using that information to inform the way teacher training programs are designed and administered. Some states—Louisiana, Ohio, and Virginia—and eleven major teacher preparation programs across the country have begun using classroom effectiveness data to inform the reform of teacher education (Noell et al. 2007; Teacher Quality Partnership 2008; Data Quality Campaign 2007; Carnegie Corporation of New York 2008). Furthermore, to enhance the quality of preparation programs, universities can also change their tenure, promotion, and incentive systems to reward education faculty—and arts and sciences faculty involved in teacher preparation—for applied research and service (i.e., training teachers who are successful in actual schools), not just for scholarship (University of North Carolina Tomorrow Commission 2007).

Increasing the Supply of Effective Teachers: Quality Alternate Routes

Alternative routes can help enlarge the pool of teaching applicants by drawing promising, nontraditional candidates into teaching. Alternative routes, such as Teach For America, the New York City Teaching Fellows, and the Mississippi Teacher Corps, recruit thousands of college graduates and professionals with strong academic credentials (e.g., high GPAs) who would not be inclined to enter teaching if required to go through traditional preparation. Such programs can greatly inform states and districts on how greater numbers of candidates can be found for open positions in high-need schools and subjects. The New Teacher Project is a nonprofit organization that works directly with school districts to help them recruit, certify, and hire high-quality teachers, and they routinely recruit hundreds of teachers for an open position (Daly 2007). In addition, teachers coming from alternate route programs, particularly

in New York City, are helping to close the achievement gap between wealthy and poor schools (Boyd et. al 2007).

However, caution must be exercised. A quarter of alternate route programs accept virtually all applicants, and 70 percent are attached to schools of education and are structured very much like regular teacher education programs (Walsh and Jacobs 2007). Thus, alternate routes, including traditional teacher preparation, must improve in quality and efficiency if they are to make a dent in the distribution problem. Moreover, research suggests that teachers with alternative certification do not stay in teaching as long as teachers from traditional programs (see NCCTQ 2007; Ingersoll 2003). This disparity may be due to the practice of some alternate routes, like Teach for America, in only asking recruits to teach for a few years; though some alternate route programs like the New York City Teaching Fellows show retention rates equal to or better than other teachers in similar schools (Kane et al. 2006; Boyd et al. 2005b, but see NCCTQ 2007). Furthermore, independent evaluations suggest that candidates from rigorous alternate routes may be more effective at raising student achievement than other teachers in similar schools (Decker et al. 2004; Noell et al. 2007; Kane et al. 2006). However, some alternate routes are of poor quality, and their turnover rates exacerbate the distribution problem. In the end, regardless of the route teachers take into the classroom, policymakers must incentivize effective teachers to remain in teaching for more than a few years, even as they increase the supply of teachers coming into the profession.

Recruiting Effective Teachers: Grow-Your-Own Programs

Considering that a majority of teachers choose to work close to where they grew up, some states and districts have implemented grow-your-own programs to increase the supply of teachers. Perhaps the most prominent among these is the North Carolina Teaching Fellows program, which recruits five hundred academically outstanding high school seniors a year to enroll in state teacher education programs. Fellows are given a $6,500 scholarship per year in exchange for agreeing to teach at least four years in a North Carolina school. Since 1986, the program has produced more than eight thousand teachers, and the average profile of a Fellow includes an SAT score over 1100, a high school grade point average of 4.0 on a weighted scale, and a rank in the top 10 percent of her or his graduating class. In keeping with the goal to recruit males and minorities, each year approximately 20 percent of the program's recipients are minority, and 30 percent are male (North Carolina Teaching Fellows 2008). Similar programs are underway in Chicago, South Carolina, and California.

Recruiting Effective Teachers: Targeting Pay

Salary is not the biggest factor in deciding who enters teaching or where they work, but it does have an impact (Allegretto et al. 2008; Hanushek and Rivkin 2007; Goldhaber 2006). Research suggests that beginning, and sometimes average, teacher salaries are not comparable to other professions (Allegretto et al. 2008) and would have to massively increase to draw candidates looking for a lucrative career, especially in fields such as math and science, where qualified candidates have more higher-paying options (EdSource 2008). But given that pay increases of that magnitude across the board are unlikely, policymakers must consider other strategies to lure candidates already disposed to teaching to work in *low-performing* high schools. Because many low-performing schools are in low-income districts, they tend to have fewer resources to attract teachers and more negative working conditions, to boot. Many states and districts already offer greater pay for teachers who agree to work in low-performing settings, most notably for those who teach subjects for which there are insufficient numbers of teachers available or for those who earn certification from the National Board for Professional Teaching Standards, a credential awarded for demonstrating accomplished teaching. However, research has shown that even additional pay—on its own—is not enough to draw top-notch teachers into struggling schools. They also

want strong leaders, collaborative colleagues, adequate resources, and working conditions that set them up for success (Berry 2007; Berry et al. 2006).

