Teacher Effectiveness: The Conditions that Matter Most and a Look to the Future

Barnett Berry

with Alesha Daughtrey & Alan Wieder

March 2010

The Teacher Effectiveness Debate

Over the last decade, policy and business leaders have come to know what parents have always known: teachers make the greatest difference to student achievement. With new statistical and analytical methods used by a wide range of researchers, evidence has been mounting that teacher quality can account for a large share of variance in student test scores.[1] The evidence on the distribution of qualified and effective teachers is also clear — and the findings are not good. Teachers who have met the demanding standards of National Board Certification and those who have generated higher "value-added" student achievement gains are far less likely to teach economically disadvantaged and minority students.[2] As a result, high-poverty schools are more likely to be beset with teaching vacancies in math and special education,[3] and much more likely to staff classrooms with out-of-field, inexperienced and less-prepared teachers.[4]

Simply stated, the teaching quality gap explains much of the student achievement gap. While most researchers and policy analysts agree about the primary role that teachers play in advancing student achievement,[5] they are often at odds over the best means to identify effective teachers and improve teaching effectiveness.

Despite the growing complexity of teaching in the 21st century, some journalists have gone so far as to propose that effective teachers are born, not made — and *the* key to school reform is attracting more of the "right" people into teaching; and then judging them after they enter teaching on the basis of how well their students score on standardized tests. [6] For them the mark of an effective teacher is whether or not their students achieve one year's worth of academic gain from September to June on an externally developed, multiple-choice test. Checker Finn, a strong proponent of deregulating teaching, argued that in considering teacher effectiveness:

> States should insist on subject knowledge [of a recruit] but otherwise open up entry into teaching. Let the market generate both quality and quantity. Decentralize personnel decisions to individual schools....[and] then hold schools accountable for their results, with teacher performance judged by what students learn on standardized tests.[7]

For Finn and many other vocal opinion-makers, school reform in high-needs schools is best driven by young, intellectually and academically talented teachers, like the Teach for America (TFA) corps members who teach for a few years before they move on to more ambitious or lucrative careers.[8] There is no doubt that the 4,000 teachers TFA recruited to teaching last year brought much-needed energy and enthusiasm to many of the nation's high-needs schools.[9] Indeed, a January 2010 article by journalist Amanda Ripley in *Atlantic Monthly* cited a

variety of individual characteristics that Teach for America possess that appear to be important for teaching in high needs schools. Many of these traits, such as personal "grit," cannot be taught to teachers. But Ms. Ripley's portrayal of William Taylor of Washington, DC – a well-prepared, university-trained new teacher – suggested that the key to effective teaching is both how teachers learn to analyze their practice as well as how they are supported by good administrators and sound teacher recruitment and preparation policies.

In fact, Ms. Ripley concludes that, "if school systems hired, trained, and rewarded teachers according to the principles…identified [to sustain effective teaching], then teachers would not need to work so hard. They would be operating in a system designed in a radically different way—designed, that is, for success."[10] In other words, the challenge of providing effective teaching in every school is less about problems with individual teachers and more about the problems with the systems in which teachers are embedded.

In reality, the right kind of teacher education and certification does matter for teaching effectiveness. But the research shows clearly that there is more variation within traditional preparation programs or "short-cut" alternative ones than there is between them, suggesting that "right kind" means something different than what the pundits or traditionalists suggest. The policy issue on which we have to focus is not how to choose between the two pathways. Rather, we have to figure out what best practices for preparation programs – *any* preparation program and through *either* pathway – ensure that teachers are prepared to teach effectively, especially in high-needs schools.

In addition, there is no question that many state licensing rules serve as barriers to recruiting talented teachers. But the challenge for policymakers is to open up pathways to the teaching profession without sacrificing the quality of professional preparation. This issue is a serious one, because over the last 5 years the number of alternative certification entrants into teaching has doubled – and now almost one in three new recruits enters teaching through a non-traditional pathway.[11] However, 22 percent of these programs require no mentoring, a component that researchers find critical to the development of effective teaching skills. Of those that do, only 30 percent of the recruits reported that they work with their mentors more than once a week; and only 10 percent work with their mentors on a daily basis.[12] Quality counts, especially when training the professionals who work with American children – and it is clear that shortcuts with not only quantity of time but also quality of time are being taken in many of these programs.

But how we define "quality" and "effectiveness" in teaching and teacher training is also critically important, and is no simple matter. While new tools must be developed to identify effective teachers, policymakers should not be seduced by the prospects of relying solely on standardized test results as a means to determine who teaches effectively. Teachers make countless complex decisions each day, in often very different contexts, with wildly variable supports for their work with increasingly diverse students. New measurement tools (e.g., value-added methods) can represent important breakthroughs for focusing teacher effects on student achievement. But even the researchers who study and develop them often admit that they are no silver bullets. And too few analysts, when considering teaching effectiveness, take a hard look to the future and needs of students and teachers who serve them.

Which Measures? To Use Valued-Added Scores or Not

Some researchers and analysts suggest that current standardized tests now in place are always the most accurate means of assessing student progress and teacher effectiveness. Researchers have been refining value-added methods (VAMs), establishing important statistical breakthrough in analyzing standardized test results for signs of student progress and teacher impact. Some school reformers argue value-added scores from these tests should be the primary metric for evaluating teachers and increasing accountability. In fact, although today's value-added systems for measuring teacher effects can provide very useful information, the data are not always reliable measures for making high-stakes decisions. In fact, a recent study revealed that a large percentage of teachers who were identified as the *most ineffective* in one year were then calculated as most ineffective in the next year.[13] For example, in Duval County, literally 30 percent of the teachers identified as the least effective (bottom quintile) in 2001, were ranked in the top two quintiles in 2002 (See Table 1 below.)

Table 1: Quintile rankings of estimated math teacher effects in 2000-01 and 2001-02 (percent of teachers by row)

Ranking in 2000-01		Ranking in 2001-02				
		Bottom 20%	Second 20%	Third 20%	Fourth 20%	Top 20%
Bottom 20%	San Diego	35	25	16	14	11
	Duval Co., FL	30	20	20	12	18
	Hillsborough Co., FL	29	23	20	17	11
	Orange Co., FL	34	23	23	10	10
	Palm Beach Co., FL	24	12	22	26	16
Top 20%	San Diego	12	9	25	24	29
	Duval Co., FL	14	13	22	25	27
	Hillsborough Co., FL	10	13	18	29	31
	Orange Co., FL	7	19	17	26	31
	Palm Beach Co., FL	13	18	18	20	22

SOURCE: Sass, T. (2008). The stability of value–added measures of teacher quality and implications for teacher compensation policy. Washington DC: CALDER.

Beyond the instability of test score data, there are two other reasons for caution in the use of student test scores as a single metric of teaching effectiveness. First, the efficacy of VAMs can be undermined by unreliable standardized tests, or those that cover only some state and district learning objectives. These limitations lead to serious questions about its use to assess individual teacher effectiveness, or even reliable estimates of student learning growth. Also, an important aspect of evaluation tools of any type is that they offer useful formative feedback, telling professionals exactly what to improve about their performance and suggesting how they might do so. When teachers receive data based on once-a-year standardized tests, they rarely are

informed of why they are or are not effective in teaching their students. They simply have raw scores, absent any deeper analytics that can help them improve their classroom teaching practices. There are ineffective teachers in schools across this country – but there might be fewer if our evaluation systems offered them constructive tools for improvement.

