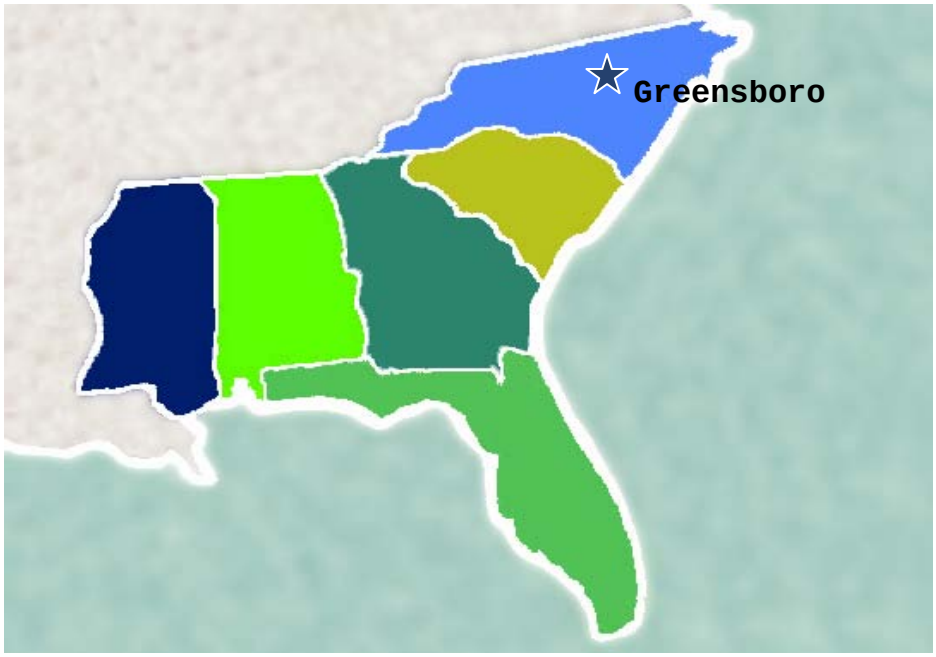
REGIONAL *EDUCATIONAL* LABORATORY
SOUTHEAST ~ SERVECenter

May 2010, EBE # 591D

EVIDENCE BASED EDUCATION REQUEST DESK

OUR GOAL

To assist educators and policymakers in their efforts to apply the evidence base to decisions about policies, programs, and practices they encounter.



REQUEST:

- Please provide a literature review of the teacher quality ARRA assurance.

RESPONSE

Our research work, based upon millions of student achievement records, clearly indicates that differences in teacher effectiveness is the single largest factor affecting academic growth of populations of students.[1]

- William Sanders

Introduction

Teacher quality research and the study of teacher effects received renewed attention and emphasis with Sanders and Rivers' (1996) startling finding that teacher effects are both additive and cumulative, persisting up to an estimated two years after the student has left the teacher's classroom. Sanders and Rivers estimated that a student receiving regular assignments (even by chance) to more effective teachers resulted in differential impact on math achievement by as much as 50 percentile points. Although these findings have undergone subsequent criticism and

[1] In Sanders (2000, p. 334)

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dispute, they serve to underscore the importance of teaching quality on student learning. This EBE Request seeks to provide an overview of recent research regarding teacher quality with special concentration on the teacher effects literature. Particular emphasis has been placed on more recent research (post-2005, with some exceptions) and more quantitative studies. Some parameters were required since this literature is quite extensive. Advances in both the availability of administrative data sets and in analytical techniques have substantially transformed the research in teacher quality over the past fifteen years, providing a level of accuracy and insight previously not always attainable.

The response is divided into eight main sections in an attempt tp provide a broad survey of the current state of the literature: (1) Accountability/Evaluation, (2) Certification/Licensure, Degree Level/Content Knowledge, & Experience, (3) Incentive/Merit/Performance Pay, (4) Professional Development, (5) Recruitment/Retention/Turnover, (6) Guide to the Literature & Research, (7) Additional Resources, and (8) Bibliography/References. All subheadings and discussions are relative to teacher quality/teacher effects. Readers are encouraged to consult the Guide to the Literature & Research to locate citations of specific topics of interest.

Accountability/Evaluation

One of the more active research areas within teacher quality and effects studies presently is teacher accountability and evaluation. With the advent of No Child Left Behind and the availability of administrative and longitudinal data sets, researchers have sought to find more rigorous approaches to not only estimating teacher effects but also to provide more accurate and robust teacher-evaluation protocols. Educators seeking a less "subjective" evaluation procedure as well as the growth in teacher incentive and merit pay programs have hastened the demand for more specific estimates of teachers' contribution to the education production function. One response of late to this demand has been the promulgation of value-added models (VAM) that seek to isolate the effect of the teacher on student achievement while controlling for a variety of predictors.[2] Essentially, VAM uses teachers' current student achievement to estimate the teachers' contribution to student learning.

The research in VAM gets technical fairly quickly since most of the discussions revolve around psychometric properties and various aspects of statistical modeling—Braun (2005), Goe (2008), and Koretz (2008) provide nice overviews of the issues and research for a more conceptual perspective. McCaffrey et al. (2003) provides one of the most comprehensive reviews of VAM while keeping the discussion accessible and Braun, Chudowsky, and Koenig (2010) present a National Academies of Sciences November 2008 conference proceedings which provides a

[2] See Braun (2005), Goe (2008), Harris (2009a, 2009b), Hill (2009a, 2009b), Koretz (2008), and Odden, Borman, and Fermanich (2004) for accessible overviews of the issues and research involved with VAM; see Ballou (2004, 2005), Ballou, Sanders, and Wright (2004), Braun, Chudowsky, and Koenig (2010), Harris (2009c), Koedel and Betts (2009, 2010), Ladd (2008), Lissitz (2005, 2006), McCaffrey et al. (2003, 2004, 2009), Reardon and Raudenbush (2009), and Rothstein (2009, 2010) for more technical discussions of the research, various model specifications and limitations.

comprehensive and current overview of the issues from the leading VAM researchers. Harris (2009a, 2009b) and Hill (2009a, 2009b) provide a nice exchange on the potential uses and limitations of VAM for teacher accountability and evaluation.

Several potential limitations to VAM have been discussed in the research. First, VAM can only generate estimates for teachers and grades that have associated tests, which would leave off a significant portion of teachers at both the elementary and secondary grades. Second, VAM requires multiple years of data and a minimum number of valid test scores which would not be available for newer teachers, those that serve special student populations (i.e., disabled, limited English proficient, etc.), or those teachers with students having substantial missing test scores. Third, VAM requires a consistent and reliable test metric that is vertically scaled to produce accurate and consistent estimates. Coupled with the sample size and data-limitation issues, this leads to questions of the stability of VAM estimates over time and across grades and subject areas (see McCaffrey et al., 2009). Fourth, there have been questions as to whether the assignment and sorting of students and teachers within schools can lead to biased VAM estimates (see Rothstein, 2009, 2010).

Researchers have begun to try and address these issues and potential limitations of VAM. Kane and Staiger (2008) have conducted one of the few VAM studies utilizing random assignment with Los Angeles County school data and found VAM estimates generated with quasiexperimental estimates to be fairly close to those produced under random assignment. Rothstein's (2009, 2010) analysis of North Carolina data found substantial bias effects with sorting and tracking of students among teachers at the elementary level. Koedel and Betts (2009, 2010) examined Rothstein's findings with an attempt to replicate his results with San Diego data and found the VAM estimates to be much more stable. VAM offers considerable insight into teacher effects and evaluation but requires further advances before many of the preceding questions can be adequately answered.

Kane and colleagues (2010) may offer a fruitful way forward in the area of teacher evaluation by combining the rigor of VAM with the contextualization of classroom observations and instructional practices. In a pioneering study utilizing Cincinnati Public Schools (CPS) teacher data from 2001 to 2009, Kane et al. match students with their teachers and take advantage of CPS's extensive Teacher Evaluation System (TES), a systemwide classroom observation and teacher evaluation system to estimate the association between teacher classroom practices and student achievement. The authors found significant correlations between student test score gains and several classroom measures of teacher effectiveness and instruction. Essentially, teachers that were evaluated to highest on their evaluations produced the largest test score gains in their students.

Certification/Licensure, Degree Level/Content Knowledge, & Experience

The literature examining the impact of teacher certification (presence or type), licensure, degree held (by level), degree of content-level specialization and a teacher's experience is quite extensive as well as inconclusive in many areas. This review does not seek to provide an exhaustive survey of the literature but rather to provide a brief historical context for the most recent findings in quantitative oriented studies. Odden, Borman, and Fermanich's (2004) overview of the classroom, school, and teacher effects literature pose the critical question:

> However, although these studies have documented that teachers and classrooms have variable impacts on student learning gains, most have not indicated what factors related to teachers/classrooms actually cause those impacts. *What we really need to know is if there are particular characteristics of teachers that are associated with high and low impact as well as if there are particular things teachers do instructionally that produce higher or lower impacts on students*. After recognizing that teachers matter greatly, the general hypothesis is that it is what teachers know and actually do in the classroom that affects what students learn (emphasis added; Odden et al., 2004, p. 8).

Goldhaber and Brewer (2000) mark the beginning of the latest iteration of research using econometric and other statistical modeling techniques to attempt and isolate the effect of teacher characteristics on student achievement. The critical advancement in this literature is the matching of students to their teachers[3] as opposed to analyzing teacher effects at the grade or school level. Comparing traditionally certified teachers to those with private school, probationary, emergency or no certification, Goldhaber and Brewer found that traditionally certified teachers exercise positive impact on student math test scores (no significant impact on science scores). Additionally, they found that students taught by emergency certified teachers did no worse than their students taught by their traditionally certified peers. This latter finding prompted Darling-Hammond and colleagues (2001) to contest the Goldhaber and Brewer findings while Goldhaber and Brewer (2001) rejoindered.

What has become increasing clear is that broad measures of teacher quality such as certification, experience, degree held, and the like, do not consistently exercise significant impacts on student achievement, while some elements of these indicators like whether a math-certified teacher (to a lesser degree science certification), the teacher's verbal ability, and graduation from more selective colleges or universities are associated with gains in student achievement.[4] Overall, there appears to be greater heterogeneity within credential status than across (Goldhaber, 2008). Rockoff and colleagues (2008) recent analysis of New York City teachers' characteristics and their impact on student and teacher outcomes find that when measures are combined, they do exercise statistically significant impacts as opposed to being entered individually into analytic

[3] In some studies the matching is uncertain since researchers are often times unable to obtain accurate student-teacher roster files to accurately estimate the effects.

[4] See Goe (2007, 2008), Dee and Cohordes (2008), Goldhaber (2008), Ladd (2008), Odden, Borman, and Fermanich (2004), and Wayne and Youngs (2003) for reviews of this literature.

models. A recent study sponsored by the U.S. Department of Education (Constantine et al., 2009) found that when elementary students in the same grade and school were randomly assigned to teachers trained through different routes (alternative vs. traditional certification), students in the different conditions did not perform any differently on standardized tests on average.

With regard to teacher experience, the empirical literature indicates that teachers are "significantly more effective in each of the first 3 to 5 years of his or her career, with gains from experience being largest in math" (Goldhaber, 2008, p. 148) across both grade levels and content areas. Goldhaber notes that we typically assume each year of experience to be similar but that may not be the case; teacher experience may be nonlinear (Goldhaber, 2008, p. 148). Huang and Moon (2009) find in their analysis of 154 teachers across 53 schools that, like previous studies, overall teacher experience did not consistently predict student achievement but the number of years of teaching experience at a particular grade level was associated with increased student reading scores. This may attest to Goldhaber's general observation that teaching experience is nonlinear in its effect on student achievement, or unmeasured teacher skills acquired through more teaching experience exercise themselves through these channels.

Incentive/Merit/Performance Pay

Overall, the impact of teacher pay incentives on student outcomes has been mixed (Goldhaber, 2008).[5] Currently the U.S. Department of Education has an extensive program entitled the Teacher Incentive Fund (TIF) to promote experimentation with various merit- and performance-pay schemes.[6] Booker and Glazerman's (2009) recent evaluation of Missouri's Career Ladder program has found that teacher bonuses can have an effect on teacher retention but does not lead to larger effects. Aaronson, Barrow, and Dowling's (2007) study of matched student-teacher data from Chicago shows that increases in student achievement cannot be explained by teacher incentive pay but rather by increases in teacher quality.

Clotfelter and colleagues' (2008) study of the North Carolina salary bonus program for public school teachers in high-needs schools found the program did reduce teacher turnover rates by 17 percent in those schools. Similarly, Glazerman et al. (2009) found reductions in teacher turnover rates in their first- year evaluation of the Teacher Advancement Program (TAP) in Chicago, although TAP schools did not produce increases in test scores for the first year. Dee and Keys (2004), utilizing experimental data from Tennessee's Project STAR program found mixed results with the state's merit-pay program, increasing math scores by 3 percentile points but with no significant effects in reading. Finally, Figlio and Kenny's (2007) national study of teacher incentive pay found associated increases in student achievement for incentivized schools, but the authors cannot rule out alternative explanations for the results given the limitations in their data.

[5] see Podgursky and Springer (2007) for a comprehensive review.
[6] See: http://www2.ed.gov/programs/teacherincentive/index.html

Issues of teacher morale, program implementation, and politicization of proposed program confound researchers attempts to estimate impacts from many of the current programs.