Recruiting Effective Teachers: Streamlining Hiring Practices

Top-notch teachers also need streamlined hiring policies that encourage them to work in high-need high schools. In general, school districts hire teachers and then assign them to schools within the district, though school-based hiring has become more common in the last decade. Of course, some teachers' unions, where strong, play a major role in the hiring process (Roza 2007). Regardless of the union role, however, most hiring processes, especially in large urban districts, are cumbersome and inefficient, though some districts, including Chicago, have made some improvements over time (New Teacher Project 2007b). To enhance teacher recruitment, hiring policies could markedly improve by setting measurable goals, making timely decisions, and approaching potential recruits with an attitude of customer service rather than compliance with regulations.

Landmark research and good practice has been done on district hiring policies by The New Teacher Project. They have found that the most successful districts begin the hiring process by asking their human resources divisions to set a small number of publicly stated, measurable goals for the number and qualities of candidates they will hire (New Teacher Project 2007b). Savvy districts also invest in online tools that create user-friendly job banks for both candidates and the administrators who hire them. Furthermore, successful districts ensure that the hiring process is timely, requiring early notification of vacancies (as early as mid-winter), adjusting budget timelines so schools can make offers before the summer, and offering financial incentives for principals to make earlier hiring decisions (New Teacher Project 2007b). To equalize distribution, low-performing schools may even need an early pick of candidates (Peske and Haycock 2006). In Hamilton County, TN, previously low-achieving schools have experienced a substantial turnaround, in part because teachers who are considering not returning in the fall must notify the district by February so that schools may begin early to hire their replacements (Achievement Alliance 2008). Overall, the most successful districts treat high-flying candidates as their customers, maintaining frequent contact with and reducing red tape for those they wish to hire.

Teachers transferring from one school to another can also complicate the hiring process. Under most collective bargaining agreements, teachers with seniority have the first shot at newly vacant positions, but they may not be required to notify schools of their wishes until late in the school year. Principals are often forced to accept these transfers, many of whom may be less successful teachers. Thus, 21 percent of principals report that a majority of teachers hired through voluntary transfers were unsatisfactory (Levin et al. 2005). However, innovative districts have considered how transfers can be based on teacher effectiveness and school fit rather than on seniority (New Teacher Project 2007b). A California law, passed in 2006, bans school districts from forcing principals at low-performing schools to hire teachers who transfer from elsewhere in the district (Scott and Rhee 2006).

Recruitment and Hiring on a Large Scale

Clark County, NV, the fastest-growing school district in the country, includes seven hundred thousand students and eighteen thousand teachers in 327 schools. On average, the district opens one new school per month, and 75 percent of teachers are recruited from outside the state. To cope, Clark County has generated several recruitment and retention strategies so that administrators can make appropriate teaching assignments. Low-performing schools are given a two-month head start in hiring and receiving transfers. In partnership with the teachers' union, the district treats new highly qualified teachers as third-year teachers to attract them with higher salaries. Teachers who attend the district's Urban Teacher Academy are moved up the salary schedule, trained for five weeks before school starts, and offered the chance to work with master teachers and full-time mentors in professional learning communities. Clark County has also experimented with principals' salaries, awarding bonus salary points for challenges a principal may face in struggling schools (e.g., high-poverty schools or low-achievement schools). Thus, working in a challenging school is now at the top of the pay ladder, not at the bottom (Clark County School District 2005). Student and teacher success has accompanied these reforms, though one strategy alone cannot claim credit. Over the past several years, the teacher turnover rate decreased by 10 percent, math and reading scores in grades 3–8 increased by as much as 14 percent, high school math scores also rose, and the high school dropout rate decreased (National Commission on Teaching and America's Future 2007).

Source: Presentation by Dr. George Ann Rice, retired associate superintendent, Human Resources Division, Clark County School District, at the 7th Annual NCTAF Symposium, July 10, 2007.

Retaining Teachers and Improving Effectiveness in Low-performing High Schools

While supplying low-performing or high-need high schools with effective teachers is undoubtedly important, this strategy alone will do little good if the teachers do not remain in the schools to which they have been recruited, and if they are not supported by working conditions, induction, professional development, and career paths that improve their ability to help students achieve.

Improving Working Conditions

Good teachers often cite working conditions as the reason they leave low-performing schools or as the reason they will not work in them in the first place (NCES 2006; Berry et al. 2006). In high schools, working conditions are linked, not only to teacher satisfaction and retention, but also to student achievement (Center for Teaching Quality 2007a). Therefore, substantial effort must be focused on improving working conditions in low-performing high schools. Working conditions include multiple factors that influence teacher distribution, including safety, availability of resources, appropriate teaching assignments, time for collaboration, ongoing professional development, and positive relationships with principals and school leaders (Johnson 2006). Research by the Center for Teaching Quality (CTQ) surveyed teachers in six states to determine what factors influence their satisfaction, efficacy, and distribution patterns and to determine what school leaders and state policymakers should consider in improving working conditions. CTQ categorized working conditions into five domains: professional development opportunities and requirements, sense of empowerment, school leadership, facilities and resources, and "time"—defined by class size, noninstructional time available, nonessential duties assigned, interruptions, and paperwork. They have found that teachers, particularly those at the high school level, who left the profession most often reported the lack of supportive working conditions, most notably poor leadership (Hirsch and Emerick 2006a).