These cautions do not mean that student test score results have no place as part of a comprehensive performance review system. However, they have to be the right tests, with tools that accurately and reliably measure student growth. For example, a fifth grade teacher may teach students who are reading at the second grade level, but the state tests do not have enough items to capture a year's worth of such students' academic growth because the test items cover only fourth to sixth grade level content. In addition, many students in high-needs schools are highly mobile and do not complete a full year of instruction in a given teacher's classroom, while others are taught the same subjects by more than one teacher. Testing tools currently in use do not account for all these variations. To some degree, we might say that while our teaching effectiveness shortfalls may be large, our shortfalls in *measuring* teaching effectiveness and student achievement are even larger.

These complex issues undermine the proposed single-minded uses of VAM, and they also contribute to teachers' distrust of testing programs. Teachers increasingly agree that student performance should be a component of their evaluations, but are hesitant to agree that today's tests are the best measure of student learning. In fact, in a 2009 national poll, teachers were asked to rate the accuracy of different measures for "indicating [their] success as a teacher."[14] The results are compelling: only 12 percent believed that current standardized tests were excellent measures. More than twice as many teachers believe that comparing their students' learning (beyond test scores) were excellent measures. But almost half (46 percent) reported that student engagement measures were the most appropriate data upon which to determine their teaching effectiveness. (See Table 2.)

*Table 2: Percentages of teachers rating a measure as "excellent" in indicating their success as a teacher*
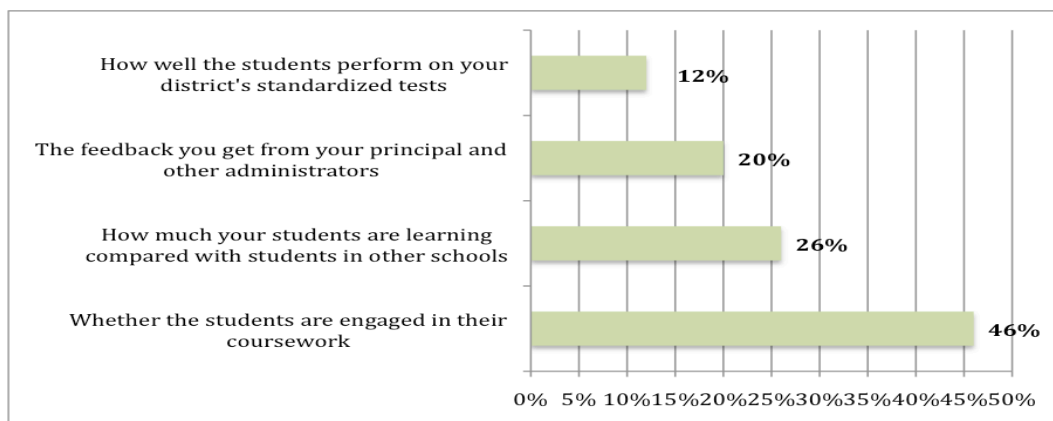
SOURCE: Coggshall, J. G., Ott, A., Behrstock, E. & Lasagna, M. (2009). *Supporting teacher talent: The view from Generation Y.* Washington, DC and New York: Public Agenda and Learning Point Associates. Retrieved February 25, 2010 at http://www.publicagenda.org/pages/supporting-teacher-talent-view-from-Generation-Y.

No doubt this is why the Gates Foundation is focusing closely on building more accurate, useful and reliable evaluation systems. The Measures of Teacher Effectiveness (MET) project will be assembling evidence from over 3,000 teachers in six diverse school districts with a comprehensive approach to developing better metrics for teacher performance reviews. The project will assemble multiple measures of teacher effects on student learning: examining student achievement gains on current standardized tests; observing teachers in their classrooms to offer formative and summative feedback; allowing teachers to view and analyze their own teaching through classroom video recordings; and developing teachers' ability to diagnose student misconceptions of content they are learning, as well as student engagement indicators. The Gates approach to developing better measures of effective teaching suggests that test scores are necessary, but not sufficient on their own.

There is one final, important element of teaching and learning that current student testing and teacher evaluation systems miss: the importance of collaboration and peer learning. The role of collaboration in making teachers more satisfied with their positions and the profession is fairly well understood by researchers.[15] However, recent polling data show that collaboration is also a major contributor to effective teaching and learning. Over 90 percent of the nation's teachers report that their colleagues contribute to their teaching effectiveness.[16] (See Figure 1.) New teachers, in particular, were more likely to strongly agree that their success in the classroom hinged on the effectiveness of others.

Figure 1: Teachers who agree that "other teachers contribute to my success in the classroom"
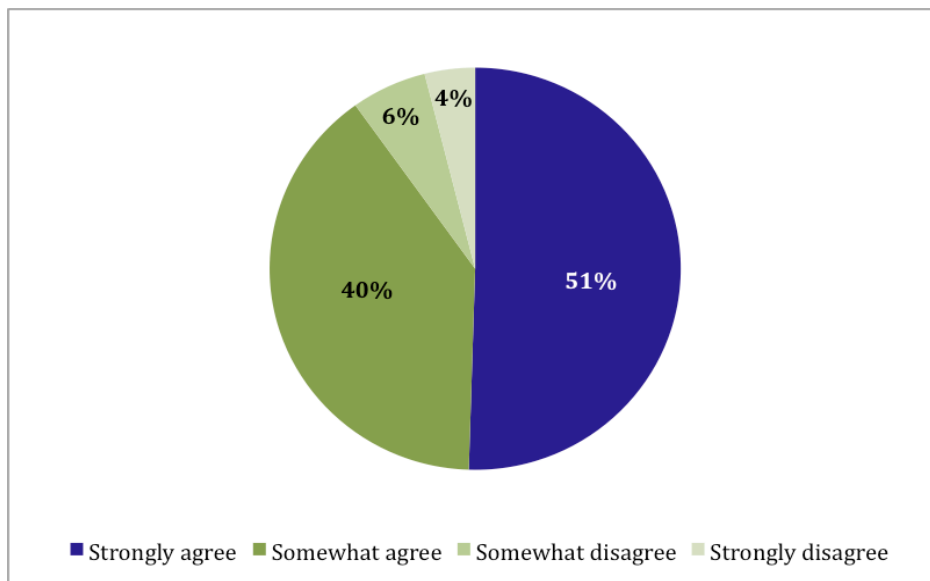
SOURCE: MetLife 2009 Survey of the American Teacher

In another recent study, using 11 years of matched teacher and student achievement data, researchers were able to isolate and quantify the added value generated by such collective expertise. They find that most value-added gains are attributable to teachers who are more experienced and better-qualified, and who stay together as teams within their schools. Drawing on sophisticated analyses, the researchers found that peer learning among small groups of teachers seems to be the most powerful predictor of improved

student achievement over time.[17] (See Table 3.) *Education Week*, in reporting on this groundbreaking research, concluded: "[T]eachers raise their games when the quality of their colleagues improves."[18]

Table 3: Development of shared expertise leads to significant student gains

	Reading Score Impacts (in standard deviations)	Math Score Impacts (in standard deviations)
As estimated value-added of teachers' peers increases, their students' achievement scores simultaneously increase.	+2.6%	+4.0%
Two years after collaborations end, teachers still post greater student achievement gains, suggesting lasting positive effects of collaboration and peer learning.	+7.2%	+7.8%

SOURCE: Jackson, C. K. & Bruegmann, E. (2009, July). Teaching students and teaching each other: The importance of peer learning for teachers. NBER Working Paper 15202. Cambridge, MA: NBER.