Professional Development

Professional and staff development have long been seen as a critical element in improving teacher quality, although determining the elements that lead to sustained improvement in both teacher practice and student learning has been more elusive. Desimore and colleagues' (2002) comprehensive study across five states helped establish the central role that staff development plays in improving classroom instruction and its impact on student learning while Borko (2004) and Scher and O'Reilly (2009) review what we currently know regarding staff development and teacher quality. While knowledge of the effective elements of sound professional development has been identified,[7] the reality across most of the U.S. is that "[s]ound principles of professional development rarely are applied in continuing professional development for teachers" (Goe, 2009, p. 48). Some exceptions have been identified in this review.

San Diego Unified School District (SDUSD) engaged in a systemwide reform beginning in 1998 that placed professional development of teachers as the centerpiece of their literacy improvement effort. Betts (2009) explains that "[p]rofessional development was deconstructed and rebuilt from the ground up" (p. 121), with SDUSD expending as much as $65 million per school year on targeted professional development for teachers to provide literacy support to students identified as struggling. O'Day and Quick (2009) and Quick, Holtzman, and Chaney (2009) provide summative reviews of the SDUSD reform project and found that professional development focused on instructional reform at scale is possible, that emphasis on content and curriculum that incorporates coaching produces increased frequency of this type of instruction and is associated with reading gains, but that sustainability of the reform effort is not ensured.

Recent work by the Wallace Foundation (2009) and subsequent evaluation conducted by RAND (see Augustine et al., 2009) sought to examine whether

> a cohesive leadership system (CLS), defined as well-coordinated policies and initiatives across state agencies and between the state and its districts, will increase the ability of principals to improve instruction in their schools. In particular, the hypothesis holds that coordinating the development of leadership standards, high-quality training, and the conditions that affect principals' work (such as access to data and sufficient resources) will facilitate successful school leadership and support improved teaching and student learning (Augustine et al., 2009, p. xv-xvi).

[7] Six critical elements have been identified for "high-quality professional development": three structural features including form, duration, and participation; and three core features including content focus, active learning, and coherence (Goe, 2009, p. 48). See also: King and Newmann (2001); Sailors and Price (2010); Scher and O'Reilly (2009); and Smylie et al. (2001).

The RAND study was not able to confirm the Wallace Foundation's hypothesis, but was able to demonstrate "that principals reporting favorable conditions also reported that they spent more time on a series of instructional leadership practices" (Augustine et al., 2009, p. xxi). Since the RAND study was essentially observational in design, drawing causal inferences were limited.[8]

Two recent rigorous evaluations sponsored by the U.S. Department of Education, one targeting elementary reading instruction (Garet et al., 2008) and one focusing middle school math (Garet et al., 2010) did produce some significant increases in teacher awareness and use of targeted instructional techniques but did not produce significant gains in student achievement in either study. However, both Sailors and Price (2010) and Saunders, Goldenberg, and Gallimore (2009) found that when professional development is accompanied by coaching or teaming significant impacts on teacher knowledge/instruction and student learning can be realized.

Recruitment/Retention/Turnover

Borman and Dowlings (2008) comprehensive meta-analysis of teacher attrition and retention studies highlighted four central findings within this literature. First, attrition in teaching may not necessarily be "healthy" turnover. Second, personal and professional factors impact attrition and change across teachers' career paths. Third, characteristics of teachers working conditions may have more significant effects on teachers' decisions than previously thought. Finally, many of these issues can be adequately addressed through appropriate policies. Hanushek and Rivkin's recent (2010a) examination of Texas public school data reveal similar trends, however, the authors found that on average it is the lower- performing teachers that tend to leave, especially in high-needs schools. In a related analysis Jacob (2010) found that Chicago public school principals tend to fire the least productive teachers, as measured by teacher absences, value-added gains, and teacher demographics.

Horng's (2009) survey of 531 California elementary teachers revealed that the primary influences on those teachers' decisions to accept employment revolve around working conditions such as school facilities, administrative support, class sizes, and salaries as opposed to student characteristics. Allensworth and colleague's (2009) extensive analysis of Chicago Public School's elementary and high school teachers' preferences for stability similarly revolved around workforce conditions. Higher teacher mobility rates were associated with negative views of principal leadership, teacher collaboration, student behavior issues, and lack of parental of support of the school.

[8] For additional studies examining the impact and importance of leadership see: Bryk et al. (2010); Clotfelter, Ladd, and Vigdor (2005); Graczewski, Knudson, and Holtzman (2009); Marsh et al. (2005); Sebring et al. (2006); and Smylie et al. (2001).

Guide to the Literature and Research

The following "annotated" research review provides a concise overview of the bibliography that follows. Citations are listed in alphabetical order by publication date and arranged by topic areas. Publications can be listed multiple times if there is sufficient topical crossover. All topics are relative to teacher quality/teacher effects. The items listed under "General Overviews, Briefs, & Guides" provide resources that are generally more concise and conceptually oriented regarding their review of the relevant literature.[9]

- **General Overviews, Briefs, & Guides:** Behrstock & Coggshall (2009); Braun (2005); Goe (2007, 2008, 2009); Goe & Croft (2009); Goldhaber (2008); Hanushek & Rivkin (2010b); Ladd (2008); Little, Goe, & Bell (2009); National Governor's Association (2009); Odden, Borman, & Fermanich (2004); and Rice (2010).
- **Achievement Gap:** Akiba, LeTendre, & Scribner (2007); Clotfelter et al. (2005); and Marsh et al. (2005).
- **Alternative Certification:** Constantine et al. (2009); Glazerman, Mayer, & Decker (2006); Suell & Piotrowski (2007); and Xu, Hannaway, & Taylor (2007).
- **Class Size Issues:** Betts, Zau, & Rice (2003); Clotfelter et al. (2007); Dee & Keys (2004); Horng (2009); Nye, Konstantopoulos, & Hedges (2004); Odden, Borman, & Fermanich (2004); and Rivkin, Hanushek, & Kain (2005).
- **Coaching & Teaming:** Quick, Holtzman, & Chaney (2009); and Saunders, Goldenberg, & Gallimore (2009).
- **Data Use:** Miller (2009); and National Governor's Association (2009).
- **Dropout/Graduation Issues:** Koedel (2008).
- **English Language Arts/Literacy/Reading:** Betts (2009); Betts, Zau, & Rice (2003); Clotfelter et al. (2007); Dee & Keys (2004); Garet et al. (2008); Glazerman, Mayer, & Decker (2006); Heck (2009); Jackson & Bruegmann (2009); Jacob & Lefgren (2004); Jacob, Lefgren, & Sims (2008); Kane et al. (2010); Koedel (2009); Neuman & Cunningham (2009); Nye, Konstantopoulos, & Hedges (2004); O'Day & Quick (2009); Parise & Spillane (2010); Quick, Holtzman, & Chaney (2009); Rivkin, Hanushek, & Kain (2005); Sailors & Price (2010); Sanders & Rivers (1996); Sebring et al. (2006); Silk et al. (2009); and Smith, Lee, & Newmann (2001).
- **Finance Issues:** Betts, Zau, & Rice (2003); Cohen, Raudenbush, & Ball (2003); Costrell & Podgursky (2009); and Odden, Borman, & Fermanich (2004).
- **International Comparisons:** Akiba, LeTendre, & Scribner (2007); and Wei et al. (2009).
- **Instructional Issues:** Betts (2009); Betts, Zau, & Rice (2003); Bryk et al. (2010); Cohen, Raudenbush, & Ball (2003); Desimone et al. (2002); Garet et al. (2010); Gitomer (2009);

[9] See also National Comprehensive Center for Teacher Quality (TQ Center), the federally funded center on teacher quality, which produce research syntheses of particular interest: http://www.tqsource.org/

Graczewski, Knudson, & Holtzman (2009); Hanushek & Rivkin (2010a); Lemov (2010); Marsh et al. (2005); Miller (2009); National Governor's Association (2009); O'Day & Quick (2009); Odden, Borman, & Fermanich (2004); Parise & Spillane (2010); Quick, Holtzman, & Chaney (2009); Saunders, Goldenberg, & Gallimore (2009); Sebring et al. (2006); Silk et al. (2009); Smith, Lee, & Newmann (2001); and U.S. Government Accountability (2009b).

- **Labor Supply Issues:** Angrist & Guryan (2008); Boyd et al. (2005); Corcoran (2007); Corcoran, Evans, & Schwab (2004); Costrell & Podgursky (2009); Goe (2009); Goldhaber, Destler, & Player (2010); Harris & Adams (2007); Harris & Rutledge (2010); Harris et al. (2010); Horng (2009); Ingersoll (2001); Jacob (2007, 2010); and Rockoff (2004).
- **Leadership Issues:** Augustine et al. (2009); Bryk et al. (2010); Darling-Hammond & Prince (2007); Glazerman, McKie, & Carey (2009); Graczewski, Knudson, & Holtzman (2009); Harris et al. (2010); Hart et al. (2008); Jacob (2010); Marsh et al. (2005); Odden, Borman, & Fermanich (2004); Rice (2010); Saunders, Goldenberg, & Gallimore (2009); Sebring et al. (2006); and Wallace Foundation (2009).
- **Math:** Aaronson, Barrow, & Sander (2007); Akiba, LeTendre, & Scribner (2007); Betts, Zau, & Rice (2003); Clotfelter et al. (2006, 2007, 2008); Darling-Hammond, Berry, & Thoreson (2001); Darling-Hammond & Prince (2007); Dee & Cohodes (2008); Dee & Keys (2004); Desimone et al. (2002); Garet et al. (2010); Glazerman, Mayer, & Decker (2006); Goldhaber & Brewer (2000, 2001); Heck (2009); Jackson & Bruegmann (2009); Jacob & Lefgren (2004); Jacob, Lefgren, & Sims (2008); Kane et al. (2010); Koedel (2009); Nye, Konstantopoulos, & Hedges (2004); Parise & Spillane (2010); Rivkin, Hanushek, & Kain (2005); Rockoff et al. (2008); Sanders & Rivers (1996); Scher & O'Reilly (2009); Sebring et al. (2006); Smith, Lee, & Newmann (2001); and Xu, Hannaway, & Taylor (2007).
- **Professional Development:** Augustine et al. (2009); Betts (2009); Borko (2004); Bryk et al. (2010); Clotfelter, Ladd, & Vigdor (2005); Darling-Hammond & Prince (2007); Desimone et al. (2002); Garet et al. (2008, 2010); Glazerman, McKie, & Carey (2009); Goe (2009); Graczewski, Knudson, & Holtzman (2009); Jacob & Lefgren (2004); King & Newmann (2001); Marsh et al. (2005); Neuman & Cunningham (2009); O'Day & Quick (2009); Odden, Borman, & Fermanich (2004); Parise & Spillane (2010); Quick, Holtzman, & Chaney (2009); Ross & Bruce (2007); Sailors & Price (2010); Saunders, Goldenberg, & Gallimore (2009); Scher & O'Reilly (2009); Sebring et al. (2006); Silk et al. (2009); Smylie et al. (2001); U.S. Department of Education (2009); U.S. Government Accountability (2009b); Wallace Foundation (2009); and Wei et al. (2009).
- **Science:** Clotfelter et al. (2008); Darling-Hammond & Prince (2007); Desimone et al. (2002); Koedel (2009); Xu, Hannaway, & Taylor (2007); and Scher & O'Reilly (2009).
- **Student Engagement:** Dee & Cohodes (2008).
- **Student Peer Effects:** Betts, Zau, & Rice (2003).

- **Student SES:** Akiba, LeTendre, & Scribner (2007); Betts, Zau, & Rice (2003); and Nye, Konstantopoulos, & Hedges (2004).
- **Student-Teacher Issues/Relationship:** Cornelius-White (2007); and Glazerman, Mayer, & Decker (2006).
- **Student-Teacher Sorting Issues:** Clotfelter et al. (2006); Horng (2009); Koedel & Betts (2009); and Rothstein (2009, 2010)
- **Teacher Certification/Degree/Licensure/NBPST:** Angrist & Guryan (2008); Betts, Zau, & Rice (2003); Clotfelter et al. (2006, 2007); Constantine et al. (2009); Darling-Hammond, Berry, & Thoreson (2001); Darling-Hammond & Prince (2007); Dee & Cohodes (2008); Glazerman, Mayer, & Decker (2006); Goe (2007, 2008, 2009); Goldhaber (2008); Goldhaber & Brewer (2000, 2001); Goldhaber & Hansen (2010); Harris (2009c); Harris & Rutledge (2010); Harris et al. (2010); Harris & Sass (2009); Hart et al. (2008); Huang & Moon (2009); Jacob (2007); Odden, Borman, & Fermanich (2004); Rivkin, Hanushek, & Kain (2005); Rockoff (2004); Rockoff et al. (2008); Rutledge et al. (2010); U.S. Department of Education (2009, 2010); Wayne & Youngs (2003); and Xu, Hannaway, & Taylor (2007).
- **Teacher Experience:** Betts, Zau, & Rice (2003); Clotfelter et al. (2005, 2006); Glazerman, Mayer, & Decker (2006); Goe (2007, 2008, 2009); Goldhaber (2008); Harris & Rutledge (2010); Harris et al. (2010); Huang & Moon (2009); Jacob (2007, 2010); Kardos & Johnson (2007); Nye, Konstantopoulos, & Hedges (2004); Odden, Borman, & Fermanich (2004); Rivkin, Hanushek, & Kain (2005); Rockoff (2004); Rockoff et al. (2008); Rutledge et al. (2010); U.S. Department of Education (2009); and Xu, Hannaway, & Taylor (2007);
- **Teacher Evaluation & Value-Added Models (VAM) Issues:** Aaronson, Barrow, & Sander (2007); Amrein-Beardsley (2008); Ballou (2004, 2005); Ballou, Sanders, & Wright (2004); Boyd et al. (2009); Braun (2005); Braun, Chudowsky, & Koenig (2010); Bryk et al. (2010); Darling-Hammond & Prince (2007); Gitomer (2009); Goe (2007, 2008, 2009); Goe & Croft (2009); Goldhaber & Hansen (2010); Gordon, Kane, & Staiger (2006); Hanushek & Rivkin (2010b); Harris (2009a, 2009b, 2009c); Harris & Rutledge (2010); Hill (2009a, 2009b); Huang & Moon (2009); Jackson & Bruegmann (2009); Jacob (2010); Jacob & Lefgren (2008); Jacob, Lefgren, & Sims (2008); Kane & Staiger (2008); Kane et al. (2010); Koedel (2009); Koedel & Betts (2009, 2010); Koretz (2008); Ladd (2008); Lissitz (2005, 2006); Little, Goe, & Bell (2009); McCaffrey et al. (2003, 2004, 2009); Odden, Borman, & Fermanich (2004); Reardon & Raudenbush (2009); Rockoff (2004); Rothstein (2009, 2010); Sanders (2000); Sanders & Rivers (1996); and Silk et al. (2009).
- **Teacher Incentive/Merit/Performance Pay/Salary Issues:** Aaronson, Barrow, & Sander (2007); Booker & Glazerman (2009); Clotfelter et al. (2008); Costrell & Podgursky (2009); Dee & Keys (2004); Figlio & Kenny (2007); Glazerman, McKie, & Carey (2009); Goe (2009); Goldhaber (2008); Goldhaber, Destler, & Player (2010);

Gordon, Kane, & Staiger (2006); Hanushek & Rivkin (2010a); Jacob (2007); Player (2010); Podgursky & Springer (2007); and Rockoff (2004).