There is no reason why leadership could not be distributed across various staff levels within a school so that duties are shared and principals have more time and energy to be the instructional leader and to address working conditions (Spillane 2006; Institute for Educational Leadership 2000). Following the lead of the CTQ survey, administrators at state, district, and even school levels could regularly conduct surveys of the teacher workforce to understand which factors are most distressing to teachers when it comes to their work environment, and target efforts to address those issues. North Carolina, the first state to administer the CTQ survey, has even established state standards for teacher working conditions (NCPTSC 2008). By focusing their attention on improving working conditions at the school site, policymakers can help schools to improve retention. Of course, school leaders themselves must have conditions that support their efforts to improve teacher retention such as adequate financial resources for improving working conditions, flexibility in hiring, and sufficient time and support for staff development.

Providing Comprehensive Induction

Comprehensive teacher induction is also crucial to retaining teachers. Research shows that comprehensive induction cuts turnover rates in half (Smith and Ingersoll 2004). Better yet, induction improves teaching skills rapidly, which is crucial because new teachers are disproportionately concentrated in schools with disadvantaged students who need the most effective teachers (Villar and Strong 2007; Peske and Haycock 2006). The New Teacher Center reports that new teachers in California who went through a rigorous induction program were, on average, as effective as fourth-year teachers who had not participated in an induction program (Villar and Strong 2007). California's statewide Beginning Teacher Support and Assessment program has been successful in increasing teacher retention from 50 percent within a teacher's first two years before the program was put into place to 90 percent following its implementation (WestEd 2002). Connecticut's Beginning Educator Support and Training (BEST) induction program has achieved similar success, and a recent study finds that BEST's teacher portfolio assessment significantly predicted student's value-added achievement on state tests (Wilson and Hallum 2006). Of further benefit, the New Teacher Center finds that induction provides a return on investment of $1.66 for every dollar spent, with the greatest return coming from improved teacher effectiveness (Villar and Strong 2007).

Research and good practice outline what comprehensive induction should include at the high school level. Induction for teachers in the upper grades should include mentoring from a trained teacher in the same subject area; professional development focused on the needs of the individual teacher; time for observation of other teachers and common planning time; a network of support from other educators outside the school; and a standards-based evaluation of teaching at the end of induction, which determines whether or not a teacher moves forward in the profession (Alliance for Excellent Education 2004). At the high school level, teachers are much more specialized in their subject area; thus, induction works best when training and support are content specific. However, rural high schools may not have veteran expertise in every area, and mentors and support staff may be too overwhelmed in low-performing settings to provide rigorous subject-specific support. Thus, high schools may rely more on external networks of expertise or professional development outside the school than in the lower grades. To avoid the ineffective, one-day workshop model (see below), high school professional development might rely increasingly on postsecondary faculty who possess content-specific knowledge. Overall, by increasing the effectiveness of all beginning teachers, teacher induction programs can help to equalize the quality and distribution of high school teachers.

Targeting Collaboration and Professional Development

Teacher collaboration and professional development can help improve the distribution of teachers since they have an impact on improving working conditions and enhancing teacher effectiveness. Unfortunately, most schools invest in professional development by sending teachers away to one-day workshops on various topics. However, research shows that professional development is most effective in improving teacher satisfaction and teacher effectiveness when it is offered regularly, takes place in the building where teachers work, and is driven by clear goals, useful data, and teacher input (Supovitz and Christman 2003; Education Trust 2005; Garet et al. 2001). At the high school level, teacher effectiveness improves when teachers collaborate in learning communities—groups of teachers working together to improve student achievement and to build a culture of shared responsibility for learning (Hirsh and Killion 2007). Therefore, to make professional development effective and to foster equitable distribution, high schools need to reorganize their schedules to provide weekly, if not daily, time for teacher learning and common planning focused on using readily available student learning data. In addition to time, high school teachers need training in the use of student achievement data and strong leadership that focuses common planning time on student outcomes (Supovitz and Klein 2003; Supovitz and Christman 2003).

Promoting Career Paths and Teacher Leadership

Veteran teachers also need support and structures that increase their likelihood of staying in the profession and in their classrooms, thus improving distribution. Policymakers can increase retention rates by investing in career ladders for experienced and effective teachers (Odden and Kelley 2002). Career ladders offer new roles for teachers that come with additional pay and responsibilities as they increase their knowledge and skills. Currently, high school teachers have little opportunity for upward mobility, other than becoming a department chair or an administrator. Growing numbers of teacher leaders are seeking ways to share their expertise and advance in their careers (Center for Teaching Quality 2007b).