These data — and our long-standing work with accomplished teachers across the nation through our virtual community, Teacher Leaders Network — have pressed us to look even more critically at the role that school conditions play in defining and developing teacher effectiveness. It seems that a comprehensive definition of "teacher and teaching effectiveness" should go beyond what an individual teaching professional does (or does not) do in the classroom, to include the whole structure of the school in which that individual teacher is embedded. Indeed, there are schools where talented teachers are not nearly as effective as they could be under other conditions, and vice versa. But what are those conditions?

Teacher Working Conditions and Teaching Effectiveness

A plethora of studies show that many factors and circumstances determine whether qualified teachers can teach effectively. Effective teaching is not just about teachers' knowledge, skills, and dispositions — but also about the conditions under which they work. Education thought leaders from a variety of viewpoints are increasingly acknowledging this as a practical reality for making teachers in high-needs and low-performing schools more effective.

Successful efforts to raise teaching quality and student achievement, especially in high-needs schools, require an intensive focus on working conditions: making sure teachers teach in the fields in which they are prepared; have adequate time to work with colleagues on matters of instruction; have ready access to information, materials and technology; and receive helpful feedback about their teaching.[19] Rosenholtz's landmark study of two decades ago concluded that "learning-enriched schools" were characterized by "collective commitments to student learning in collaborative settings...where it is assumed improvement of teaching is a collective rather than individual enterprise, and that analysis, evaluation, and experimentation in concert with colleagues are conditions under which teachers improve."[20] One recent study found that students achieve more in mathematics and reading when they attend schools characterized by higher levels of teacher collaboration for school improvement.[21]

Other researchers have found that school characteristics such as smaller size and common planning time are key to supporting professional learning communities, which can encourage effective innovation.[22] They have also found that teachers who participate in structured dialogues to analyze student work and collectively solve problems in their schools are more likely to change their teaching practices and improve student achievement.[23] Still other researchers have found that professional development using "scientifically rigorous methodologies" and characterized by depth and duration (30 to 100 hours of time over six months to a year) was likely to impact student achievement positively. Despite this research, high-intensity, job-embedded collaborative learning is not very common among teachers in American schools.[24] Some analysts have claimed that cultivating these teacher working conditions and building a sense of trust in schools are critical factors in school reform – as both have been linked to greater teacher effectiveness, irrespective of the academic ability of teachers and whether they attended a competitive college.[25]

Teaching in a high-needs school is often a frenetic experience. Many teachers find it necessary to put in well over 60 hours a week to manage multiple interventions, meet the social and emotional needs of their students, mediate conflicts when out-of-school turmoil spills over into the classroom, cope with the complexity of teaching highly mobile students, and deal with the constant pressure to prepare for high-stakes tests. A recent Public Agenda poll revealed that teachers, young and old, are primarily "disheartened" by the overemphasis on standardized tests as the tool to judge them and their schools.[26] This effect is certainly heightened in our most challenging school environments.

Many teachers in high-needs schools also struggle to find resources they can use to differentiate instruction for students with varying special needs, including the growing number of students who are learning English as a second language. The pressure to do a nearly impossible job is tremendous. In the absence of supportive working conditions, the human price – all too often – is professional burnout. In a widely read *Washington Post* article, former Teach For America recruit Sarah Fine described why she resigned from teaching after administrators "steadily expand[ed] the workload and workday" while "more and more major decisions were made behind closed doors, and more and more teachers felt micromanaged rather than supported."[27]

CTQ's work with teachers in high-needs schools has led us to look carefully at the kinds of working conditions that seem to matter most for student achievement. Since we started our investigations over five years ago, we have surveyed over 300,000 teachers in seven different states and several major urban school districts. Like other investigators, we have found that quality school leadership, more time for planning and collaboration, and opportunities to take an active role in school decision-making processes all correlate highly with teachers' plans to remain in teaching. In some cases, we also found that these factors related to improved student achievement.[28]

We have learned that elementary school teachers are far more positive about their working conditions, when compared to their middle and high school counterparts; new teachers who have quality support are more likely to report they will remain in teaching; and teachers who report relatively low levels of satisfaction with their professional development often do not have access to the kinds of training they believe they need. These findings are not surprising for

anyone who has spent time in schools, but nonetheless are rarely addressed by those who seek to improve teacher and teaching effectiveness.

The early results of our working conditions research showed more variation in teachers' reports of their working conditions within schools than among them. In particular, those survey results showed no significant differences between high-needs and "not-so-high-needs" schools. Taken together, and given the evidence of other research and our own observations, these two results suggested that our instruments were insufficiently sensitive to capture the realities of these very different school environments.

Therefore, over the last year, with support from the Ford Foundation, we launched a series of case studies in several high-needs urban districts to understand more deeply the effects of working conditions on the retention of effective teachers in challenging schools. Our early findings call to mind the work of Dr. W. Edwards Deming, legendary for his role in reinvigorating Japanese industries after World War II, who developed the "85-15 rule." According to Deming, 85 percent of a worker's performance is determined by the system in which they work, and the remaining 15 percent by their individual effort.[29] In other words, it is the system that needs most of our attention. Improving student learning in the 21st century will require policymakers to get beyond the usual debates about teaching effectiveness and focus not just on the qualities of individual teachers, but on the conditions that facilitate their improved effectiveness.

Going Deeper: Working Conditions that Matter Most

Our recent case studies have surfaced a range of working conditions that seem to matter most for effective teaching, teacher retention, and student achievement. The work we report here is only exploratory, but we have uncovered a number of tightly connected factors that seem to determine whether teachers in high-needs schools find their work environment supportive of their teaching and beneficial in building their own capacity to help their students meet academic standards. What follows are brief descriptions of several key "threshold" conditions on which schools and districts should focus to promote effective teaching and student learning.

First, it is important to point out that with rapid changes in learning technologies, effective classrooms in the 21st century will not focus solely on imparting siloed information to students in discrete classrooms. Rather, researchers[30] and teachers[31] project that effective education will be increasingly about how well topics and skills can be interconnected to boost higher-order thinking and learning, capacities for clear communication, and critical and strategic thinking. Teachers will need to be not only content area experts, but also sound managers of students' educational experiences, coordinating diverse sources of learning beyond the standard text and lecture. Creating school environments that support this kind of effective teaching goes well beyond the traditional "working conditions" issues related to the time, resources and training available to teachers. Increasingly, research points to the fact that it is not just *what* teachers can access, but *how* they use those accessed resources to advance instructional excellence, that will determine their effectiveness and their longevity in the profession.

1. Preparing teachers, seriously, for high-needs schools

Our research has pointed to several types of in-depth preparation essential for effective teaching in high-needs schools. No matter the talent or enthusiasm new recruits may possess, serious preparation matters a great deal for teaching effectiveness. All teachers in these settings need preparation for working with special needs students and with students who are learning English as a second language. Our case study findings found that teachers who entered teaching with more of these skills were more at ease, less harried, more likely to respond favorably to the students they were teaching, and more likely to have the pedagogical tools to teach them.