- **Teacher Mentoring:** Glazerman, McKie, & Carey (2009).
- **Teacher Mobility/Turnover:** Allensworth, Poinisciak, & Mazzeo (2009); Borman & Dowling (2008); Clotfelter et al. (2008); Hanushek & Rivkin (2010a); Harris & Adams (2007); Heck (2009); Horng (2009); Ingersoll (2001); Jacob (2007, 2010); and Kardos & Johnson (2007).
- **Teacher Peer Effects:** Jackson & Bruegmann (2009); Kardos & Johnson (2007); and Parise & Spillane (2010).
- **Teacher Preparation:** Boyd et al. (2009); Constantine et al. (2009); D'Agostino & Powers (2009); Glazerman, Mayer, & Decker (2006); Goe (2007, 2008, 2009); Goldhaber (2008); Harris & Rutledge (2010); Jacob (2007, 2010); Rockoff et al. (2008); Rutledge et al. (2010); U.S. Department of Education (2009); and Xu, Hannaway, & Taylor (2007).
- **Teacher Recruitment/Retention:** Behrstock & Coggshall (2009); Booker & Glazerman (2009); Borman & Dowling (2008); Boyd et al. (2005); Corcoran (2007); Corcoran, Evans, & Schwab (2004); Darling-Hammond & Prince (2007); Guarino, Santibanez, & Daley (2006); Hanushek & Rivkin (2010a); Harris et al. (2010); Heck (2009); Horng (2009); Ingersoll (2001); Jacob (2007, 2010); Kardos & Johnson (2007); and Rutledge et al. (2010).
- **U.S. ED/GAO/IES Evaluations, Practice Guides, & Reports:** Constantine et al. (2009); Garet et al. (2008, 2010); U.S. Department of Education (2009, 2010); and U.S. Government Accountability Office (2009a, 2009b).

Additional Resources

- ***Center for Teaching Quality (CTQ):*** The Center for Teaching Quality seeks to improve student learning and advance the teaching profession by cultivating teacher leadership, conducting timely research, and crafting smart policy—all in an effort to ensure that every student in America has a qualified, well-supported, and effective teacher. Since 1999, CTQ's work—rooted in the National Commission on Teaching and America's Future (1996) landmark report What Matters Most—has sought to promote a coherent system of teacher recruitment, preparation, induction, professional development, compensation, and leadership that can dramatically close the nation's student achievement gap: http://www.teachingquality.org/
- ***Center for the Study of Teaching and Policy (CTP; University of Washington):*** The Center for the Study of Teaching and Policy investigates efforts to improve the quality of teaching and learning, the teacher workforce, and the systems of support for teachers'

work in various contexts and at multiple levels of the K–12 educational system: http://depts.washington.edu/ctpmail/

- ***Improving the Distribution of Teachers in Low-Performing High Schools:*** The Alliance for Excellent Education in cooperation with MetLife Foundation sponsored this conference on April 10, 2008,in Washington, DC (audio, PDFs, and video all available): http://www.all4ed.org/events/distributionteachers_lowperformingHSs
- ***Institute of Education Sciences (IES) – Practice Guides:*** http://ies.ed.gov/ncee/wwc/publications/practiceguides/
- ***Institute of Education Sciences (IES) – What Works Clearinghouse (WWC):*** http://ies.ed.gov/ncee/wwc/
- ***National Center for Analysis of Longitudinal Data in Education Research (CALDER):*** The National Center for Analysis of Longitudinal Data in Education Research (CALDER) informs education policy development through analyses of data on individual students and teachers over time. The Center's research focuses most centrally on how teacher policies, governance policies, and social and economic community conditions affect outcomes for teachers and their students. CALDER is one of the new federally funded National Research and Development Centers and is supported by a five-year, $10 million grant from the Institute for Education Sciences at the U.S. Department of Education. Led by Jane Hannaway, the Center is a joint project of the Urban Institute, where she directs the Education Policy Center, and scholars at Duke University, Stanford University, the University of Florida, the University of Missouri, the University of Texas at Dallas, and the University of Washington: http://www.caldercenter.org/
- ***National Center on Performance Incentives (NCPI) (Vanderbilt University):*** The purpose of the Center is to address one of the most contested questions in public education: Do financial incentives for teachers, administrators, and schools affect the quality of teaching and learning? NCPI's work involves a series of rigorous research initiatives, including randomized field trials and evaluations of existing pay-for-performance programs. The National Center on Performance Incentives is funded by a five-year, $10 million grant from the United States Department of Education's Institute of Education Sciences. The grant is a cooperative agreement between the Institute of Education Sciences, the U.S. Department of Education, and Vanderbilt University: http://www.performanceincentives.org/
- ***National Comprehensive Center for Teacher Quality (TQ Center/Learning Points Associates, ETS, and Vanderbilt University):*** The National Comprehensive Center for Teacher Quality (TQ Center) is a national resource to which the regional comprehensive centers, states, and other education stakeholders turn for strengthening the quality of teaching—especially in high-poverty, low-performing, and hard-to-staff schools—and for finding guidance in addressing specific needs, thereby ensuring highly qualified teachers are serving students with special needs. The National Comprehensive Center for Teacher Quality (TQ Center) was launched on October 2, 2005, after Learning Point Associates,

and its partner organizations, ETS, and Vanderbilt University, entered into a five-year cooperative agreement with the U.S. Department of Education to operate the teacher quality content center. In 2004, prior to the launch of the TQ Center, Learning Point Associates, the Education Commission of the States, and ETS created the National Partnership for Teaching in At-Risk Schools, which served as the foundation for the underlying knowledge base supporting the TQ Center's current mission: http://www.tqsource.org/

- ***National Council on Teacher Quality (NCTQ):*** The National Council on Teacher Quality is a nonpartisan research and advocacy group committed to restructuring the teaching profession, led by our vision that every child deserves effective teachers: http://www.nctq.org/p/
- ***Teacher Quality Research (TQR):*** Is a partnership between researchers at Florida State University and the University of Wisconsin at Madison, funded through grants from the U.S. Department of Education and the National Board for Professional Teaching Standards (NBPTS). The purpose of TQR is to provide research evidence on the characteristics and education of effective teachers, in order to develop policies to improve the quality of teachers and instruction: http://www.teacherqualityresearch.org/
- ***Understanding Teaching Quality (UTQ):*** The Understanding Teacher Quality (UTQ) project is examining potential measures of teaching quality to gain a fuller understanding of what makes for effective teaching practice. To this end, we are studying a wide range of measures and practices including direct observations of classroom teaching, analyses of classroom assignments and student work, measures of teachers' pedagogical and content knowledge, and measures of student achievement. This study is supported by a 4-year grant from the Bill and Melinda Gates foundation, and is a collaboration of Educational Testing Service (ETS), RAND Corporation, and the Institute for Social Research at the University of Michigan (ISR-UM): http://www.utqstudy.org/index.html
- ***U.S. Department of Education—Doing What Works (DWW):*** http://dww.ed.gov/
- ***U.S. Department of Education—Improving Teacher Quality State Grants:*** http://www2.ed.gov/programs/teacherqual/index.html
- ***U.S. Department of Education—Race to the Top Fund/Program:*** http://www2.ed.gov/programs/racetothetop/index.html
- ***U.S. Department of Education—Teacher Incentive Fund (TIF):*** http://www2.ed.gov/programs/teacherincentive/index.html
- ***U.S. Department of Education—Teacher Quality and Quality of Teachers and Other Service Providers for Students with Disabilities Grants:*** http://www2.ed.gov/programs/specedtq/index.html
- ***U.S. Department of Education—Teacher Quality Enhancement Grants:*** http://www2.ed.gov/programs/heatqp/tqpsum.html
- ***U.S. Department of Education—Transition to Teaching Grants:*** http://www2.ed.gov/programs/transitionteach/index.html

Bibliography/References

Aaronson, D., Barrow, L., & Sander, W. (2007). Teachers and student achievement in the Chicago public high schools. *Journal of Labor Economics, 25*(1), 95–135.

Abstract: We estimated the importance of teachers in Chicago public high schools using matched student-teacher administrative data. A one standard deviation, one semester improvement in math teacher quality raises student math scores by 0.13 grade equivalents or, over one year, roughly one-fifth of average yearly gains. Estimates are relatively stable over time, reasonably impervious to a variety of conditioning variables, and do not appear to be driven by classroom sorting or selective score reporting. Also, teacher quality is particularly important for lower-ability students. Finally, traditional human capital measures—including those determining compensation—explain little of the variation in estimated quality.

Akiba, M., LeTendre, G.K., & Scribner, J.P. (2007). Teacher quality, opportunity gap, and national achievement in 46 countries. *Educational Researcher, 36*(7), 369–387.

Abstract: The 2003 Trends in International Mathematics and Science Study data from 46 countries showed that, although the national level of teacher quality in the United States was similar to the international average, the opportunity gap in students' access to qualified teachers between students of high and low socioeconomic status (SES) was among the largest in the world. Cross-national analyses revealed that the countries with better teacher quality produced higher mathematics achievement. However, larger opportunity gaps in access to qualified teachers did not predict larger achievement gaps between high-SES and low-SES students cross-nationally. These analyses provide empirical, cross-national evidence of the importance of investing in teacher quality for improving national achievement. National policies and practices related to improving teacher quality appear to be a promising area for future research to identify how other countries have achieved both excellence and equity in student achievement.

Allensworth, E., Ponisciak, S., & Mazzeo, C. (2009). *The schools teachers leave: Teacher mobility in Chicago Public Schools*. Chicago: Consortium on Chicago School Research.

Abstract: This report reveals that about 100 Chicago schools suffer from chronically high rates of teacher turnover, losing a quarter or more of their teaching staff every year, and many of these schools serve predominantly low-income African American children. In the typical Chicago elementary school, 51 percent of the teachers working in 2002 had left four years later, while the typical high school had seen 54 percent leave by 2006. The authors examined the factors associated with high mobility rates, including teachers' background characteristics, school

structure, students' characteristics, and workplace conditions. Workforce conditions such as principal leadership, teacher collaboration, student safety all influence stability. In elementary schools, teachers' perceptions of parents as partners in students' education are strongly tied to stability; in high schools, teachers tend to leave schools with the highest rates of student misbehavior. The data includes personnel records from about 35,000 teachers in 538 elementary schools and 118 high schools. This study reflects the Consortium's commitment to study education issues that are top priorities in Chicago and districts nationwide. While some teacher mobility is normal and expected, high turnover rates can produce a range of organizational problems at schools, such as discontinuity in professional development, shortages in key subjects, and loss of teacher leadership. Previous research also indicates that schools with high turnover are more likely to have inexperienced, ineffective teachers.

Link: http://ccsr.uchicago.edu/publications/CCSR_Teacher_Mobility.pdf

Amrein-Beardsley, A. (2008). Methodological concerns about the education value-added assessment system. *Educational Researcher, 37*(2), 65–75.

Abstract: Value-added models help to evaluate the knowledge that school districts, schools, and teachers add to student learning as students progress through school. In this article, the well-known Education Value-Added Assessment System (EVAAS) is examined. The author presents a practical investigation of the methodological issues associated with the model. Specifically, she argues that, although EVAAS is probably the most sophisticated value-added model, it has flaws that must be addressed before widespread adoption. She explores in depth the shortage of external reviews and validity studies of the model, its insufficient user-friendliness, and methodological issues about missing data, regression to the mean, and student background variables. She also examines a paradigm case in which the model was used to advance unfounded assertions.

Angrist, J.D., & Guryan, J. (2008). Does teacher testing raise teacher quality? Evidence from state certification requirements. *Economics of Education Review, 27*(5), 483–503.