One promising program of this type is the Career-in-Teaching (CIT) program in Rochester, NY. CIT allows teachers to advance along several levels during their careers, earning additional pay and recognition along the way. Teachers begin as interns, for up to four years, during which time they must acquire a master's degree. Professional teachers are those who receive tenure after serving successfully as an intern. Lead teachers must have at least seven years of experience, a proven ability to work with high-need students, and an ability to work cooperatively with colleagues. Lead teachers are competitive and selective positions that enable experienced, effective teachers to mentor intern teachers. Over the course of ten years, CIT has retained 95 percent of participating teachers (Koppich et al. 2002). Other notable career paths have been developed in Denver and as part of schools in the Teacher Advancement Program (Denver Public Schools 2008; National Institute for Excellence in Teaching 2008).

A Word on Financial Incentives

Many states and districts offer recruitment bonuses to attract teachers to low-performing schools, but that practice does not guarantee that teachers will succeed or stay very long (Liu et al. 2004). Financial incentives for recruitment are probably needed, but as a complement, states and districts may want to consider offering retention bonuses for teachers with demonstrated effectiveness who also take on difficult assignments or who agree to work for an extended period of time in struggling high schools (Darling-Hammond 2007). Retention bonuses ensure that financial incentives are targeted to proven teachers and reward those who stay long enough to improve student achievement over time. Financial incentives can take a variety of forms, including bonuses but also housing incentives, tuition subsidies for further course work, and sabbaticals for teachers to take a semester or year off to reenergize and to improve their skills, provided that they commit to returning to their assignment.

Recommendations for Federal Policy

Although the majority of decisions that impact teachers are local or state responsibilities, policymakers at all levels can and should be engaged in working to improve the distribution of teachers in low-performing high schools. The federal government can help by supporting and ensuring good practice at the state and local levels.

Building and Using Data Systems

A critical role for the federal government is to encourage and to help states build statewide longitudinal data systems that track teacher and student data. State data systems must also be aligned with district and school data systems and link teacher and student data in ways that inform efforts to improve distribution. Currently, there is modest federal support for the Statewide Data Systems program (just under $50 million was appropriated for the program in FY 2008), which should be increased and expanded. All states should build these data systems in accord with the ten elements of the Data Quality Campaign, an organization committed to helping state policymakers implement high quality state data systems (Data Quality Campaign 2008). One key component of the ten elements, for teacher distribution purposes, is to ensure that data systems link teacher data to student data using individual teacher identifiers (Data Quality Campaign 2007). Linking the data allows states, districts, and schools to know how effective their teachers are, where they work, and other vital information that can help lure good teachers to work with struggling students. Moreover, the expanded Statewide Data Systems program should provide district grants that build the capacity of educators to *use* data to improve teaching and learning. The program could also help states track the effectiveness of their newly minted teachers and provide feedback to their preparation programs (see Teacher Quality Partnership 2008; Data Quality Campaign 2007). Several types of information should be collected, including data on teacher assignment, turnover rates, qualifications, where teachers work, teacher attendance and longevity rates, and how effective teachers are in improving student achievement.

The Data Quality Campaign's
Ten Essential Elements of a State Longitudinal Data System

1. A unique statewide student identifier
2. Student-level enrollment, demographic, and program participation information
3. The ability to match individual students' test records from year to year to measure academic growth
4. Information on untested students
5. A teacher identifier system with the ability to match teachers to students
6. Student-level transcript information, including information on courses completed and grades earned
7. Student-level college readiness test scores
8. Student-level graduation and dropout data
9. The ability to match student records between P–12 and postsecondary systems
10. A state data audit system assessing data quality, validity, and reliability

For more information, go to www.DataQualityCampaign.org.

Strengthening Teacher Preparation

To help increase the supply of teachers, the federal government should provide resources to teacher preparation programs to recruit and prepare more and better candidates into teaching. At the same time, existing accountability provisions in the Higher Education Act should be tightened to require schools of education—and perhaps whole institutions, since colleges of arts and sciences also contribute to the

preparation of high school teachers—to set measurable goals for producing teacher candidates in shortage areas and for high-need high schools. Accountability provisions should also require programs to track their graduates to determine how effective they are with actual students and hold schools of education accountable for the effectiveness of their graduates. Louisiana, Ohio, and Virginia already collect effectiveness data for teacher preparation programs to guide improvements in teacher education (Noell et al. 2007; Teacher Quality Partnership 2008; Data Quality Campaign 2007).