We have also learned that teachers in high-needs schools need to acquire specific knowledge about how to manage reform mandates. Such training helps teachers to manage multiple interventions more effectively, meet the social and emotional needs of their students, mediate conflicts when out-of-school turmoil spills over into the classroom, understand the complexity of teaching highly mobile students, and deal with the rush to prepare for high-stakes tests. With deeper preparation, one administrator in a high-needs school district told us, "they are more likely to keep their heads above water" and "remain in teaching long enough to get good at what they do."

In addition, we have learned that many new teachers in high-needs schools struggle to find resources they can use to differentiate instruction for students with varying academic needs and community or home contexts. Many do not have content-specific mentors who can provide the just-in-time support they need. The teachers we interviewed entered teaching through various pathways, both traditional and alternative. The pathway did not seem to matter, but – as supported by findings in the research cited here – additional preparation for and clinical experience in high-needs schools did. Those teachers with less such specific experience were also less ready to teach effectively in high-needs schools.

2. Staffing schools to build on collective experience and expertise

Many researchers, as noted previously, often do not find that teaching experience (after the first few years) is strongly associated with student achievement. Our research points to two reasons for the tenuous link: (1) a lack of coherent and ongoing mentoring support available to novice teachers in high-needs schools, and (2) administrators who not know how to organize their teaching talent in the best interests of student learning. Some problems of under-preparation and inexperience can be ameliorated by the better use of experienced, expert teachers in coaching and mentoring roles.

One of our case studies makes this point clearly. A well-prepared principal, also well-known in the district for her instructional expertise, was confounded by the influx of brand new teachers in one grade level in her high-needs school. Concerned about the novices' ability to deliver high-quality instruction and their potential for burnout, she made the unusual choice of removing the one seasoned veteran in that particular grade level from full-time teaching. Instead, this veteran circulated daily among the four novice teachers' classrooms as a full-time coach, mentor and team teacher. As the recent research literature suggests, this experiment in collaboration and shared expertise was a success. Despite having only first-year teachers, all four classes were excelling. According to the principal, the novice teachers were already beginning to teach as if they had much more teaching experience. All of the novices were planning to remain in

teaching, defying the typical attrition rate among new teachers in high-needs schools. This example not only speaks to an innovative form of instructional leadership for principals and veteran teachers in high-needs schools, it reveals that the effects of teaching experience on instructional practice and student achievement are not easily determined.

3. Building skill and creating time for collaboration: horizontally and vertically

As the positive impacts of teacher collaboration have become more widely recognized and promoted, more schools and districts have encouraged collective practice within grade level or subject area teams. In one of our case study sites, survey data revealed that more teachers are reporting adequate time for collaboration at their schools. Collaboration – if done in a structured and focused manner – can be incredibly important in helping teachers develop effective teaching practices and problem-solving skills.

Teachers, especially in high-needs schools, clamor for more time — and not just with their grade level or subject matter peers. In one case study site, a high-needs school has struggled to raise third grade test scores, despite a history of horizontal (grade-level) collaboration among teachers. Now they are beginning to experiment with *vertical* collaboration as well, so that K-2 teachers are more aware of – and more accountable for – what needs to be done to lay the groundwork for literacy and numeracy skills that will be tested in the years *after* students leave their classrooms. Vertical collaboration also provides space and structure for early-grades teachers to "hand off" knowledge about how particular students learn best to their upper-grades colleagues, making it more likely that students can get instruction geared to their particular needs from day one in their succeeding classrooms. In this school, teachers are already reporting more confidence in their teaching. The practice has been shown to improve teacher retention and effectiveness over time. However, we have found few systematic efforts in our sites for ensuring both horizontal and vertical planning time.

4. Eliminating out-of-field assignments

The need to cultivate collective expertise – and provide other types of ongoing support and professional development for teachers – is particularly strong in high-needs schools, which have a disproportionate number of beginning and out-of-field teachers. Education budget cuts due to the recession have forced unprecedented numbers of reductions in force (RIFs) over the past year and even more mobility of teachers within and across schools. Even where tenure or seniority has protected some teachers' positions from being cut outright, many teachers have been required to change grade level or subject area, often on a moment's notice. Even if new assignments are not technically out-of-field, the differences between old and new assignments can be drastic, leaving even experienced teachers performing like relative novices.

For instance, in one high-needs school, a veteran earth sciences teacher found himself placed in an upper-grade chemistry classroom earlier this school year, due to forced re-staffing as a result of economic recession:

> I know I'm licensed for any secondary science course, but this feels like starting over. I need new lesson plans for the new subject, and have to use different methods for the new age group. And I only had one class in chemistry in college!

Another veteran teacher was moved from middle school to high school, after being "surplused" twice because of the recession, and was in that sense forced to teach out of field:

> It's really frustrating because I had been teaching at the middle school for so long and finally learned how to teach the early adolescent. The all of a sudden I was fired and then later rehired and sent to a high school where the students are quite different – and I had to teach a course I had never taught before. Then, I got RIFed [pink slipped] again.

In other case study sites, we came across innumerable examples where second grade teachers were being moved to the fifth grade, and vice versa. Even though most of these transfers involved experienced teachers, the differences in curriculum and the developmental age of students posed new pedagogical challenges for them, with few if any formal professional development supports. In this kind of staffing context, traditional notions of induction support as a "beginners only" system are outdated, and the demarcation between experienced and inexperienced teachers becomes even more ambiguous.

Researchers have shown how teacher and teaching effectiveness can be muddied by out-of-field teaching assignments made by administrators who either do not have the resources or the inclination to fill every classroom with teachers who are prepared to teach specific content.[32] Others have documented how administrators rarely select teachers on the basis of instructional effectiveness, but rather on a range of local political and organizational preferences.[33] One of the most confounding working conditions problems in high-needs schools is out-of-field teaching — not the qualifications or dispositions of the individual teachers. Professional development and support systems must evolve to address that need.

5. Managing student transiency & mobility

Research shows that student mobility can depress achievement, not only for the transient students themselves, but also for their classmates.[34] Student mobility, caused by families who must move from one neighborhood or region to another, is disproportionately a problem in high-needs schools, adding another challenge to serving students in these communities. While housing instability and residency issues for low-income and immigrant students are beyond the control of teachers, it has become a problematic working condition for them.

Our case study visits have surfaced how an inflexible school curriculum and outdated data systems undermine teachers' capacity to teach transient students effectively. Some teachers, usually by happenstance, will teach more mobile students than others. Indeed, some teachers may only have a few students enter and exit during the school year, while others may have over 50 percent mobility. Class loads and assignments are rarely altered for teachers with a high incidence of student turnover — few school administrators are trained or expected to manage this kind of student mobility. As a result some teachers are more extended than others — and in many cases, become "exhausted" given the extra work and stress these situations create.