Abstract: The education reform movement includes efforts to raise teacher quality through stricter certification and licensing provisions. Most U.S. states now require public school teachers to pass a standardized test such as the Praxis. Although any barrier to entry is likely to raise wages in the affected occupation, the theoretical effects of such requirements on teacher quality are ambiguous. Teacher testing places a floor on whatever skills are measured by the required test, but testing is also costly for applicants. These costs shift teacher supply to the left and may be especially likely to deter high-quality applicants from teaching in public schools.

Moreover, test requirements may disqualify some applicants that schools would otherwise want to hire. We use the Schools and Staffing Survey to estimate the effect of state teacher testing requirements on teacher wages and teacher quality as measured by educational background. The results suggest that state-mandated teacher testing is associated with increases in teacher wages, though we find no evidence of a corresponding increase in quality. Consistent with the fact that Hispanics have marked lower licensure scores than non-Hispanic Whites or Blacks, testing appears to reduce the fraction of new teachers who are Hispanic.

Augustine, C.H., Gonzalez, G., Ikemoto, G.S., Russell, J., Zellman, G.L., Constant, L., Armstrong, J., & Dembosky, J.W. (2009). *Improving school leadership: The promise of cohesive leadership systems* (MG-885-WF). Santa Monica, CA: RAND Corporation.

Abstract: Improving the nation's public schools is one of the highest priorities of federal, state, and local government in America. Recent research has shown that the quality of the principal is, among school-based factors, second only to the quality of the teacher in contributing to what students learn in the classroom. New programs to develop school leaders who can exercise vigilance over instruction and support effective teaching practices are not likely to succeed, however, if they are inconsistent with other state and district policies affecting school leadership. The Wallace Foundation, which focuses its grantmaking in education primarily on school leadership, has posited that well-coordinated policies and initiatives to develop leadership standards, provide high-quality training, and improve the conditions that affect principals' work will increase their ability to improve instruction in their schools. This study documents the actions taken by the Foundation's grantees to create a more cohesive set of policies and initiatives to improve instructional leadership in schools; describes how states and districts have worked together to forge such policies and initiatives around school leadership; and examines the hypothesis that more cohesive systems do in fact improve school leadership. The study found that it is possible to build more cohesive leadership systems and that such efforts appear to be a promising approach to developing school leaders engaged in improving instruction. Although the study did not find evidence that the full underlying theory behind this initiative is sound, it did find a correlation between improved conditions for principals and their engagement in instructional practices.

Link: http://www.rand.org/pubs/monographs/2009/RAND_MG885.pdf

Ballou, D. (2004). Rejoinder. *Journal of Educational and Behavioral Statistics, 29*(1), 131–134. [See Ballou, Sanders, & Wright (2004)]

Abstract: Not provided.

Ballou, D. (2005). Value-added assessment: Lessons from Tennessee. In R. W. Lissetz (Ed.), *Value added models in education: Theory and applications* (pp. 272–297). Maple Grove, MN: JAM Press.

Abstract: Not provided.

Ballou, D., Sanders, W., & Wright, P. (2004). Controlling for student background in value-added assessment of teachers. *Journal of Educational and Behavioral Statistics, 29*(1), 37–65. [See Ballou, 2004 for rejoinder]

Abstract: The Tennessee Value-Added Assessment System measures teacher effectiveness on the basis of student gains, implicitly controlling for socioeconomic status and other background factors that influence initial levels of achievement. The absence of explicit controls for student background has been criticized on the grounds that these factors influence gains as well. In this research, we modify the TVAAS by introducing commonly used controls for student SES and demographics. The introduction of controls at the student level has a negligible impact on estimated teacher effects in the TVAAS, though not in a simple fixed effects estimator with which the TVAAS is compared. The explanation lies in the TVAAS's exploitation of the covariance of tests in different subjects and grades, whereby a student's history of test performance substitutes for omitted background variables.

Behrstock, E., & Coggshall, J.G. (2009). *Key issue: Teacher hiring, placement, and assignment practices*. Washington, DC: National Comprehensive Center for Teacher Quality.

Abstract: This Key Issue discusses the importance of implementing effective teacher hiring and placement practices, particularly for at-risk districts and schools. It provides strategies for teacher hiring, assignment, and placement that will help districts' approaches to hiring and placing teachers who are likely to be effective and stay in the schools where they start.

Link: http://www.tqsource.org/publications/KeyIssue_HiringPlacementAssignment.pdf

Betts, J.R. (2009). The San Diego Blueprint for Student Success: A retrospective overview and commentary. *Journal of Education for Students Placed at Risk, 14*(1), 120–129.

Abstract: In a series of reforms started in 1998 and formalized with the 2000 introduction of the Blueprint for Student Success, the San Diego Unified School District (SDUSD) implemented a wide-ranging series of reforms designed to boost the literacy skills of students. This article provides an overview of the reforms, assesses the contributions made by the articles in this special issue of JESPAR, and highlights complementarities between this research and related quantitative research. Overall, the evidence suggests that the model of professional development in the 8th largest district in the nation took root and led to tangible changes in the classroom. Achievement analyses by Betts (2005), Betts, Zau, and King (2005), and Betts, Zau, and Koedel (2008) have suggested that the reading achievement of students improved in the lower grades as a result of the reforms, but dipped somewhat in high school. This article concludes with thoughts on the political and financial challenges to sustaining such reforms and the practical difficulties of evaluating their impact.

Betts, J.R., Zau, A.C., & Rice, L.A. (2003). ***Determinants of student achievement: New evidence from San Diego*****. San Francisco: Public Policy Institute of California.**

Abstract: This report presents the results of a unique study conducted by the authors in collaboration with the San Diego Unified School District (the second-largest district in California). For this study, the authors compiled a highly detailed, student-level database that enabled them to link factors influencing student achievement in ways that have not been possible with the state-level data generally used in such studies. In this report, they examine resource inequalities across schools, explore trends in achievement, and, most important, provide detailed statistical estimates of the school and classroom factors that most influence student achievement.

Some of their findings:

- The lowest socioeconomic status (SES) schools generally receive fewer resources than more affluent schools, especially in the case of teacher qualifications in elementary schools.
- An individual student's rate of learning is influenced by the academic ability of peers in his or her classroom and grade. Classroom-level peer effects are stronger in elementary school. Grade-level peer effects are stronger in middle and high school.
- Class size influences gains in reading achievement in elementary grades but does not appear to be of significant importance in middle and high schools.
- Teacher qualifications can make a difference, but the various measures of qualification have sporadic and varying effects in elementary, middle, and high schools, as well as on gains in math and reading achievement.

The authors conclude the study with a discussion of the implications of their findings, especially in light of the grim new financial reality facing most school districts as a result of California's serious budget deficits.

Link: http://www.ppic.org/content/pubs/report/R_803JBR.pdf

Technical Appendix: http://www.ppic.org/content/other/web_appendix_toc.htm

Booker, K., & Glazerman, S. (2009). *Effects of the Missouri Career Ladder program teacher mobility* (MPR Reference No. 6333-400). Washington, DC: Mathematica Policy Research, Inc.

Abstract: This report presents evidence suggesting that a school district's participation in the Missouri Career Ladder Program would tend to increase retention in the district and the profession, especially for mid-career teachers. The report notes that small bonuses can affect behavior but not necessarily lead to large effects.

Link: http://www.mathematica-mpr.com/publications/PDFs/education/MCL_mobility.pdf

Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, *33*(8), 3–15. [*See also Scher & O'Reilly, 2009*]

Abstract: Teacher professional development is essential to efforts to improve our schools. This article maps the terrain of research on this important topic. It first provides an overview of what we have learned as a field, about effective professional development programs and their impact on teacher learning. It then suggests some important directions and strategies for extending our knowledge into new territory of questions not yet explored.

Borman, G.D., & Dowling, N.M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research*, 78(3), 367–409.

Abstract: This comprehensive meta-analysis on teacher career trajectories, consisting of 34 studies of 63 attrition moderators, seeks to understand why teaching attrition occurs, or what factors moderate attrition outcomes. Personal characteristics of teachers are important predictors of turnover. Attributes of teachers' schools, including organizational characteristics, student body composition, and resources (instructional spending and teacher salaries), are also key moderators. The evidence suggests that attrition from teaching is (a) not necessarily "healthy"

turnover, (b) influenced by various personal and professional factors that change across teachers' career paths, (c) more strongly moderated by characteristics of teachers' work conditions than previously noted in the literature, and (d) a problem that can be addressed through policies and initiatives. Though researchers have utilized a number of national and state databases and have applied economic labor theory to questions related to teacher attrition, the authors argue that better longitudinal data on teacher career paths and more nuanced theories are needed.

Boyd, D.J., Grossman, P.L., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher preparation and student achievement. *Educational Evaluation and Policy Analysis, 31*(4), 416–440.

Abstract: There are fierce debates over the best way to prepare teachers. Some argue that easing entry into teaching is necessary to attract strong candidates, whereas others argue that investing in high- quality teacher preparation is the most promising approach. Most agree, however, that we lack a strong research basis for understanding how to prepare teachers. This article is one of the first to estimate the effects of features of teachers' preparation on teachers' value-added to student test score performance. Our results indicate variation across preparation programs in the average effectiveness of the teachers they are supplying to New York City schools. In particular, preparation directly linked to practice appears to benefit teachers in their 1st year.

Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). The draw of home: How teachers' preferences for proximity disadvantage urban schools. *Journal of Policy Analysis and Management, 24*(1), 113–132.

Abstract: This paper explores a little-understood aspect of labor markets, their spatial geography. Using data from New York State, we find teacher labor markets to be geographically very small. Teachers express preferences to teach close to where they grew up and, controlling for proximity, they prefer areas with characteristics similar to their hometown. We discuss implications of these preferences for the successful recruitment of teachers, including the potential benefits of local recruiting and training. We also discuss implications for the modeling of teacher labor markets, including the possible biases that arise in estimates of compensating differentials when distance is omitted from the analyses. This study contributes to the literature on the geography of labor markets more generally by employing data on residential location during childhood instead of current residence, which may be endogenous to job choice.

Braun, H.I. (2005). *Using student progress to evaluate teachers: A primer on value-added models* (PIC-VAM). Princeton, NJ: Educational Testing Service.

Abstract: This Policy Information Perspective is intended to help educators and policymakers understand the benefits and limitations of using valued-added models to evaluate teachers.

Link: http://www.ets.org/Media/Research/pdf/PICVAM.pdf

Braun, H., Chudowsky, N., & Koenig, J. (Eds.) (2010). *Getting value out of value-added: Report of a workshop*. Washington, DC: National Academies Press.

Abstract: Value-added methods refer to efforts to estimate the relative contributions of specific teachers, schools, or programs to student test performance. In recent years, these methods have attracted considerable attention because of their potential applicability for educational accountability, teacher pay-for-performance systems, school and teacher improvement, program evaluation, and research. Value-added methods involve complex statistical models applied to test data of varying quality. Accordingly, there are many technical challenges to ascertaining the degree to which the output of these models provides the desired estimates. Despite a substantial amount of research over the last decade and a half, overcoming these challenges has proven to be very difficult, and many questions remain unanswered—at a time when there is strong interest in implementing value-added models in a variety of settings. The National Research Council and the National Academy of Education held a workshop, summarized in this volume, to help identify areas of emerging consensus and areas of disagreement regarding appropriate uses of value-added methods, in an effort to provide research-based guidance to policy makers who are facing decisions about whether to proceed in this direction.

Contents: 1 Introduction to Value-Added Modeling -- 2 Uses and Consequences of Value-Added Models -- 3 Measurement Issues -- 4 Analytic Issues -- 5 Considerations for Policy Makers -- References -- Appendix A: Workshop Agenda and Participants -- Appendix B: Biographical Sketches of Committee Members and Staff.

Link: http://www.nap.edu/catalog.php?record_id=12820

Bryk, A.S., Sebring, P B., Allensworth, E., Luppescu, S., & Easton, J.Q. (2010). *Organizing schools for improvement: Lessons from Chicago*. Chicago: University of Chicago Press. [*See also Sebring et al., 2006*]

Abstract: In 1988, the Chicago public school system decentralized, granting parents and communities significant resources and authority to reform their schools in dramatic ways. To track the effects of this bold experiment, the authors of Organizing Schools for Improvement

collected a wealth of data on elementary schools in Chicago. Over a seven-year period they identified one hundred elementary schools that had substantially improved—and one hundred that had not. What did the successful schools do to accelerate student learning? The authors of this illuminating book identify a comprehensive set of practices and conditions that were key factors for improvement, including school leadership, the professional capacity of the faculty and staff, and a student-centered learning climate. In addition, they analyze the impact of social dynamics, including crime, critically examining the inextricable link between schools and their communities. Putting their data onto a more human scale, they also chronicle the stories of two neighboring schools with very different trajectories. The lessons gleaned from this groundbreaking study will be invaluable for anyone involved with urban education.

Contents: Acknowledgments -- Prologue: A Tale of Two Schools -- Introduction: A Rare Opportunity to Learn about School Improvement --1 Developing Appropriate Outcome Indicators -- 2 A Framework of Essential Supports -- 3 Testing the Framework of the Essential Supports -- 4 Probing Deeper: Organizational Mechanisms -- 5 Trust, Size, and Stability: Key Enablers -- 6 The Influences of Community Context -- Summary and Conclusions -- Appendix A: Socioeconomic Status Factor -- Appendix B: A Value-Added Indicator: A School's Academic -- Productivity Profile -- Appendix C: Overview of the Fourteen Indicators for the Five Essential Supports -- Appendix D: Probability Experiment to Evaluate Results Presented in Figure 3.3 -- Appendix E: Interview Questions from the Project on Human Development in Chicago Neighborhoods -- Appendix F: Coefficients from Analyses of Leadership in Chapter 4 -- Appendix G: Value-Added Replication Results for 1997 through 2005 -- Appendix H: Efforts of the Consortium on Chicago School Research to Build More Productive Ties between Research, Practice, and Policy to Improve Practice -- Notes -- References -- Index.