In exchange for increased reporting and accountability, institutions of higher education should be provided with federal funds to enhance their preparation programs and to boost their recruitment of more and better candidates. Funds could be used for tuition waivers or other incentives that recruit academically gifted students to apply to become teachers; loan forgiveness or stipends for candidates who agree to work for several years in low-performing high schools; funds for universities and colleges to provide comprehensive induction to novice teachers in their region; and money to create training laboratories, such as teaching hospitals, that would prepare teachers for work in actual low-performing high schools (Darling-Hammond 2007; Carnegie Corporation 2007). The underwriting of teacher preparation for academically gifted students who work in low-performing schools is a common practice in other industrialized nations with high student achievement (Shimahara and Sakai 1995; Darling-Hammond and Cobb 1995). In time, such investments should begin to show returns as teacher quality improves and as teacher turnover rates decline.

Ensuring Equity in Teacher Quality

The objective of Title I of the No Child Left Behind Act (NCLB) is to address the needs of disadvantaged students, and it outlines the major accountability and reporting requirements of the law. Under Title I, states are required to submit equity plans that ensure poor and minority students are not taught at higher rates than other students by inexperienced, unqualified, or out-of-field teachers. States were first required to submit equity plans in Summer 2006, but analysis of the plans found that most were not in compliance with the law. For example, only four states looked at the connection between poor students and inexperienced teachers, and only two—Ohio and Nevada—had plans built around solid data (Education Trust 2006). Since 2006, all states have submitted equity plans that are in compliance with the law, but states and districts continue to grapple with how to improve distribution (Center on Education Policy 2007b). Certainly, the U.S. Department of Education must hold states accountable for reporting and acting on teacher distribution problems. But accountability alone will not solve the large problems states and districts are struggling to address. To help, the Department of Education should issue better guidance on the creation of equity plans, providing assistance and information on best practice to states. The National Comprehensive Center for Teacher Quality, whose mission is to help states implement federal requirements, has helped by outlining how states can better equalize the distribution of teachers (Gore 2006). Federal law could also help by linking the use of Title II teacher quality funds to related needs identified under the teacher equity provisions in Title I.

In addition, the comparability provision in Title I should be strengthened. This provision requires states to allocate money equitably so that schools serving low-income students receive and can spend dollars comparable to those spent by high-income schools. But when districts report their spending, they are not required to report actual—and instead can report average—teacher salaries, allowing them to mask significant differences across schools. Since the bulk of district budgets goes toward teacher salaries, such a loophole allows for glaring inequities. In some cases, affluent schools have up to a million more dollars available to spend on teachers, and a study in California found the gaps are largest at the high school level (Education Trust—West 2005). The loophole should be closed by requiring districts to report actual, rather than average, teacher salaries, thus complying with the intent of existing federal

law. Closing the loophole would provide poorer high schools more resources that could be used in recruiting and retaining their fair share of effective teachers.

Maximizing Federal Dollars

Title II of NCLB provides roughly $3 billion in federal funds for class size reduction and professional development. Unfortunately, only 32 percent of Title II funds were spent on professional development in 2006–07 (U.S. Department of Education 2007). And what few dollars do go to staff development are not concentrated, but rather are spread thinly over a large number of allowable uses, none of which must be tied to student learning needs or teacher quality needs identified by the testing and teacher equity provisions in Title I. Title II funds should be strengthened by targeting them to schools with the greatest teacher quality needs and used for recruitment and retention strategies based on that data.

Therefore, Title II should require a more rigorous "need index" than the one that currently exists. A stronger need index would be developed by states within certain parameters, including indicators such as "highly qualified" status, measures of teacher effectiveness, teacher and principal turnover rates, teacher attendance rates, and measures of working conditions to determine which schools have the greatest needs and what those needs are. Furthermore, that data collected on teacher needs would then be complemented by data on student needs such as those from Title I accountability assessments. Funds would then be targeted within those schools with the greatest teacher and student needs for comprehensive recruitment, retention, and improvement strategies that address those needs, such as the strategies outlined in this brief. In this way, Title II funds would no longer be spent on what is simply perceived to be good uses; rather, spending would be based on the actual needs of schools that have been identified using student and teacher data.

Conclusion

The achievement gap in the United States between poor and minority children and their wealthier, white counterparts is largely an opportunity gap. High-performing high schools have fewer problems attracting and retaining effective teachers, whereas ineffective teachers are disproportionately concentrated in the lowest-performing high schools. Because teacher quality is the single most important school-based factor in a child's education, disparity in teaching quality only exacerbates lagging student achievement. State and district policies wield most of the influence over teacher distribution, but federal policymakers can—and must—play a crucial role in supporting and ensuring comprehensive recruitment, retention and improvement strategies at the state and local levels—strengthening data systems, teacher preparation, equity in resources, and the use of federal funds to improve teaching. The problem is urgent. But fortunately, with effort at every level, it is one that can be alleviated.

MetLife Foundation

The Alliance for Excellent Education is grateful to MetLife Foundation for its generous financial support for the development of this brief. The findings and conclusions presented are those of the Alliance and do not necessarily represent the views of the funder.