6. Supporting students out of school

Our research also suggests that teachers in high-needs schools need more support from ancillary education and social service professionals to assist them in both reaching and teaching their students. Many students from high-needs communities come to school with an array of family

and personal problems (e.g., abuse, neighborhood violence, food insecurity or actual hunger, lack of proper clothes to wear). These are not excuses for not learning, but they are realities, and teachers need support in connecting the teaching of academic content to the socio-emotional and physical needs of students. A CTQ case study at one Title I school in a southwestern state, led by the school's counseling department, has developed numerous programs to respond to these needs by providing students and their families with school supplies, fresh food, and school uniforms and other clothing. In addition, an "After School All Star" program includes an hour for homework and tutoring as well as an hour of other activities – art, music, and sports – that would otherwise be unavailable to these students. These attempts meet physical needs, offer academic remediation and enrichment activities that help students stay active and learn to love learning, and give time to interact positively with caring adults help close the "learning opportunity gaps" that give rise to achievement gaps.

In addition, our case studies have surfaced a more critical factor in student success: the knowledge that teachers have of afterschool programs and the acumen of administrators in helping connect what takes places during the regular school day with the services and support that students receive in the community (e.g., Big Brother/Big Sister programs). In most of our case study sites, few of the teachers we interviewed had received any information through school or district induction programs about afterschool or summer enrichment programs or other resources for their students available during out-of-school time. None report being explicitly trained to leverage these resources to boost student learning or wellbeing.

Our case study work has also shown us that there are direct educational benefits to involving classroom teachers in building bridges between school and community. For example, some teachers reported to us that they feel far more in control of their work with students when there are specific connections between what they teach in core curriculum and what their students experience in afterschool and summer programs. In some instances, teachers make these connections on their own — and on their own time. Sometimes administrators are aware of these efforts and assist, but often they do not.

Policy Implications

All too often, today's debates over teaching effectiveness nose-dive into a scuffle over whether to use standardized tests to judge teachers. As carefully described herein, current value-added models are far less reliable for judging *individual* teachers than for assessing *whole grades and schools*.[35] And an overemphasis on standardized tests for evaluating students and teachers runs the risk of focusing too much on a narrow definition of basic skills – or the results of once-a-year standardized tests – at the expense of helping students become college- and career-ready for the 21st century.

In defining teaching effectiveness, we need new evaluation tools and processes to assemble multiple measures of academic growth over time, as well to help teachers analyze and change their classroom practices. Teaching is too complex to be judged by a single metric. Careful researchers are calling for a range of tools and metrics to measure teacher effectiveness based on evidence of the following: (1) student learning, including evidence drawn from classroom assessments and value-added student achievement test scores, where appropriate; (2) teacher

performance; and (3) measures of teacher knowledge, skills, and practices associated with student learning. [36]

Policymakers — at both the federal and state level — will need to prepare teachers more deeply. More investments will need to be made in Teacher Residencies, bridging the best of both university-based and alternative preparation, where talented, newly minted college graduates and mid-career switchers are matched to the needs of local districts, paid to learn in a year-long paid internship under the tutelage of master teachers, and trained as change agents while expecting to remain in the profession (not leave after two years). These new recruits have the time to engage in serious study of how students learn, how to document and measure academic progress, understand the cultural context in which they teach, and develop a well-honed repertoire of subject-specific teaching methods.

But perhaps most importantly, too little of today's policy talk and action focuses on the conditions under which teachers can teach effectively. Current research – both ours and the work of others - points to the need for policies and practices that zero in on the specific working conditions and professional supports teachers require to persist and excel in high-needs schools. In particular, policymakers need to focus on the kinds of specialized preparation needed for teaching in challenging classes and contexts, how schools can be organized so teachers can learn from each other (including within and across different grades and subjects), and a laser-like attention to eliminating out-of-field teaching as well as supports for working with highly transient students and afterschool programs critical for student success.

A recent poll by the Public Agenda Foundation found that *nearly 80 percent of teachers* would choose to teach in a school where administrators supported them, rather than a school with significantly higher salaries.[37] Recent research on National Board Certified Teachers (NBCTs) has produced similar findings. [38] Our own work with NBCTs suggests that financial incentives alone will not lure these accomplished teachers to high-needs schools. Factors such as strong principal leadership, a collegial staff with a shared teaching philosophy and pedagogical practices, the autonomy to adapt curriculum to the needs of their diverse students (i.e., no rigid scripted curriculum), and access to subject-specific resources (e.g., classroom reading libraries and science equipment) are first and foremost.[39] Financial incentives were important but not at the top of these teachers' lists. Senior teachers are more than willing to transfer to high-needs schools if the conditions were ripe and they had opportunities to take on new roles and spread their expertise.[40]

We agree that more finely tuned research needs to be conducted to gauge the most critical working conditions linked to effective teaching and student achievement gains. Framing a more accurate narrative of teaching effectiveness will be key to building the political will necessary to advance the working conditions that matter most for students and their learning. Teaching can and should recruit more talented individuals into the profession and ensure they have the right attitudes toward students in high-needs schools. But evidence strongly suggests that we focus less on individual teachers' attributes than on the quality of the structures that develop, support and facilitate the work of effective teachers. A look to the future of teaching and learning requires us to do so.

Defining Teacher Effectiveness for the Future

Already interactive media environments and immersive learning games are creating students with a new profile of cognitive skills, requiring teachers to teach much differently.[41] Advances in cognitive science and human brain-scanning techniques are spawning new teaching methodologies that diagnose and remedy literacy difficulties in children and adults. Now and in the near future, teachers must help groups of students, in both virtual and brick-and-mortar venues, to mutually support each other's learning, promoting a high level of interaction and collaboration that is flexible, democratic and person-centered.

Virtual tools and networking, just coming of age in the early years of the 21st century, will open borderless learning territories for students of all ages, anytime and anywhere — and will require empowered, well-prepared teachers to synthesize a multitude of internet tools for teaching and learning — co-mingling text, images, audio, video, simulations, and games in ways reflective of how re-wired students develop and use knowledge.

Indeed, we are projecting that for the Teachers of 2030 (who I describe in my forthcoming book),* the structure of the profession must look very different than it does now at the height of the dysfunctional debate over how to recruit and utilize talented teachers and principals. The battle over the role of university-based teacher education and alternative certification —and the controversy over how to evaluate and reward teachers — must end.

Imagine that by 2030, policymakers will remove cumbersome state procedures that may inhibit talented individuals from entering teaching — while also avoiding preparation shortcuts that undermine a teacher's readiness to teach, especially in our highest needs schools. Universities, school districts, non-profits and community-based organizations are working together to recruit and develop teachers for high-need schools, which are still very much with us.

In 2030, policymakers, administrators, and teacher unions are no longer arguing over whether to use standardized test score data to assess teaching effectiveness. Under new leadership from a collective of researchers and teacher leaders, an ingenious array of student assessments are instituted that both drive instructional change and assure public accountability.

Imagine in 2030, about 15 percent of the nation's teachers — over 500,000 — have been prepared in customized residency programs designed to fully train them in the cognitive science of teaching and to also equip them for new leadership roles. Most are now serving in hybrid positions where they teach students part of the day or week, and also have dedicated time to lead as student support specialists, teacher educators, community organizers, and virtual mentors in teacher networks. Some spend part of their non-teaching time working closely with university- and think tank-based researchers on studies of teaching and learning — or conducting policy analyses that are grounded in their everyday pedagogical experiences. In some school districts, teachers in these hybrid roles earn salaries comparable to the highest paid administrators, if not more.

These expert teacher leaders, thanks in part to viral networking, have become well known to growing numbers of parents, business and community leaders, and policymakers. They are

---

* *The Teachers of 2030,* slated to be published by Teachers College Press.

honored for their ability to use a wide array of instructional tools, built on brain research and neurological advances, to design personalized, learner-centered experiences and environments for the diverse students who still populate America's public schools.