Clotfelter, C.T., Glennie, E.J., Ladd, H.F., & Vigdor, J.L. (2008). Would higher salaries keep teachers in high-poverty schools? Evidence from a policy intervention in North Carolina. *Journal of Public Economics, 92*(5–6), 1352–1370.

Abstract: For a three-year time period beginning in 2001, North Carolina awarded an annual bonus of $1,800 to certified math, science and special education teachers working in public secondary schools with either high-poverty rates or low test scores. Using longitudinal data on teachers, we estimate hazard models that identify the impact of this differential pay by comparing turnover patterns before and after the program's implementation, across eligible and ineligible categories of teachers, and across eligible and barely ineligible schools. Results suggest that this bonus payment was sufficient to reduce mean turnover rates of the targeted teachers by 17%. Experienced teachers exhibited the strongest response to the program. Finally, the effect of the program may have been at least partly undermined by the state's failure to fully educate teachers regarding the eligibility criteria. Our estimates most likely underpredict the

potential outcome of a program of permanent salary differentials operating under complete information.

Clotflelter, C.T., Ladd, H.F., & Vigdor, J.L. (2005). Who teaches whom? Race and the distribution of novice teachers. *Economics of Education Review, 24*(4), 377–392.

Abstract: This paper focuses on one potentially important contributor to the achievement gap between black and white students—differences in their exposure to novice teachers. We present a model that explores the pressures that may lead school administrators to distribute novice teachers unequally across or within schools. Using a rich micro-level data set provided by the North Carolina Department of Public Instruction, we find that novice teachers are distributed among schools and among classrooms within schools in a way that disadvantages black students.

Clotfelter, C.T., Ladd, H.F., & Vigdor, J.L. (2006). Teacher-student matching and the assessment of teacher effectiveness. *Journal of Human Resources, 41*(4), 778–820.

Abstract: Administrative data on fifth grade students in North Carolina show that more highly qualified teachers tend to be matched with more advantaged students, both across schools and in many cases within them. This matching biases estimates of the relationship between teacher characteristics and achievement; we isolate this bias in part by focusing on schools where students are distributed relatively evenly across classrooms. Teacher experience is consistently associated with achievement; teacher licensure test scores associate with math achievement. These returns display a form of heterogeneity across students that may help explain why the observed form of teacher-student matching persists in equilibrium.

Clotflelter, C.T., Ladd, H.F., & Vigdor, J.L. (2007). Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review, 26*(6), 673–682.

Abstract: We use a rich administrative dataset from North Carolina to explore questions related to the relationship between teacher characteristics and credentials on the one hand and student achievement on the other. Though the basic questions underlying this research are not new—and, indeed, have been explored in many papers over the years within the rubric of the "education production function"—the availability of data on all teachers and students in North Carolina over a 10-year period allow us to explore them in more detail than has been possible in previous studies. We conclude that a teacher's experience, test scores and regular licensure all have positive effects on student achievement, with larger effects for math than for reading. Taken

together the various teacher credentials exhibit quite large effects on math achievement, whether compared to the effects of changes in class size or to the socio-economic characteristics of students.

Cohen, D.K., Raudenbush, S.W., & Ball, D.L. (2003). Resources, instruction, and research. *Educational Evaluation and Policy Analysis*, *25*(2), 119–142.

Abstract: Many researchers who study the relations between school resources and student achievement have worked from a causal model, which typically is implicit. In this model, some resource or set of resources is the causal variable and student achievement is the outcome. In a few recent, more nuanced versions, resource effects depend on intervening influences on their use. We argue for a model in which the key causal agents are situated in instruction; achievement is their outcome. Conventional resources can enable or constrain the causal agents in instruction, thus moderating their impact on student achievement. Because these causal agents interact in ways that are unlikely to be sorted out by multivariate analysis of naturalistic data, experimental trials of distinctive instructional systems are more likely to offer solid evidence on instructional effects.

Constantine, J., Player D., Silva, T., Hallgren, K., Grider, M., & Deke, J. (2009). *An evaluation of teachers trained through different routes to certification, final report* (NCEE 2009-4043). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Abstract: The report, *An Evaluation of Teachers Trained Through Different Routes to Certification*, compares the achievement of elementary school students in the same grade, at the same school who were randomly assigned to teachers who chose to be trained through different routes to certification—traditional education school routes and alternative routes. The evaluation found that students of teachers who chose to enter teaching through an alternative route did not perform statistically different from students of teachers who chose a traditional route to teaching. This finding was the same for teachers coming from those programs that required comparatively many as well as few hours of coursework; however, among those teachers who reported taking coursework while teaching, their students performed lower than their counterparts.

Link: http://ies.ed.gov/ncee/pubs/20094043/pdf/20094043.pdf

Corcoran, S.P. (2007). Long-run trends in the quality of teachers: Evidence and implications for policy. *Education Finance and Policy*, *2*(4), 395–407.

Abstract: One of the key provisions of the No Child Left Behind Act requires states to ensure that every teacher be "highly qualified." Though the meaning of "highly qualified" remains hotly contested, the legislation's emphasis on teachers is well-founded. Nearly all modern research on the subject finds teacher effectiveness to be among the most important school inputs into student achievement. Yet recent literature, including my own work (Corcoran, Evans, and Schwab 2004), finds evidence that the quality of teachers has steadily eroded over time. In particular, the likelihood that a high-aptitude female pursued a career in teaching dropped precipitously between 1960 and 2000. In this article, I summarize these and related findings, review some of the most common explanations for the trend in teacher quality, and discuss policies that have been advanced to attract talented graduates to the teaching profession.

Corcoran, S P., Evans, W.N., & Schwab, R.M. (2004). Women, the labor market, and the declining relative quality of teachers. ***Journal of Public Policy Analysis and Management, 23*****(3), 449–470.**

Abstract: School officials and policymakers have grown increasingly concerned about their ability to attract and retain talented teachers. A number of authors have shown that in recent years the brightest students—at least those with the highest verbal and math scores on standardized tests—are less likely to enter teaching. In addition, it is frequently claimed that the ability of schools to attract these top students has been steadily declining for years. There is, however, surprisingly little evidence measuring the extent to which this popular proposition is true. We have good reason to suspect that the quality of those entering teaching has fallen over time. Teaching has for years remained a predominately female profession; at the same time, the employment opportunities for talented women outside teaching have soared. In this paper, we combine data from five longitudinal surveys of high school graduates spanning the classes of 1957 to 1992 to examine how the propensity for talented women to enter teaching has changed over time. While the quality of the average new female teacher has fallen only slightly over this period, the likelihood that a female from the top of her high school class will eventually enter teaching has fallen dramatically.

Cornelius-White, J. (2007). Learner-centered teacher-student relationships are effective: A meta-analysis. ***Review of Educational Research, 77*****(1), 113–143.**

Abstract: Person-centered education is a counseling-originated, educational psychology model, overripe for meta-analysis, that posits that positive teacher-student relationships are associated with optimal, holistic learning. It includes classical, humanistic education and today's constructivist learner-centered model. The author reviewed about 1,000 articles to synthesize 119

studies from 1948 to 2004 with 1,450 findings and 355,325 students. The meta-analysis design followed Mackay, Barkham, Rees, and Stiles's guidelines, including comprehensive search mechanisms, accuracy and bias control, and primary study validity assessment. Variables coded included 9 independent and 18 dependent variables and 39 moderators. The results showed that correlations had wide variation. Mean correlations (r= .31) were above average compared with other educational innovations for cognitive and especially affective and behavioral outcomes. Methodological and sample features accounted for some of the variability.

Costrell, R.M., & Podgursky, M. (2009). Peaks, cliffs, and valleys: The peculiar incentives in teacher retirement systems and their consequences for school staffing. *Education Finance and Policy, 4*(2), 175–211.

Abstract: This article examines the pattern of incentives for work versus retirement in six state teacher pension systems. We do this by examining the annual accrual of pension wealth from an additional year of work over a teacher's career. Accrual of wealth is highly nonlinear and heavily loaded at arbitrary years that would normally be considered mid-career. One typical pattern exhibits low accrual in early years, accelerating in the mid- to late fifties, followed by dramatic decline or even negative returns in years that are relatively young for retirement. Key factors in the defined benefit formulas that drive such patterns are identified along with likely consequences for employee behavior. The authors examine efficiency and equity consequences of these systems as well as options for reform.

D'Agostino, J.V., & Powers, S.J. (2009). Predicting teacher performance with test scores and grade point average: A meta-analysis. *American Educational Research Journal, 46*(1), 146–182.

Abstract: A meta-analysis was conducted to examine the degree to which teachers' test scores and their performance in preparation programs as measured by their collegiate grade point average (GPA) predicted their teaching competence. Results from 123 studies that yielded 715 effect sizes were analyzed, and the mediating effects of test and GPA type, criterion type, teaching level, service level, and decade of data collection were considered. It was found that test scores were at best modestly related to teaching competence and that performance in preparation programs was a significantly better predictor of teaching skill. Results revealed that test scores likely do not provide additional information beyond preservice performance to safeguard the public from incompetent teaching.

Darling-Hammond, L., Berry, B., & Thoreson, A. (2001). Does teacher certification matter? Evaluating the evidence. ***Educational Evaluation and Policy Analysis*****, *23*(1), 57–77.** [See rejoinder by Goldhaber & Brewer, 2001; and Goldhaber & Brewer, 2000 for original article]

Abstract: The authors respond to Dan Goldhaber and Dominic Brewer's article in the Summer 2000 issue of *Educational Evaluation and Policy Analysis* that claimed from an analysis of NELS teacher and student data that teacher certification has little bearing on student achievement. Goldhaber and Brewer found strong and consistent evidence that, as compared with students whose teachers are uncertified, students achieve at higher levels in mathematics when they have teachers who hold standard certification in mathematics. (The same was true to a somewhat lesser extent in science.) However, they emphasized their finding that, "Contrary to conventional wisdom, mathematics and science [students] who have teachers with emergency credentials do no worse than students whose teachers have standard teaching credentials" and suggested that certification be abandoned. This article critiques the methodological grounding for this finding and presents additional data on the characteristics of the small sub-sample of teachers in NELS data base who held temporary and emergency credentials. It finds that most of these teachers have qualifications resembling those of teachers with standard certification, and that those who have more education training appear to do better in producing student achievement. It also reviews the literature on teacher education and certification as the basis for evaluating Goldhaber and Brewer's claim that states should eliminate certification requirements and proposes additional research that would illuminate how teacher education and certification operate—and could better operate—to enable teachers to succeed in their work.

Darling-Hammond, L., & Prince, C.D. (2007). ***Strengthening teacher quality in high-need schools: Policy and practice*****. Washington, DC: Council of Chief State School Officers.**

Abstract: High-quality teaching is more important than it has ever been as schools, districts and states face the critical challenge of educating ALL students at higher levels than ever before. Educators are feeling increased pressure to do more with a more diverse population. With generous support from The Joyce Foundation, the Council of Chief State School Officers is reflecting on the challenges of teachers in this document because there are great things going on all over the United States to improve learning for students. States, districts, cities, and schools are developing innovative programs and methods to overcome challenges in the classroom even before the teacher is hired. Others are doing great things to improve the professional development being offered to teachers and leaders, making it more relevant and timely. Still others are working to create environments in which great teaching can happen. This report addresses four challenging topics—the first being understanding and evaluating teacher effectiveness. The final three chapters, devoted to topics within the context of high-need schools,

are attracting mathematics and science teachers, special skills needed to teach diverse learners, and the role of leadership in attracting and retaining teachers.

Link: http://www.ccsso.org/publications/details.cfm?PublicationID=354

Dee, T.S., & Cohodes, S R. (2008). Out-of-field teachers and student achievement: Evidence from matched-pairs comparisons. *Public Finance Review, 36*(1), 7–32.

Abstract: This study examines whether subject-specific teacher certification and academic degrees are related to teacher quality. The research design exploits contemporaneous, within-student comparisons made possible by a unique feature of the National Education Longitudinal Study of 1988 (NELS:88). Specifically, NELS:88 contains subject-specific outcomes for eighth-grade students in two subjects as well as data on their teachers for those subjects. The analysis of these data indicates that assignment to a subject-certified teacher is associated with higher test scores. However, these gains appear to be concentrated in social studies and mathematics. Furthermore, the authors also find that subject-certified teachers are not more effective at promoting the intellectual engagement of their students but are more likely to have negative opinions of a given student's performance.

Dee, T.S., & Keys, B.J. (2004). Does merit pay reward good teachers? Evidence from a randomized experiment. *Journal of Policy Analysis and Management, 23*(3), 471–488.

Abstract: A common criticism of merit-pay plans is that they fail to systematically target rewards to the most effective teachers. This study presents new evidence on this issue by evaluating data from Tennessee's Career Ladder Evaluation System and the Project STAR class-size experiment. Because the students and teachers participating in the experiment were randomly assigned, inferences about the relative quality of teachers certified by the career ladder should be unbiased. The results indicate that Tennessee's career ladder had mixed success in rewarding teachers who increased student achievement. Assignment to career-ladder teachers increased mathematics scores by roughly 3 percentile points but generally had smaller and statistically insignificant effects on reading scores.