References

The Achievement Alliance. 2008. *It's being done: The Benwood initiative*. www.achievementalliance.org/files/Benwood.pdf (accessed March 6, 2008).

Adelman, C. 1999. *Answers in the tool box*. Washington, DC: U.S. Department of Education.

Allegretto, S., S. Corcoran, and L. Mishel. 2008. *The teaching penalty*. Washington, DC: Economic Policy Institute.

Alliance for Excellent Education. 2008a. *Measuring and improving the effectiveness of high school teachers*. Washington, DC: Author.

_____. 2008b. *What keeps good teachers in the classroom?* Washington, DC: Author.

_____. 2007. *High school teaching for the twenty-first century: Preparing students for college*. Washington, DC: Author.

_____. 2004. *Tapping the potential: Retaining and developing high-quality new teachers*. Washington, DC: Author.

American Association of Colleges of Teacher Education. 2007. *Preparing STEM teachers*. Washington, DC: Author.

Babu, S. and R. Mendro. 2003. *Teacher accountability: HLM-based teacher effectiveness indices in the investigation of teacher effects on student achievement in a state assessment program*. Presented at the American Education Research Association Annual Meeting.

Berry, B. 2007. *Recruiting and retaining quality teachers for high-needs schools*. Hillsborough, NC: Center for Teaching Quality.

Berry, B., K. Bosetti, H. Gallagher, H. Hough, J. Koppich, and A. Wiese. 2006. *The impact of National Board-certified teachers on low-performing schools*. Paper presented at the American Educational Research Association Annual Meeting.

Bililign, S. and C. Stone. 2006. "Enhancing North Carolina's math and science teacher-preparation programs." PowerPoint Presentation. Greensboro, NC: North Carolina A&T State University.

Boyd, D., H. Lankford, S. Loeb, and J. Wyckoff. 2005a. Explaining the short careers of high achieving teachers in schools with low-performing students. *American Economic Review* 95(2).

Boyd, D., P. Grossman, H. Lankford, S. Loeb, and J. Wyckoff. 2005b. *How changes in entry requirements alter the teacher workforce and affect student achievement*. Albany, NY: The Teacher Pathways Project.

Boyd, D., H. Lankford, S. Loeb, J. Rockoff, and J. Wyckoff. 2007. *The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools*. Washington, DC: Urban Institute.

Carnegie Corporation. 2008. *Teachers for a new era*. http://www.teachersforanewera.org/ (accessed February 17, 2008).

_____. 2007a. *Help for beginning teachers. Carnegie Reporter* 4 (2).

Center on Education Policy. 2007a. *Principles for reauthorizing the teacher provisions of the No Child Left Behind Act and the Higher Education Act*. Washington, DC: Author.

_____. 2007b. *Implementing the No Child Left Behind teacher requirements*. Washington, DC: Author.

Center for Teaching Quality. 2007a. *Teaching and learning conditions improve high school reform efforts*. Hillsborough, NC: Author.

Center for Teaching Quality. 2007b. *Performance-pay for teachers*. Hillsborough, NC: Author.

Clark County School District. 2005. Negotiated Agreement between the Clark County School District and the Clark County Association of School Administrators and Professional-technical Employees. October 20, 2005.

Clotfelter, C., H. Ladd, and J. Vigdor. 2007a. *Teacher credentials and student achievement in high school: A cross-subject analysis with fixed effects*. Washington, DC: Urban Institute.

Clotfelter, C., H. Ladd, J. Vigdor, and J. Wheeler. 2007b. *High poverty schools and the distribution of teachers and principals*. Working paper 1. Washington, DC: Urban Institute.

Daly, T. 2007. "Improving teacher selection to improve student results." PowerPoint presentation. New York: The New Teacher Project.

Darling-Hammond, L. 2007. A marshall plan for teaching: What it will really take to leave no child behind. *Education Week*, 26 (18).

Darling-Hammond, L. and V. Cobb (eds). 1995. *Teacher preparation and professional development in APEC Members: A comparative study*. Washington, DC: U.S. Department of Education.

Data Quality Campaign. 2008. *Developing and supporting P–20 education data systems*. Austin: National Center for Educational Accountability.

_____. 2007. *Benefits of and lessons learned from linking teacher and student data*. Austin: National Center for Educational Accountability.

DeAngelis, K. and J. Pressley. 2007. *Leaving schools or leaving the profession: Setting Illinois' record straight on new teacher attrition*. Edwardsville, IL: Illinois Education Research Council.

Decker, P. T., D. P. Mayer, and S. Glazerman. 2004. *The effects of Teach for America on students: Findings from a national evaluation*. Princeton, NJ: Mathematica Policy Research, Inc.

Denver Public Schools. 2008. *ProComp*. http://denverprocomp.org/ (accessed February 17, 2008).