These specially trained hybrid teachers are groomed for a long career in teaching. As the leaders of their profession, they are expected to support and develop a wide array of classroom practitioners, many of who may transition to other careers during their working life. Master teachers also work closely with content experts, online mentors, and teaching assistants who – with the right supervision – contribute significantly to a teaching and learning enterprise that extends beyond the conventional school day.

The once-vexing struggle to secure qualified and effective teachers for all of America's 60 million students has been resolved. No longer is the "teacher quality" debate focused solely on measuring the effectiveness of individual teachers in isolated classrooms. Instead, most policymakers are more interested in how teachers grow professionally and spread their knowledge to others. In 2030, education accountability systems place a premium on how teachers learn as teams, both in their brick and mortar buildings and in virtual settings where they work with peers, mentors, and coaches. In 2030, curriculum and instruction drives accountability and results, not the other way around as it has for much of education's convoluted past.

By 2030, policymakers have finally rejected top-down social engineering strategies like No Child Left Behind that (however well-intentioned) ultimately sapped initiative and stymied innovation. Instead, school accountability focuses on multiple measures of student learning that are in sync with teacher behaviors known to promote intellectual, social and emotional growth. Accountability systems have also expanded their oversight to assess how effectively district administrators, non-profits, community colleges, and universities support teachers and principals. Powered by the interactivity and flexibility of the Web, teachers are more responsible for student learning than ever before — and education stakeholders hold policymakers more accountable for creating the conditions so talented teachers can teach effectively.

Appendix A: Unpacking the Evidence on Teacher Effectiveness

There is no shortage of research reports on teacher and teaching effectiveness. Bundles of them are released each year by a variety of institutes and think tanks – many revealing particular biases in the way questions are framed and data are assembled. Some scholars have noted that researchers often draw on "differing notions of evidence" in conducting such studies, noting that their conclusions may be driven by different ideologies and "assumptions about the purposes of schooling" in American society.[42]

Our review here is not meant to offer definitive claims, but to set a context for a better understanding of the evidence on teaching effectiveness. Our brief discussion, while more illustrative than exhaustive, raises a number of issues with the conventional wisdom about what makes a teacher effective in a high-needs school.

Debate 1: How much does a teacher's own academic ability matter for teacher effectiveness?

Most research studies do support claims that academic ability is important for teachers to possess and that formal teacher preparation and teaching experience may have only modest effects on student achievement test results. But consumers of these investigations need to read the fine print. For example, a number of researchers have pointed to a teacher's own test scores (e.g., on the Scholastic Aptitude Test) and personal traits such as energy and enthusiasm as predictors of effective teaching.[43] In some ways, this is common sense. However, most studies show a relatively minor relationship between a teacher's verbal skills and her students' own standardized test scores.[44] Overall, the proportion of the variance in student achievement that researchers ascribe to a teacher's academic prowess is small in comparison with other factors such as preparation. However, preparation — and what counts for it —has been very hard to define and measure, given the unevenness of our nation's teacher education enterprise across the nation.

Debate 2: Does teacher preparation really matter for teacher effectiveness?

Traditional teacher preparation is often denigrated because much of the related research on teacher education is muddied by poor designs and variable specification.[45] For example, in one study, researchers compared young recruits from Teach for America, a well-known alternative certification program, with other young teachers in the same high-needs schools and found that the alternate-route teachers produced greater achievement gains in math (but not reading) for their students.[46] But, a close examination of the study revealed that the TFA recruits actually had more practice-based teacher preparation, mentoring, and pedagogical coursework than their peers.[47]

Other studies have shown that alternatively trained teachers who had very limited pedagogical coursework before they began to teach actually *lowered* their students' achievement scores over the course of the academic year.[48] These findings and other research suggest that pathways into teaching do matter for student achievement. Granted, a 2005 synthesis of teacher education research by a panel of the American Educational Research Association did not clearly point to the superiority of any particular program structure (e.g., four-year undergraduate program, a fifth-year post-baccalaureate program, or alternative program).[49] The panel did indicate that, under the right conditions, certain strategies used in preparation programs, such as case studies and teaching portfolios, can yield positive outcomes for teachers and their students. And increasing evidence is pointing to the fact that *the quality of the training*, especially the student-teaching experience and how well the clinical preparation is tied to

relevant pedagogical coursework, is what drives the connections between teacher education to student achievement.[50]

In fact, a 2008 [examination of evidence on teacher education](link) by the National Bureau of Economic Research found that teachers with more extensive clinical training (including a full-year internship) before they begin to teach actually produce higher student achievement gains.[51] In a study of both traditional and alternative pathways into teaching, the researchers – using a large and sophisticated database – found that teacher education programs that produce higher student achievement gains (in their graduates' first year of teaching) had the following characteristics:

(1) Extensive and well-supervised student teaching, with strong "congruence" between the training experience and the first-year teaching assignment;

(2) Opportunities "to engage in the actual practices involved in teaching" (e.g., lesson studies with colleagues);

(3) Opportunities to study and assess local school curricula; and

(4) A capstone experience in which action research or data-focused portfolios are used to make summative judgments about the quality of the teacher candidate.[52]

Debate 3: Does experience – and what type of experience – matter to teacher effectiveness?

Some researchers have not found that teaching experience beyond the initial three years results in improved student test scores.[53] However, not all teachers, even with the same number of years in the classroom, have the same teacher preparation and professional development experiences over time. Other researchers have shown that more *experienced*, *expert* teachers know more than novices and organize the knowledge of content, teaching strategies, and students differently, retrieve it more readily, and can apply it in novel and creative ways.[54] Still others have shown that more seasoned experts are more able to overcome some of the stressful working conditions found in many in high-needs schools. [55]

Teachers do not gain from their experience in a vacuum. Teaching experience may matter for student achievement when teachers have access to their more expert, seasoned colleagues. Researchers have shown that the main reason American students do not perform as well as many of their international peers on achievement measures in math and science is that their teachers are not give the kinds of opportunities to learn from each other.[56] In this investigation it was the collective experience of teachers, as they learned from each other, which seemed to matter most for improving student achievement. (In addition as noted in this policy brief, recent research has found that peer learning among small groups of teachers seems to be the most powerful predictor of student achievement over time.[57])

As part of our own investigations into working conditions, teacher retention and student achievement, one science teacher with 10 years' experience told us:

> I remember those early stages of feeling so overwhelmed as a novice teacher. I was trying to prepare everything one day ahead of where the kids were. And then I went through a stage where I was a little bit more comfortable. I had plenty of content knowledge. That has never been a

problem. The problem has been how to teach it. If it was not for the mentor who helped me, and now my professional learning community, I would not be as effective as I am. I would have to honestly say that it's just in the last couple of years that I really feel good about my teaching and the results I am getting. I think that it really takes five years, with support, to become an effective teacher.

Works Cited

[1] Boyd, D., Lankford, H., Loeb, S., Rockoff, J. & Wyckoff, J. (2007). *The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools.* CALDER Working Paper 10; Ferguson, R. F. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal on Legislation, 28*(2), 465-498; Hanushek, E. A. (1996). *School resources and achievement in Maryland.* Baltimore, MD: Maryland State Department of Education; Rivkin, S.G., Hanushek, E. A., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica, 73*(2), 417–58; Rockoff, J. E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review, 94*(2), 247–252; Sanders, W. L. & Rivers, J. C. (1996). *Cumulative and residual effects of teachers on future student academic achievement.* Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.