Desimone, L.M., Porter, A.C., Garet, M.S., Yoon, K.S., & Birman, B.F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational Evaluation and Policy Analysis, 24*(2), 81–112.

Abstract: This article examines the effects of professional development on teachers' instruction. Using a purposefully selected sample of about 207 teachers in 30 schools, in 10 districts in five states, we examine features of teachers' professional development and its effects on changing teaching practice in mathematics and science from 1996–1999. We found that professional development focused on specific instructional practices increases teachers' use of those practices in the classroom. Furthermore, we found that specific features, such as active learning opportunities, increase the effect of the professional development on teacher's instruction.

Figlio, D.N., & Kenny, L.W. (2007). Individual teacher incentives and student performance. *Journal of Public Economics, 91*(5–6), 901–914.

Abstract: This paper is the first to systematically document the relationship between individual teacher performance incentives and student achievement using the United States data. We combine data from the National Education Longitudinal Survey on schools, students, and their families with our own survey conducted in 2000 regarding the use of teacher incentives. This survey on teacher incentives has unique data on frequency and magnitude of merit raises and bonuses, teacher evaluation, and teacher termination. We find that test scores are higher in schools that offer individual financial incentives for good performance. Moreover, the estimated relationship between the presence of merit pay in teacher compensation and student test scores is strongest in schools that may have the least parental oversight. The association between teacher incentives and student performance could be due to better schools adopting teacher incentives or to teacher incentives eliciting more effort from teachers; it is impossible to rule out the former explanation with our cross-sectional data.

Garet, M.S., Cronen, S., Eaton, M., Kurki, A., Ludwig, M., Jones, W., Uekawa, K., Falk, A., Bloom, H., Doolittle, F., Zhu, P., & Sztejnberg, L. (2008). *The impact of two professional development interventions on early reading instruction and achievement* (NCEE 2008-4030). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Abstract: The report, *The Impact of Two Professional Development Interventions on Early Reading Instruction and Achievement*, describes the effectiveness of two specific professional development strategies in improving the knowledge and practice of 2nd grade teachers in high-poverty schools and the reading achievement of their students. Both the 8-day content-focused institutes series (treatment A) and the institute series plus in-school coaching (treatment B) produced positive impacts on teachers' knowledge of scientifically based reading instruction and on one of the three instructional practices promoted by the professional development. However, neither intervention resulted in significantly higher student test scores at the end of the one-year

implementation period. The institute series plus in-school coaching did not produce a significantly greater impact on teacher practice than the institute series alone.

Executive Summary: http://ies.ed.gov/ncee/pdf/20084031.pdf

Full Report: http://ies.ed.gov/ncee/pdf/20084030.pdf

Garet, M., Wayne, A., Stancavage, F., Taylor, J., Walters, K., Song, M., Brown, S., Hurlburt, S., Zhu, P., Sepanik, S., & Doolittle, F. (2010). ***Middle school mathematics professional development impact study: Findings after the first year of implementation*** **(NCEE 2010-4009). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.**

Abstract: Results after one year of providing teachers math professional development (PD) indicate no improvement on their students' math achievement when compared to teachers who did not receive the study-provided PD. The Middle School Mathematics Professional Development Impact Study: Findings After the First Year of Implementation included 77 schools in 12 districts in 2007–2008. The PD, although purposely designed to be relevant to the curricula that teachers were using in their classrooms, focused primarily on developing teachers' capability to teach positive rational number topics effectively. America's Choice and Pearson Achievement Solutions were the two professional development providers, each operating in half the districts. Teachers who taught the core 7th grade mathematics class in the study schools were assigned by lottery to either receive the professional development or not. Teachers in all of the study schools continued to be eligible for district-provided PD.

Other key findings include:

- Professional development for the teachers produced no statistically significant impact on their students' achievement in the areas covered by the training-ratio, proportion, fractions, percentages, decimals.
- The training did have a statistically significant impact on one of three measures of teacher practice—"frequency with which teachers engaged in activities that elicited student thinking."
- The training did not have a statistically significant impact on measured teacher knowledge.
- The study's program was implemented as intended and on average resulted in an additional 55 hours of math professional development during the 2007–08 school year.

Executive Summary: http://ies.ed.gov/ncee/pubs/20104009/pdf/20104010.pdf

Full Report: http://ies.ed.gov/ncee/pubs/20104009/pdf/20104009.pdf

Gitomer, D.H. (Ed.) (2009). *Measurement issues and assessment for teaching quality*. Thousand Oaks, CA: Sage Publications.

Abstract: Offering perspectives focused on the meaningful goal of measuring and assessing teacher quality, *Measurement Issues and Assessment for Teaching Quality* brings together leading researchers and practitioners from the fields of education, economics and policy who contribute provocative, illuminating, and coherent articles that explore key issues surrounding this vital topic.

Features:

- Provides an in-depth examination of three thematic sections: Measuring Teaching Quality for Professional Entry, Measuring Teaching Quality in Practice, Measuring Teaching Quality in Context
- Includes section summaries by Drew Gitomer that highlight key issues and common themes that tie the articles together
- Closes with a summary and call to action by Lee Shulman, President of The Carnegie Foundation for the Advancement of Teaching

Measurement Issues and Assessment for Teaching Quality is must reading for principals, educational administrators, and policymakers concerned with the dynamics of improving teacher quality.

Contents: Acknowledgements -- Introduction -- SECTION I: MEASURING TEACHING QUALITY FOR PROFESSIONAL ENTRY -- Ch 1. Measuring Teacher Quality for Professional Entry / Suzanne M. Wilson -- Ch 2. Hiring for Teacher Quality at the District Level: Lessons from The New Teacher Project / Timothy Daly & David Keeling -- Ch 3. Professionalizing the Occupation of Teaching in a Time of Transition / Alan D. Bersin & Mary Vixie Sandy -- Broadening the Vision of Professional Entry–Synthesis of Section I / Ida M. Lawrence & Drew H. Gitomer -- SECTION II. MEASURING TEACHING QUALITY IN PRACTICE -- Ch 4. Measuring Teacher Quality in Practice / Deborah Loewenberg Ball & Heather C. Hill -- Ch 5. The Policy Uses and Policy Validity of Value-Added and Other Teacher Quality Measures / Douglas N. Harris -- Ch 6. Approximations of Teacher Quality and Effectiveness: View from the State Education Agency / Mitchell D. Chester & Susan Tave Zelman -- Measuring Teacher and Teaching Quality: Considerations and Next Steps–Synthesis of Section II / Stephen Lazer -- SECTION III. MEASURING TEACHING QUALITY IN CONTEXT -- Ch 7. Mapping the Terrain of Teacher Quality / Arturo Pacheo -- Ch 8. Measuring Instruction for Teacher Learning

/ Mary Kay Stein & Lindsay Clare Matsumura -- Ch 9. Opportunity to Teach: Teacher Quality in Context / Gloria Ladson-Billings -- Crisp Measurement and Messy Context: A Clash of Assumptions and Metaphors–Synthesis of Section III / Drew H. Gitomer -- Assessment of Teaching or Assessment for Teaching? Reflections on the Invitational Conference / Lee S. Shulman -- About the Contributors -- Author Index -- Subject Index.

Glazerman, S., Mayer, D., & Decker, P. (2006). Alternative routes to teaching: The impacts of Teach for America on student achievement and other outcomes. *Journal of Policy Analysis and Management, 25*(1), 75–96.

Abstract: This paper reports on a randomized experiment to study the impact of an alternative teacher preparation program, Teach for America (TFA), on student achievement and other outcomes. We found that TFA teachers had a positive impact on math achievement and no impact on reading achievement. The size of the impact on math scores was about 15 percent of a standard deviation, equivalent to about one month of instruction. The general conclusions did not differ substantially for subgroups of teachers, including novice teachers, or for subgroups of students. We found no impacts on other student outcomes such as attendance, promotion, or disciplinary incidents, but TFA teachers were more likely to report problems with student behavior than were their peers. The findings contradict claims that such programs allowing teachers to bypass the traditional route to the classroom harm students.

Glazerman, S., McKie, A., & Carey, N. (2009). *An evaluation of the Teacher Advancement Program (TAP) in Chicago: Year one impact report: Final report* (6319-520). Washington, DC: Mathematica Policy Research, Inc.

Abstract: The Teacher Advancement Program (TAP), a whole-school intervention that aims to improve schools by raising teacher quality, provides teachers with opportunities for professional growth, promotion to school leadership roles without leaving the classroom, structured feedback, and performance-based compensation. This report focuses on the Chicago Public Schools, which began implementing TAP in 2007. Early findings from Mathematica's study, which focused on the district's K–8 schools, note that teachers in TAP schools reported significantly more mentoring and support than their peers in similar schools. Although TAP led to changes inside schools, these changes did not produce measurable impacts on student test scores through March of the start-up year. In addition, the program had a significant impact on teacher retention. TAP teachers were five percentage points more likely to return to their schools than were non-TAP teachers.

Link: http://www.mathematica-mpr.com/publications/PDFs/education/TAP_rpt.pdf

Goe, L. (2007). ***The link between teacher quality and student outcomes: A research synthesis*****. Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved April 24, 2009, from** http://www.tqsource.org/publications/LinkBetweenTQandStudentOutcomes.pdf

Abstract: Many reports, studies, and research articles published in recent years suggest that teacher quality matters a great deal in terms of student learning. This research synthesis explores the evidence for this relationship in an effort to help identify which teacher qualifications and characteristics should be prioritized in educating and hiring those teachers who are most likely to have a positive impact on student learning. In addition, the framework developed for this research synthesis, when applied, will help put into perspective the many different aspects of teacher quality and how they have been measured. The key questions covered in this research synthesis are as follows: What is teacher quality? How can it be measured? How important is it to student learning? Do certain aspects of teacher quality have a stronger impact on student achievement for specific students, subjects, or grade levels? How important is teacher experience? How can teacher quality be better understood? The synthesis considers the various ways of defining teacher quality as well as the many ways it has been measured. The studies that are the focus of the synthesis use standardized student achievement test scores as outcome measures. The reason for focusing on teacher contributions to student achievement test scores is that this approach allows results to be compared across studies.

Link: http://www.tqsource.org/publications/LinkBetweenTQandStudentOutcomes.pdf

Goe, L. (2008). ***Key issue: Using value-added models to identify and support highly effective teachers*****. Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved April 24, 2009, from** http://www2.tqsource.org/strategies/het/UsingValueAddedModels.pdf

Abstract: Not provided.

Link: http://www2.tqsource.org/strategies/het/UsingValueAddedModels.pdf

Goe, L. (Ed.) (2009). ***America's opportunity: Teacher effectiveness and equity in K–12 classrooms*****. Washington, DC: National Comprehensive Center for Teacher Quality.**

Abstract: Written in collaboration with experts in the field and staff from regional comprehensive centers and state education agencies, the second biennial report of the National Comprehensive Center for Teacher Quality synthesizes the emerging research base on teacher effectiveness and equitable distribution of K–12 teachers. This research base reinforces the federal focus on ensuring highly effective teachers for all students.

Web Site: http://www.tqsource.org/publications/2009TQBiennialReport.php

Full Report PDF:
http://www.tqsource.org/publications/2009TQBiennial/2009BiennialReport.pdf

Goe, L., & Croft, A. (2009). *Methods of evaluating teacher effectiveness* (Research-to-Practice Brief). Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved June 10, 2009, from
http://www.tqsource.org/publications/RestoPractice_EvaluatingTeacherEffectiveness.pdf

Abstract: This brief is intended to help regional centers and state policymakers as they consider evaluation methods to clarify policy, develop new strategies, identify effective teachers, or guide and support districts in selecting and using appropriate evaluation methods for various purposes. Included in this brief and listed below is a five-point definition of teacher effectiveness developed by the authors by analyzing research, policy, and standards that address teacher effectiveness, and consulting experts in the field.

- "Effective teachers have high expectations for all students and help students learn, as measured by value-added or other test-based growth measures, or by alternative measures.
- Effective teachers contribute to positive academic, attitudinal and social outcomes for students such as regular attendance, on-time promotion to the next grade, on-time graduation, self-efficacy and cooperative behavior.
- Effective teachers use diverse resources to plan and structure engaging learning opportunities; monitor student progress formatively, adapting instruction as needed; and evaluate learning using multiple sources of evidence.
- Effective teachers contribute to the development of classrooms and schools that value diversity and civic-mindedness.
- Effective teachers collaborate with other teachers, administrators, parents and education professionals to ensure student success, particularly the success of students with special needs and those at high risk for failure" (Goe et al., 2008, p. 8).

Link: http://www.tqsource.org/publications/RestoPractice_EvaluatingTeacherEffectiveness.pdf

Goldhaber, D. (2008). Teachers matter, but effective teacher quality policies are elusive. In H.F. Ladd, & E.B. Fiske (Eds.), *Handbook of research in education finance and policy* (pp. 146–165). New York: Routledge.

Abstract: Not provided.

Goldhaber, D.D., & Brewer, D.J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis, 22*(2), 129–145. [See response by Darling-Hammond et al., 2001; and rejoinder by Goldhaber & Brewer, 2001]

Abstract: We empirically test how 12th-grade students of teachers with probationary certification, emergency certification, private school certification, or no certification in their subject area compare relative to students of teachers who have standard certification in their subject area. We also determine whether specific state-by-state differences in teacher licensure requirements systematically affect student achievement. In mathematics, we find teachers who have a standard certification have a statistically significant positive impact on student test scores relative to teachers who either hold private school certification or are not certified in their subject area. Contrary to conventional wisdom, mathematics and science students who have teachers with emergency credentials do no worse than students whose teachers have standard teaching credentials.