EdSource. 2008. *Math and science teachers: Recruiting and retaining California's workforce.* Mountain View, CA: Author.

The Education Trust. 2008. *Their fair share*. Washington, DC: Author.

_____. 2006. *Missing the mark: An Education Trust analysis of teacher-equity plans*. Washington, DC: Author.

_____. 2005. *Gaining traction, gaining ground*. Washington, DC: Author.

Education Trust–West. 2005. *California's hidden teacher spending gap*. Oakland, CA: Author.

Ferguson, R. and H. Ladd. 1996. Additional evidence on how and why money matters. In H. Ladd (ed). *Holding schools accountable*. Washington, DC: The Brookings Institution.

Garet, M. S., A. C. Porter, L. Desimone, B. B. Birman, and K. S. Yoon. 2001. What makes professional development effective? *American Educational Research Journal* 38, no. 4.

Gitomer, D. 2007. *Teacher quality in a changing policy landscape*. Princeton, NJ: Educational Testing Service.

Goldhaber, D. 2006. *Teacher pay reforms*. Washington, DC: Center for American Progress.

Goldhaber, D., B. Gross and D. Player. 2007. Are public schools really losing their "best"? Working Paper 12. Washington, DC: Urban Institute.

Gore, L. 2007. *The link between teacher quality and student outcomes: A research synthesis*. Washington, DC: National Comprehensive Center for Teacher Quality.

_____. 2006. *Revising the equitable distribution component in your state's plan for highly qualified teachers*. Washington, DC: National Comprehensive Center for Teacher Quality.

Hanushek, E. 1992. The trade-off between child quantity and quality. In *The Journal of Political Economy* 100 (1).

Hanushek, E. and S. Rivkin. 2007. Pay, working conditions, and teacher quality. In *The Future of Children* 17 (1).

Hanushek, E. A., J. F. Kain, and S. G. Rivkin. 2005. *Teachers, schools, and academic achievement*. *Econometrica* 73 (2).

Helms, A. D. 2008. Hiring still lags at poor schools: CMS board reconsidering forced teacher transfers. Charlotte, NC: Charlotte Observer. January 23, 2008.

Hirsch, E. and S. Emerick. 2006a. *Teacher working conditions are student learning conditions: A report on the 2006 North Carolina teacher working conditions survey*. Hillsborough, NC: Center for Teaching Quality.

_____. 2006b. *Arizona teacher working conditions*. Hillsborough, NC: Center for Teaching Quality.

Hirsh, S., and J. Killion. 2007. *The learning educator.* Oxford, OH: National Staff Development Council.

Ingersoll, R. 2007a. *A Comparative Study of Teacher Preparation and Qualifications in Six Nations*. Consortium for Policy Research in Education.

_____. 2007b. Quality programs for new teacher support. Paper presented at the 2007 Annual Meeting of the American Educational Research Association.

_____. 2004. Why some schools have more underqualified teachers than others. In D. Ravitch (ed.). *Brookings Papers on Education Policy*, 45–88. Washington, DC: Brookings Institution Press.

_____. 2003. Is there really a teacher shortage? Philadelphia: Consortium for Policy Research in Education.

Institute for Educational Leadership. 2000. *Leadership for student learning*. Washington, DC: Author.

Jepsen, C. and S. Rivkin. 2002. *Class size reduction, teacher quality, and academic achievement in California public elementary schools*. San Francisco: Public Policy Institute of California.

Jerald, C. 2002. *All talk, no action: Putting an end to out-of-field teaching*. Washington, DC: The Education Trust.

Johnson, S. M. 2006. *The workplace matters: Teacher quality, retention, and effectiveness.* Washington, DC: National Education Association.

Kane, T., J. Rockoff, and D. Staiger. 2006. *What does certification tell us about teacher effectiveness? Evidence from New York City*. Cambridge, MA: National Bureau of Economic Research.

Kapadia, K., V. Coca, and J. Easton. 2007. *Keeping new teachers*. Chicago: Consortium on Chicago School Research.

Koppich, J., C. Asher, and C. Kerchner. 2002. *Developing careers, building a profession: The Rochester career in teaching plan*. Washington, DC: National Commission on Teaching & America's Future.

Lee, J., S. Clery, and J. Pressley. 2001. *Paths to teaching.* Edwardsville, IL: Illinois Education Research Council.

Levin, J. and M. Quinn. 2003. *Missed opportunities.* New York: The New Teacher Project.

Levin, J., J. Mulhern, and J. Schunk. 2005. *Unintended consequences*. New York: The New Teacher Project.

Liu, E., S. Johnson, and H. Peske. 2004. *New teachers and the Massachusetts signing bonus program: The limits of inducements.* Paper presented at the Annual Meeting of the American Educational Research Association.

MetLife. 2005. *The MetLife survey of the American teacher: Transitions and the role of supportive relationships.* New York: Author.