[2] Cavalluzzo, L. (2004). *Is National Board Certification an effective signal of teacher quality?* Alexandria, VA: CNA Corporation; Goldhaber, D. & Anthony, E. (2004). Can teacher quality be effectively assessed? Seattle, WA: Center on Reinventing Public Education, University of Washington; Humphrey, D. C., Koppich, J. E. & Hough, H. J. (2005, March 3). Sharing the wealth: National Board Certified Teachers and the students who need them most. *Education Policy Analysis Archives, 13*(18); Sanders, W. L. & Rivers, J. C. (1996). Cumulative and residual effects of teachers on future student academic achievement. Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.

[3] Strizek, G. A., Pittsonberger, J. L., Riordan, K. E., Lyter, D. M., & Orlofsky, G. F. (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, National Center for Education Statistics.

[4] Ingersoll, R. M. (1999). The problem of underqualified teachers in American secondary schools. *Educational Researcher, 28*(2). Retrieved September 15, 2008 from http://www.gse.upenn.edu/faculty_research/docs/ER-RMI-1999.pdf; Mayer, D. P., Mullens, J. E. & Moore, M. T. (2002). Monitoring school quality: An indicators report. Washington, DC: National Center for Education Statistics. Retrieved September 15, 2008 from http://nces.ed.gov/pubs2001/2001030.pdf.

[5] Darling-Hammond, L. & Sykes, G. (2003, September 17). Wanted: A national teacher supply policy for education: The right way to meet the 'highly qualified teacher' challenge. *Education Policy Analysis Archives, 11*(33). Retrieved October 30, 2009 at http://epaa.asu.edu/epaa/v11n33/; Murnane, R. J. (1985, June). Do effective teachers have common characteristics: Interpreting the quantitative research evidence. Paper presented at the National Research Council Conference on Teacher Quality in Science and Mathematics, Washington, DC; Sanders, W. L. & Rivers, J. C. (1996). *Cumulative and Residual Effects of Teachers on Future Student Academic Achievement.* Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center; Wayne, A. J. & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. *Review of Educational Research, 73*(1), 89-122.

[6] Kristof, N. (2006, April 30). Opening classroom doors. *New York Times.* Retrieved April 30, 2006 at http://select.nytimes.com/2006/04/30/opinion/30kristof.html?_r=1.

[7] Finn, C. & Wilcox, D. (1999, August 9). Board games: Failure of National Board for Professional Teaching Standards to accomplish objective of improving quality of teaching in the US. *National Review.* Retrieved July 1, 2007 at http://www.fordhamfoundation.org/institute/publication/publication.cfm?id=161

[8] Rotherham, A. J. (2009). Achieving teacher and principal excellence: A guidebook for donors. Washington, DC: Philanthropy Roundtable. Retrieved November 8, 2009 at http://www.philanthropyroundtable.org/store_product.asp?prodid=210.

[9] See the Real World of Teach for America at http://learningmatters.tv/blog/video/the-real-world-of-teach-for-america-the-series/3669/.

[10] Ripley, A. (2010, January/February). What makes a great teacher? *The Atlantic.* Retrieved February 10, 2010 at http://www.theatlantic.com/doc/201001/good-teaching.

[11] Feistritzer, E. (2009). Alternative teacher certification: A state-by-state analysis 2009. Washington DC: NCEI.

[12] Feistritzer, E. (2009). Alternative teacher certification: A state-by-state analysis 2009. Washington DC: NCEI.

[13] Sass, T. (2008). The stability of value–added measures of teacher quality and implications for teacher compensation policy. Washington DC: CALDER.

[14] Coggshall, J. G., Ott, A., Behrstock, E. & Lasagna, M. (2009). Supporting teacher talent: The view from Generation Y. Washington, DC and New York: Public Agenda and Learning Point Associates. Retrieved February 25, 2010 at http://www.publicagenda.org/pages/supporting-teacher-talent-view-from-Generation-Y.

[15] Berry, B., Daughtrey, A. & Wieder, A. (2010, February). A better system for schools: Developing, supporting and retaining effective teachers. New York and Hillsborough, NC: Teachers Network and the Center for Teaching Quality; Bryk, A. Nagaoka, J. & Newmann, F. (2000). Chicago classroom demands for authentic intellectual work: Trends from 1997-1999. Chicago: Consortium on Chicago School Research; Ingersoll, R. & Perda, D. (2009). The mathematics and science teacher shortage: Fact and myth. Philadelphia: Consortium for Policy Research in Education, University of Pennsylvania; Wei, R., Darling-Hammond, L., Andree, A. Richardson, N. & Orphanos, S. (2009). Professional learning in the learning profession: A status report on teacher development in the US and abroad. Dallas: National Staff development Council.

[16] MetLife Foundation (2009). The MetLife survey of the American teacher: Collaborating for student success. New York: Author.

[17] Jackson, C. K. & Bruegmann, E. (2009, August). Teaching students and teaching each other: The importance of peer learning for teachers. NBER Working Paper 15202. Washington, DC: National Bureau of Economic Research.

[18] Viadero, D. (2009). Top-notch teachers found to affect peers. *Education Week.* Retrieved September 1, 2009 at http://www.edweek.org/ew/articles/2009/09/01/03peer.html?tkn=VQ[F91pv4%2Fm1H05QrumV3xEwIqnZkr5Dl8iG.

[19] Little, J. W. (1996, April). *Organizing schools for teacher learning.* New York: Paper presented at the annual meeting of the American Educational Research Association.

[20] Rosenholtz, S. (1989). *Teacher's Workplace: The Social Organization of Schools.* New York: Longman.

[21] Goddard, Y., Goddard, R. D. (2007, April). A theoretical and empirical investigation of teacher collaboration for school improvement and student achievement in public elementary schools. *Teachers College Record, 109*(4), 877–896.

[22] Louis, K. S., Kruse, S. & Marks, H. (1996). Schoolwide professional community. In F. Newmann and Associates. *Authentic Achievement: Restructuring Schools for Intellectual Quality*, 179-203. San Francisco: Jossey-Bass.

[23] Cohen, D. K., & Hill, H. C. (2001). Learning policy. New Haven, CT: Yale University Press.

[24] Wei, R., Darling-Hammond, L, Andree, A., Richardson, N., and Orphanos, S. (2009). Professional learning in the learning profession: A status report on teacher development in the U.S. and abroad. Dallas, TX: National Staff Development Council.

[25] Bryk, A. S. & Schneider, B. (2002). *Trust in Schools: A Core Resource for Improvement.* New York: Russell Sage Foundation; Rosenholtz, S. J. (1989). *Teachers' Workplace: The Social Organization of Schools.* New York: Longman; Talbert, J., McLaughlin, M. & Rowan, B. (1993). Understanding context effects on secondary school teaching. *Teachers College Record, 95*(1), 45-68.

[26] Johnson, J., Yarrow, A., Rochkind, A., and Ott, A. (2009). Teaching for a living: How teachers see the profession today. New York: Public Agenda Foundation.