Goldhaber, D.D., & Brewer, D.J. (2001). Evaluating the evidence on teacher certification: A rejoinder. *Educational Evaluation and Policy Analysis, 23*(1), 79–86. [See Darling-Hammond et al., 2001; and Goldhaber & Brewer, 2000 for original article]

Abstract: In "Does Teacher Certification Matter? Evaluating the Evidence" (appearing in this issue of *Educational Evaluation and Policy Analysis*), Linda Darling-Hammond, Barnett Berry, and Amy Thoreson, comment on our earlier piece, "Does Teacher Certification Matter? High School Teacher Certification Status and Student Achievement" (*Educational Evaluation and Policy Analysis*, Summer 2000). Unfortunately, the Darling-Hammond et al. piece does not accurately portray our original article, which is one of the first studies of the effects of teacher certification on student achievement that uses a national student level dataset in a multivariate framework. Here we discuss the portrayal of our paper, and argue that there are important policy questions about certification, and the teacher labor market in general, that ought to be addressed by researchers in a dispassionate way that focuses on rigorous, high-quality empirical findings.

As yet we do not believe there is enough information to draw strong conclusions about the impacts of certification on the teacher applicant pool or about the overall level of quality of the teacher workforce. Thus, it is important to ask questions about these issues so that research can be used to guide the development of sound public policy.

Goldhaber, D., Destler, K., & Player, D. (2010). Teacher labor markets and the perils of using hedonics to estimate compensating differentials in the public sector. *Economics of Education Review, 29*(1), 1–17.

Abstract: Some scholars and policymakers who are concerned about the inequitable distribution of quality teachers suggest offering financial incentives for working in hard-to-staff schools. Previous studies have estimated compensating differentials using hedonic modeling, an approach potentially undermined by district-wide salary schedules and the lack of labor market competitiveness. To address this problem, we build hedonic wage models for both public and private schools using data from the 1999–2000 Schools and Staffing Survey and the 2000 Census. Empirical estimates suggest that both public and private schools compensate teachers for some working conditions, but there also appear to be differences between public and private schools in the magnitude of the compensating differentials, particularly for teaching low-income students.

Goldhaber, D., & Hansen, M. (2010a). *Assessing the potential of using value-added estimates of teacher job performance for making tenure decisions* (CALDER Working Paper No. 31). **Washington, DC: National Center for Analysis of Longitudinal Data in Education Research.**

Abstract: Reforming teacher tenure is an idea that appears to be gaining traction with the underlying assumption that one can infer, to a reasonable degree, how well a teacher will perform over her career based on estimates of her early-career effectiveness. In this paper, the authors explore the potential for using value-added models to estimate performance and inform tenure decisions. There is little evidence that the variation of teacher effects change over teacher careers, but strong evidence that prior year estimates of job performance predict student achievement, even when there is a multi-year lag between the two.

Link: http://www.caldercenter.org/upload/Goldhaber-and-Hansen_-Working-paper-31-updated-version.pdf

Goldhaber, D., & Hansen, M. (2010b). Race, gender, and teacher testing: How informative a tool is teacher licensure testing? *American Educational Research Journal, 47*(1), 218–251.

Abstract: Virtually all states require teachers to undergo licensure testing before participation in the public school labor market. This article analyzes the information these tests provide about teacher effectiveness. The authors find that licensure tests have different predicative validity for student achievement by teacher race. They also find that student achievement is impacted by the race/ethnicity match between teachers and their students, with Black students significantly benefitting from being matched with a Black teacher. As a consequence of these matching effects, the uniform application of licensure standards is likely to have differential impacts on the achievement of White and minority students.

Gordon, R., Kane, T.J., & Staiger, D.O. (2006). *Identifying effective teachers using performance on the job* (The Hamilton Project, Discussion Paper 2006-01). Washington, DC: The Brookings Institution. Retrieved April 21, 2009, from http://www3.brookings.edu/views/papers/200604hamilton_1.pdf

Abstract: Traditionally, policymakers have attempted to improve the quality of the teaching force by raising minimum credentials for entering teachers. Recent research, however, suggests that such paper qualifications have little predictive power in identifying effective teachers. We propose federal support to help states measure the effectiveness of individual teachers—based on their impact on student achievement, subjective evaluations by principals and peers, and parental evaluations. States would be given considerable discretion to develop their own measures, as long as student achievement impacts (using so-called "value-added" measures) are a key component. The federal government would pay for bonuses to highly rated teachers willing to teach in high-poverty schools. In return for federal support, schools would not be able to offer tenure to new teachers who receive poor evaluations during their first two years on the job without obtaining district approval and informing parents in the schools. States would open further the door to teaching for those who lack traditional certification but can demonstrate success on the job. This approach would facilitate entry into teaching by those pursuing other careers. The new measures of teacher performance would also provide key data for teachers and schools to use in their efforts to improve their performance.

Link: http://www3.brookings.edu/views/papers/200604hamilton_1.pdf

Graczewski, C., Knudson, J., & Holtzman, D.J. (2009). Instructional leadership in practice: What does it look like, and what influence does it have? *Journal of Education for Students Placed at Risk, 14*(1), 72–96.

Abstract: Literature on school reform has emphasized the need for principals to expand beyond their traditionally administrative role and become instructional leaders. This article examines the relationship between the practice of site-based instructional leadership and the professional development that teachers received in the context of a district-wide reform effort in San Diego City Schools. Using data from teacher surveys and school-based interviews, we find a connection between aspects of principal instructional leadership (coherent school-wide vision and leaders' engagement in instructional improvement) and selected research-based characteristics of effective teacher professional development (coherence and focus on content and curriculum). We conclude by addressing some of the tensions and limitations associated with a particular vision for site-based instructional leadership.

Guarino, C.M., Santibanez, L., & Daley, G.A. (2006). Teacher recruitment and retention: A review of the recent empirical literature. *Review of Educational Research, 76*(2), 173–208.

Abstract: This article critically reviews the recent empirical literature on teacher recruitment and retention published in the United States. It examines the characteristics of individuals who enter and remain in the teaching profession, the characteristics of schools and districts that successfully recruit and retain teachers, and the types of policies that show evidence of efficacy in recruiting and retaining teachers. The goal of the article is to provide researchers and policymakers with a review that is comprehensive, evaluative, and up to date. The review of the empirical studies selected for discussion is intended to serve not only as a compendium of available recent research on teacher recruitment and retention but also as a guide to the merit and importance of these studies.

Hanushek, E.A., & Rivkin, S.G. (2010a). *Constrained job matching: Does teacher job search harm disadvantaged urban schools?* (NBER Working Paper No. 15816). Cambridge, MA: National Bureau of Economic Research.

Abstract: Search theory suggests that early career job changes on balance lead to better matches that benefit both workers and firms, but this may not hold in teacher labor markets characterized by salary rigidities, barriers to entry, and substantial differences in working conditions that are difficult for institutions to alter. Of particular concern to education policy makers is the possibility that teacher turnover adversely affects the quality of instruction in schools serving

predominantly disadvantaged children. Although such schools experience higher turnover on average than others, the impact on the quality of instruction depends crucially on whether it is the more productive teachers who are more likely to depart. The absence of direct measures of productivity typically hinders efforts to measure the effect of turnover on worker quality. In the case of teachers, however, the availability of matched panel data of students and teachers, enables the isolation of the contributions of teachers to achievement despite the complications of purposeful choices of families, teachers, and administrators. The empirical analysis reveals that teachers who remain in their school tend to outperform those who leave, particularly those who exit the Texas public schools entirely. Moreover, this gap appears to be larger for schools serving predominantly low-income students, evidence that high turnover is not nearly as damaging as many suggest.

Hanushek, E.A., & Rivkin, S.G. (2010b). ***Using value-added measures of teacher quality*** **(CALDER Policy Brief 9). Washington, DC: National Center for Analysis of Longitudinal Data in Education Research.**

Abstract: Can value-added measures provide valuable information to assess the quality of teachers and to create incentives for improvement? CALDER researchers tackle this important and timely question by describing the analytic framework of value-added measures, by identifying methodological concerns about value-added estimation and ways to mitigate them, and by discussing the policy uses of value-added estimates of teacher effectiveness.

Link: http://www.caldercenter.org/upload/CALDER-Research-and-Policy-Brief-9.pdf

Harris, D.N. (2009a). Teacher value-added: Don't end the search before it starts. ***Journal of Policy Analysis and Management, 28*****(4), 693–699.** [See also: Harris, 2009b; and Hill, 2009a, 2009b]

Abstract: Not provided.

Harris, D.N. (2009b). Response to Heather C. Hill. ***Journal of Policy Analysis and Management, 28*****(4), 709–711.** [See also: Harris, 2009a; and Hill, 2009a, 2009b]

Abstract: Not provided.

Harris, D.N. (2009c). Would accountability based on teacher value added be smart policy? An examination of the statistical properties and policy alternatives. *Education Finance and Policy, 4*(4), 319–350.

Abstract: Annual student testing may make it possible to measure the contributions to student achievement made by individual teachers. But would these "teacher value-added" measures help to improve student achievement? I consider the statistical validity, purposes, and costs of teacher value-added policies. Many of the key assumptions of teacher value added are rejected by empirical evidence. However, the assumption violations may not be severe, and value-added measures still seem to contain useful information. I also compare teacher value-added accountability with three main policy alternatives: teacher credentials, school value-added accountability, and formative uses of test data. I argue that using teacher value-added measures is likely to increase student achievement more efficiently than a teacher credentials-only strategy but may not be the most cost-effective policy overall. Resolving this issue will require a new research and policy agenda that goes beyond analysis of assumptions and statistical properties and focuses on the effects of actual policy alternatives.

Harris, D.N., & Adams, S.J. (2007). Understanding the level and causes of teacher turnover: A comparison with other professions. *Economics of Education Review, 26*(3), 325–337.

Abstract: It is commonly believed that teacher turnover is unusually high and that this is a sign of failure in the education system. Previous studies have tested this idea by comparing teacher turnover with that of similar professions, but have come to contradictory conclusions. We provide additional evidence by comparing teachers with professionals from other fields that are arguably comparable, namely nurses, social workers, and accountants. Using data from the Current Population Survey, the results suggest that the average rate of teacher turnover is not significantly higher than these professions, even after controlling for other measured differences among them. Where teacher turnover differs most from other professions is in the greater prevalence of turnover among older workers, likely reflecting earlier retirement. We find some evidence that the relatively high ratio of pensions-to-salaries in teaching partially explains this behavior. Other factors affecting turnover are also studied.

Harris, D.N., & Rutledge, S.A. (2010). Models and predictors of teacher effectiveness: A comparison of research about teaching and other occupations. *Teachers College Record, 112*(3), 2010, 914–960.

Abstract: *Background/Context*: A half-century ago, scholars of teaching observed that there was a disconnect between theory and evidence. This problem remains. Although there is great deal of scholarly activity about teacher effectiveness and quality, discussion of theory is largely separate from empirical evidence. In addition, research on teaching is based on an implicit assumption that teaching is unique, suggesting further that lessons cannot be learned from other occupations and professions.

Purpose/Objective/Research Question/Focus of Study: The theory-evidence disconnect, and relationship with other occupations, is addressed by comparing and contrasting research on teachers with research on other occupations. *Research Design*: The article synthesizes and analyses past discussions of the nature of teaching and empirical analysis of the predictors of teacher effectiveness. A similar review is provided for other occupations, and the two bodies of research are analyzed together. *Conclusions/Recommendations*: First, four models of teaching are identified—labor, profession, craft, and art—each with its own (often implicit) objectives and theories about how learning takes place. However, the age-old theory-evidence disconnect remains because empirical analyses still almost never mention theory, and vice versa. This problem is much less pronounced in research on other occupations and professions in which theory and empirical analysis are appropriately intertwined. Although disconnect in teacher research is partly due to disagreement about the objectives and nature of teaching, and there is greater agreement on these grounds in other occupations, it is shown that clear theories and models of teacher effectiveness can be developed and tested for each of the four models of teaching. Second, there is considerable similarity between the teacher characteristics that predict teacher effectiveness and those predicting worker effectiveness in similarly complex occupations and professions. Specifically, cognitive ability and experience predict effectiveness for both groups, whereas personality and education are not predictive. These specific findings are informative for developing specific models of effectiveness. More generally, the similarity across teaching and other complex occupations suggests that teaching, although different, is not completely unique and that lessons can be learned from research that extend beyond teaching.

Harris, D.N., Rutledge, S.A., Ingle, W.K., & Thompson, C.C. (2010). Mix and match: What principals really look for when hiring teachers. *Education Finance and Policy, 5*(2), 228–246.

Abstract: The vast majority of research and policy related to teacher quality focuses on the supply of teachers and ignores teacher demand. In particular, the important role of school principals in hiring teachers is rarely considered. Using interviews of school principals in a midsized Florida school district, we provide an exploratory mixed-methods analysis of the teacher characteristics principals prefer. Our findings contradict the conventional wisdom that principals undervalue content knowledge and intelligence. Principals in our study ranked content knowledge third among a list of twelve characteristics. Intelligence does appear less important at

first glance, but this is apparently because principals believe all applicants who meet certification requirements meet a minimum threshold on intelligence and because some intelligent teachers have difficulty connecting with students. More generally, we find that principals prefer an "individual mix" of personal and professional qualities. They also create an "organizational mix," hiring teachers who differ from those already in the school in terms of race, gender, experience, and skills, and an "organizational match," in which teachers have similar work habits and a high propensity to remain with the school over time. Because of tenure rules, many principals also prefer less experienced (untenured) teachers, even though research suggests that they are less effective.