Morton, I. *Teacher collaboration in urban secondary schools*. http://www.ericdigests.org/1994/teacher.htm (accessed March 27, 2008).

National Center for Education Statistics. 2006. *Characteristics of schools, districts, teachers, principals, and school libraries in the United States: 2003-04 Schools and Staffing Survey*. Washington, DC: U.S. Department of Education.

_____. 2000. Monitoring school quality: An indicators report. Washington, DC: U.S. Department of Education.

National Commission on Teaching and America's Future. 2008. *Urban teaching academies*. http://www.nctaf.org/resources/demonstration_projects/urban_teaching/index.htm (accessed on March 27, 2008).

_____. 2007. *Reducing the Achievement Gap Through District/Union Collaboration*. Washington, DC: Author.

National Comprehensive Center for Teacher Quality. 2007. *Lessons learned: New teachers talk about their jobs, challenges, and long-range plans*. Washington, DC: Author.

National Institute for Excellence in Teaching. 2008. *Multiple career paths*. http://www.talentedteachers.org/tap.taf?page=element1 (accessed February 17, 2008).

The New Teacher Project. 2007a. *Teacher hiring, assignment, and transfer in Portland public schools*. New York: Author.

_____. 2007b. *Teacher Hiring, assignment, and transfer in Chicago public schools*. New York: Author.

Noell, G. H., B. A. Porter, and R. M. Patt. 2007. *Value-added assessment of teacher preparation in Louisiana: 2004–2006*. http://www.regents.state.la.us/Academic/TE/2007/VAA%20TPP%20Technical%20Report%2010-24-2007.pdf (accessed November 1, 2007).

North Carolina Professional Teaching Standards Commission. 2008. *Standards for working conditions in North Carolina.* http://www.ncptsc.org/STANDARDS%20FOR%20WORKING%20CONDITIONS%20IN%20NORTH%20CAROLINA%20SCHOOLS.doc (accessed on March 16, 2008).

North Carolina Teaching Fellows. 2008. *The Teaching Fellows program*. http://www.teachingfellows.org/theprogram/ (accessed March 27, 2008).

Odden, A. and C. Kelley. 2002. *Paying teachers for what they know and do*. Thousand Oaks, CA: Corwin Press.

Peske, H. and K. Haycock. 2006. *Teaching inequality*. Washington, DC: The Education Trust.

Presley, J., and Y. Gong. 2005. *The demographics and academics of college readiness in Illinois*. Edwardsville, IL: Illinois Education Research Council.

Rivkin, S.G., E.A. Hanushek, J.F. Kain. 2002. *Teachers, schools and academic achievement.* Dallas: University of Texas-Dallas Texas Schools Project.

Roza, M. 2007. *Frozen assets*. Washington, DC: Education Sector.

Sanders, W. and J. Rivers 1996. *Cumulative and residual effects of teachers on future student academic achievement*. Knoxville: University of Tennessee Value-Added Research and Assessment Center.

Sanders, W. and S. Horn. 1998. *Research findings from the Tennessee value-added assessment system database*. *Journal of Personnel Evaluation in Education* 12 (3).

Scott, J. and M. Rhee. 2006. Common sense in teacher hiring. *Education Week* 26, vol. 12. Bethesda, MD: Editorial Projects in Education [EPE]..

Shimahara, N. and A. Sakai. 1995. *Learning to teach in two cultures: Japan and the United States*. New York: Garland Publishing.

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

Spillane, J. 2006. *Distributed leadership*. San Francisco: Jossey-Bass.

Supovitz, J. and V. Klein. 2003. *Mapping a course for improved student learning*. Philadelphia: Consortium for Policy Research in Education.

Supovitz, J. and J. Christman. 2003. *Developing communities of instructional practice*. Philadelphia: Consortium for Policy Research in Education.

Teacher Quality Partnership. 2008. *Teacher quality partnership*. http://www.teacherqualitypartnership.org/ (accessed January 24, 2008).

Tennessee Department of Education. 2007. *Tennessee's most effective teachers: Are they assigned to the schools that need them most?* Nashville: Author.

University of North Carolina Tomorrow Commission. 2007. *Final report*. Chapel Hill, NC: Author.

U.S. Department of Education. 2007. *Findings from the 2006-07 survey on the use of funds under Title II, Part A*. Washington, DC: Author.

Villar, A. and M. Strong. 2007. *Is mentoring worth the money?*. Santa Cruz, CA: The New Teacher Center.

Walsh, K. and S. Jacobs. 2007. *Alternative certification isn't alternative*. Washington, DC: Thomas B. Fordham Institute.

WestEd. 2002. Statewide support: Evaluating California's BTSA program. *R&D Alert* 4 (2).

Wilson, M. and P. Hallum. 2006. *Using student achievement test scores as evidence of external validity for indicators of teacher quality.* Berkeley, CA: University of California at Berkeley.