[27] Fine, S. (2009, August 9). Schools need teachers like me. I just can't stay. *Washington Post.* Retrieved on August 9, 2009 at http://www.washingtonpost.com/wp-dyn/content/article/2009/08/07/AR2009080702046.html.

[28] Berry, B. and Fuller, E. (2007). Stemming the tide of teacher attrition: How working conditions influence teacher career intentions and other key outcomes in Arizona. Hillsborough, NC: Center for Teaching Quality.

[29] Deming, W. E. (2000). *Out of Crisis.* Cambridge: MIT Press.

[30] Silva, Elena (2009, October). Teachers at work: Improving teacher quality through school design. Washington, DC: Education Sector.

[31] Berry, B. (2009, October). The teachers of 2030: Creating a student-centered profession for the 21st century. Hillsborough, NC: Center for Teaching Quality.

[32] Ingersoll, R. M. (1999). The problem of underqualified teachers in American secondary schools. *Educational Researcher, 28*(2). Retrieved September 15, 2008 from http://www.gse.upenn.edu/faculty_research/docs/ER-RMI-1999.pdf.

[33] Murnane, R. J., & Steele, J. L. (2007). What is the problem? The challenge of providing effective teachers for all children. *The Future of Children, 17*(1), 15-43.

[34] Hartman, C. (2002). High classroom turnover: How children get left behind. In Piche, D. M., Taylor, W. L. & Reed, R. A. (Eds.), *Rights at Risk: Equality in an Age of Terrorism,* 227-244; Rumberger, R. W. & Larson, K. A. (1998). Student mobility and the increased risk of high school dropout. *American Journal of Education, 107*(1), 1-35; US Government Accountability Office (1994). Elementary school children: Many change schools frequently, harming their education. Washington, DC: USGAO.

[35] Harris, D. & Sass, T. (2006). "Teacher training and teacher value-added," paper presented at the 2006 conference of the American Education Finance Association.

[36] Darling-Hammond, L. (2007). Recognizing and enhancing teacher effectiveness: A policymaker's guide. In L. Darling-Hammond and C. D. Prince (Eds.), *Strengthening Teacher Quality in High-Need Schools: Policy and Practice.* Washington, DC: The Council of Chief State School Officers

[37] Rochkind, J.; Ott, A.; Immerwahr, J.; Doble, J.; & Johnson, J. (2007). Lessons learned: New teachers talk about their jobs, challenges, and long-range plans: A report from the National Comprehensive Center for Teacher Quality and Public Agenda. New York: Public Agenda.

[38] Humphrey, D. C., Koppich, J. E., & Hough, H. J. (2005). Sharing the wealth: National Board Certified Teachers and the students who need them most. *Education Policy Analysis Archives*, *13*(18). Retrieved June 1, 2005 from http://epaa.asu.edu/epaa/v13n18/; Koppich, J. E. & Humphrey, D. C. (2006, April 3). Making use of what teachers know and can do: Policy, practice, and National Board Certification. *Education Policy Analysis Archives, 15*(7). Retrieved June 1, 2006 from http://epaa.asu.edu/epaa/v15n17/ .

[39] Berry, B. (2007). Recruiting and retaining quality teachers for high-needs schools: Insights from NBCT summits and other policy initiatives. Hillsborough, NC: Center for Teaching Quality.

[40] Berry, B., Smylie, M., & Fuller, E. (2008). Understanding teacher working conditions: A review and look to the future. Report prepared for the Spencer Foundation. Hillsborough, NC: Center for Teaching Quality.

[41] Dede, C. (2007, February). *Transforming education for the 21st century: New pedagogies that help all students attain sophisticated learning outcomes.* Raleigh, NC: Friday Institute.

[42] Cochran-Smith, M. & Fries, M. K. (2002). The discourse of reform in teacher education: Extending the dialogue. *Educational Researcher, 31*(6), 26–28.

[43] Goldhaber, D. & Anthony, E. (2004). Can teacher quality be effectively assessed? Seattle, WA: Center on Reinventing Public Education, University of Washington.

[44] Murnane, R. J., & Steele, J. L. (2007). What is the problem? The challenge of providing effective teachers for all children. *The Future of Children, 17*(1), 15-43.

[45] Cochran-Smith, M. & Zeichner, K. (2005). Studying teacher education: The report of the AERA Panel on Research and Teacher Education. Mahwah, NJ: Lawrence Erlbaum.

[46] Decker, P.T., Mayer, D.P. & Glazerman, S. (2004). *The Effects of Teach For America on Students: Findings from a National Evaluation.* Princeton, NJ: Mathematica.

[47] Berry, B. (2005, October 19). Teacher quality and the question of preparation. *Education Week.* Retrieved April 1, 2009 from http://www.edweek.org/ew/articles/2005/10/19/08berry.h25.html.

[48] Corcoran, S. P., & Jennings, J. L. (2009). *Review of "An Evaluation of Teachers Trained Through Different Routes to Certification: Final Report."* Boulder, CO and Tempe, AZ: Education and the Public Interest Center & Education Policy Research Unit. Retrieved November 1, 2009 from http://epicpolicy.org/thinktank/review-evaluation-of-teachers.

[49] Cochran-Smith, M. and Zeichner, K. (2005). Studying teacher education: The report of the AERA panel on research and teacher education. Washington, DC: American Educational Research Association.

[50] Humphrey, D. C. & Wechsler, M. E. (2007). *Characteristics of effective alternative teacher certification.* Menlo Park, CA: SRI International; Humphrey, D. C. & Wechsler, M. E. (2005, September). Insights into alternative certification: Initial findings from a national study. *Teachers College Record.* Retrieved October 1, 2008 from http://www.tcrecord.org.

[51] Boyd, D., Grossman, P., Lankford, H., Loeb, S. & Wyckoff, J. (2008, September). Teacher preparation and student achievement. NBER Working Paper Number W14314. National Bureau of Economic Research. Retrieved September 30, 2008 at http://ssrn.com/abstract=1264576.

[52] Boyd, D., Grossman, P., Lankford, H., Loeb, S. & Wyckoff, J. (2008, September). Teacher preparation and student achievement. NBER Working Paper Number W14314. National Bureau of Economic Research. Retrieved September 30, 2008 at http://ssrn.com/abstract=1264576.

[53] Murnane, R. J., & Steele, J. L. (2007). What is the problem? The challenge of providing effective teachers for all children. *The Future of Children, 17*(1), 15-43.

[54] Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1-22; Berliner, D. (1988). The development of expertise in pedagogy. Paper presented at the meeting of the American Association of Colleges for Teacher Education, New Orleans, LA.; Sternberg, R. J., & Horvath, J. A. (1995). A prototype view of expert teaching. *Educational Researcher, 24*(6), 9-17.

[55] Garmston, R. J. (1998). Becoming expert teachers (Part One). *Journal of Staff Development*, *19*(1). Retrieved on April 1, 2009 at http://www.nsdc.org/library/publications/jsd/garmston191.cfm.

[56] Stigler, J. & Hiebert, J. (2009, November). Closing the teaching gap. *Phi Delta Kappan, 91*(3), 32-37.

[57] Jackson, C. K. & Bruegmann, E. (2009, August). Teaching students and teaching each other: The importance of peer learning for teachers. NBER Working Paper 15202. Washington, DC: National Bureau of Economic Research.