Harris, D.N., & Sass, T.R. (2009). The effects of NBPTS-certified teachers on student achievement. *Journal of Policy Analysis and Management, 28*(1), 55–80.

Abstract: In this study, we consider the efficacy of a relatively new and widely accepted certification system for teachers established by the National Board for Professional Teaching Standards (NBPTS). We utilize an extensive database covering the universe of teachers and students in Florida for a four-year span to determine the relationship between NBPTS certification and the impact of teachers on student test scores from both low-stakes and high-stakes exams. Contrary to some previous studies, we find evidence that NBPTS certification provides a positive signal of a teacher's contribution to student achievement only in a few isolated cases. However, our results do reinforce evidence from previous research that the process of becoming NBPTS certified does not increase teacher productivity.

Hart, H.M., Sporte, S.E., Ponisciak, S.M., Stevens, W.D., & Cambronne, A. (2008). *Teacher and principal leadership in Chicago: Ongoing analyses of preparation programs*. Chicago: Consortium on Chicago School Research.

Abstract: This is the third report by the Consortium on Chicago School Research (CCSR) that examines leadership development programs supported by The Chicago Public Education Fund for Chicago public school principals and teachers. This current study, like the previous two, is not a comprehensive program evaluation. It is more descriptive in nature, providing insights into a series of discrete questions posed by The Fund. We draw on a range of existing quantitative data resources, including Chicago Public Schools' personnel and test score data, and our own biannual survey of teachers and principals to augment data sources already available to The Fund. We look at the Chicago's National Board Certified Teachers (NBCTs) and the district's three main programs for principal preparation—Leadership and Urban Network for Chicago (LAUNCH), New Leaders for New Schools (NLNS) and the University of Illinois at Chicago's (UIC) Urban Education Leadership.

Link: http://ccsr.uchicago.edu/publications/T%20%20P%20Leadership%20CCSR%20064.pdf

Heck, R.H. (2009). Teacher effectiveness and student achievement: Investigating a multilevel cross-classified model. *Journal of Educational Administration, 47*(2), 227–249.

Abstract: *Purpose*—The purpose of this paper is to show how increasing teacher effectiveness is central to school efforts to improve student outcomes. This study aims to examine successive teachers' effects on student achievement. The premise advanced is that teacher effectiveness is an individual resource that varies across classrooms within schools, as well as a collective resource that varies across schools. *Design/methodology/approach*—The methods used represent an attempt to expand the scope of previous studies about ways in which schools affect student learning by examining a multilevel constellation of teacher-related effects (e.g. classroom effectiveness, collective teaching quality, school academic organization) that can be changed to increase educational effectiveness. The sample consisted of 9,196 students, cross-classified in 511 and 527 classrooms, and nested in 156 elementary schools. *Findings*—First, the effectiveness of successive teachers was related to student achievement in reading and math. Second, collective teacher effectiveness, as an organizational property of schools, was positively associated with achievement levels. Third, the stability of the school's teaching staff and the quality of its academic organization and teaching processes were positively related to achievement levels. *Originality/value*—Findings are consistent with studies that have found that differences in teacher effectiveness matter in explaining student achievement. They also suggest that teacher effects tend to accumulate within and between schools to provide noticeable academic advantage or disadvantage. The results imply promising avenues through which a leadership focus on hiring and retaining high-quality teachers and facilitating improved academic processes can yield increased school effectiveness.

Hill, H.C. (2009a). Evaluating value-added models: A validity argument approach. *Journal of Policy Analysis and Management, 28*(4), 700–709. [See also: Harris, 2009a, 2009b; and Hill, 2009b]

Abstract: Not provided.

Hill, H.C. (2009b). Response to Douglas N. Harris. *Journal of Policy Analysis and Management, 28*(4), 711–712. [See also: Harris, 2009a, 2009b; and Hill, 2009a]

Abstract: Not provided.

Horng, E.L. (2009). Teacher tradeoffs: Disentangling teachers' preferences for working conditions and student demographics. *American Educational Research Journal, 46*(3), 690–717.

Abstract: One of the greatest differences in resources across schools in California comes from an inequitable distribution of teachers. This study identifies reasons for this sorting of teachers by surveying 531 teachers in a California elementary school district. The surveys ask the teachers to make choices between various workplace characteristics. With this information, the study disentangles student demographics from other characteristics of teaching jobs that are amenable to policy influences. It finds that teachers identify working conditions—particularly school facilities, administrative support, and class sizes—and salaries as significantly more important than student characteristics when selecting a school in which to work.

Huang, F.L., & Moon, T.R. (2009). Is experience the best teacher? A multilevel analysis of teacher characteristics and student achievement in low-performing schools. *Educational Assessment, Evaluation and Accountability* (online).

Abstract: The study investigated several teacher characteristics, with a focus on two measures of teaching experience and their association with second grade student-achievement gains in low-performing, high-poverty schools in a Mid-Atlantic state. Value-added models using three-level hierarchical linear modeling were used to analyze the data from 1,544 students, 154 teachers, and 53 schools. Results indicated that traditional teacher qualification characteristics such as licensing status and educational attainment were not statistically significant in producing student achievement gains. Total years of teaching experience was also not a significant predictor but a more specific measure, years of teaching experience at a particular grade level, was significantly associated with increased student reading achievement. We caution researchers and policymakers when interpreting results from studies that have used only a general measure of teacher experience as effects are possibly underestimated. Policy implications are discussed.

Link:
http://www.springerlink.com/content/uq2u701588j46364/?p=dd95e987ddfb4661828799cd8d71fba0&pi=0

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

Abstract: Contemporary educational theory holds that one of the pivotal causes of inadequate school performance is the inability of schools to adequately staff classrooms with qualified teachers. This theory also holds that these school staffing problems are primarily due to shortages of teachers, which, in turn, are primarily due to recent increases in teacher retirements and student enrollments. This analysis investigates the possibility that there are other factors—those tied to the organizational characteristics and conditions of schools—that are driving teacher turnover and, in turn, school staffing problems. The data utilized in this investigation are from the Schools and Staffing Survey and its supplement, the Teacher Followup Survey conducted by the National Center for Education Statistics. The results of the analysis indicate that school staffing problems are not primarily due to teacher shortages, in the technical sense of an insufficient supply of qualified teachers. Rather, the data indicate that school staffing problems are primarily due to excess demand resulting from a "revolving door"—where large numbers of qualified teachers depart their jobs for reasons other than retirement. Moreover, the data show that the amount of turnover accounted for by retirement is relatively minor when compared to that associated with other factors, such as teacher job dissatisfaction and teachers pursuing other jobs. The article concludes that popular education initiatives, such as teacher recruitment programs, will not solve the staffing problems of such schools if they do not also address the organizational sources of low teacher retention.

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

Abstract: Using longitudinal elementary school teacher and student data, we document that students have larger test score gains when their teachers experience improvements in the observable characteristics of their colleagues. Using within-school and within-teacher variation, we show that a teacher's students have larger achievement gains in math and reading when she has more effective colleagues (based on estimated value-added from an out-of-sample pre-period). Spillovers are strongest for less experienced teachers and persist over time, and historical peer quality explains away about 20 percent of the own-teacher effect, results that suggest peer learning.

Jacob, B.A. (2007). The challenges of staffing urban schools with effective teachers. *The Future of Children, 17*(1), 129–153.

Abstract: Brian Jacob examines challenges faced by urban districts in staffing their schools with effective teachers. He emphasizes that the problem is far from uniform. Teacher shortages are more severe in certain subjects and grades than others, and differ dramatically from one school to

another. The Chicago public schools, for example, regularly receive roughly ten applicants for each teaching position. But many applicants are interested in specific schools, and district officials struggle to find candidates for highly impoverished schools. Urban districts' difficulty in attracting and hiring teachers, says Jacob, means that urban teachers are less highly qualified than their suburban counterparts with respect to characteristics such as experience, educational background, and teaching certification. But they may not thus be less effective teachers. Jacob cites recent studies that have found that many teacher characteristics bear surprisingly little relationship to student outcomes. Policies to enhance teacher quality must thus be evaluated in terms of their effect on student achievement, not in terms of conventional teacher characteristics. Jacob then discusses how supply and demand contribute to urban teacher shortages. Supply factors involve wages, working conditions, and geographic proximity between teacher candidates and schools. Urban districts have tried various strategies to increase the supply of teacher candidates (including salary increases and targeted bonuses) and to improve retention rates (including mentoring programs). But there is little rigorous research evidence on the effectiveness of these strategies. Demand also has a role in urban teacher shortages. Administrators in urban schools may not recognize or value high-quality teachers. Human resource departments restrict district officials from making job offers until late in the hiring season, after many candidates have accepted positions elsewhere. Jacob argues that urban districts must improve hiring practices and also reevaluate policies for teacher tenure so that ineffective teachers can be dismissed.

Jacob, B.A. (2010). *Do principals fire the worst teachers?* (NBER Working Paper No. 15715). Cambridge, MA: National Bureau of Economic Research.

Abstract: This paper takes advantage of a unique policy change to examine how principals make decisions regarding teacher dismissal. In 2004, the Chicago Public Schools (CPS) and Chicago Teachers Union (CTU) signed a new collective bargaining agreement that gave principals the flexibility to dismiss probationary teachers for any reason and without the documentation and hearing process that is typically required for such dismissals. With the cooperation of the CPS, I matched information on all teachers that were eligible for dismissal with records indicating which teachers were dismissed. With this data, I estimate the relative weight that school administrators place on a variety of teacher characteristics. I find evidence that principals do consider teacher absences and value-added measures, along with several demographic characteristics, in determining which teachers to dismiss.

Jacob, B.A., & Lefgren, L. (2004). The impact of teacher training on student achievement: Quasi-experimental evidence from school reform efforts in Chicago. *Journal of Human Resources*, *39*(1), 50–79.

Abstract: While there is a substantial literature on the relationship between general teacher characteristics and student learning, school districts and states often rely on in-service teacher training as a part of school reform efforts. Recent school reform efforts in Chicago provide an opportunity to examine in-service training using a quasi-experimental research design. In this paper, we use a regression discontinuity strategy to estimate the effect of teacher training on the math and reading performance of elementary students. We find that marginal increases in in-service training have no statistically or academically significant effect on either reading or math achievement, suggesting that modest investments in staff development may not be sufficient to increase the achievement of elementary school children in high-poverty schools.

Jacob, B.A., & Lefgren, L. (2008). Can principals identify effective teachers? Evidence on subjective performance evaluation in education. ***Journal of Labor Economics, 26*****(1), 101–135.**

Abstract: We examine how well principals can distinguish between more and less effective teachers. To put principal evaluations in context, we compare them with the traditional determinants of teacher compensation—education and experience—as well as value-added measures of teacher effectiveness based on student achievement gains. We present "out-of-sample" predictions that mitigate concerns that the teacher quality and student achievement measures are determined simultaneously. We find that principals can generally identify teachers who produce the largest and smallest standardized achievement gains but have far less ability to distinguish between teachers in the middle of this distribution.

Jacob, B.A., Lefgren, L., & Sims, D. (2008). ***The persistence of teacher-induced learning gains*** **(NBER Working Paper No. 14065). Cambridge, MA: National Bureau of Economic Research.** [Forthcoming in *Journal of Human Resources*]

Abstract: Educational interventions are often narrowly targeted and temporary, and evaluations often focus on the short-run impacts of the intervention. Insofar as the positive effects of educational interventions fadeout over time, however, such assessments may be misleading. In this paper, we develop a simple statistical framework to empirically assess the persistence of treatment effects in education. To begin, we present a simple model of student learning that incorporates permanent as well as transitory learning gains. Using this model, we demonstrate how the parameter of interest—the persistence of a particular measurable education input—can be recovered via instrumental variables as a particular local average treatment effect. We initially motivate this strategy in the context of teacher quality, but then generalize the model to consider educational interventions more generally. Using administrative data that links students and teachers, we construct measures of teacher effectiveness and then estimate the persistence of

these teacher value-added measures on student test scores. We find that teacher-induced gains in math and reading achievement quickly erode. In most cases, our point estimates suggest a one-year persistence of about one-fifth and rule out a one-year persistence rate higher than one-third.

Link: http://libproxy.uncg.edu:2790/papers/w14065

Kane, T.J., & Staiger, D.O. (2008). *Estimating teacher impacts on student achievement: An experimental evaluation* (NBER Working Paper No. 14607). Cambridge, MA: National Bureau of Economic Research.

Abstract: We used a random-assignment experiment in Los Angeles Unified School District to evaluate various non-experimental methods for estimating teacher effects on student test scores. Having estimated teacher effects during a pre-experimental period, we used these estimates to predict student achievement following random assignment of teachers to classrooms. While all of the teacher effect estimates we considered were significant predictors of student achievement under random assignment, those that controlled for prior student test scores yielded unbiased predictions and those that further controlled for mean classroom characteristics yielded the best prediction accuracy. In both the experimental and non-experimental data, we found that teacher effects faded out by roughly 50 percent per year in the two years following teacher assignment.

Kane, T.J., Taylor, E.S., Tyler, J.H., & Wooten, A.L. (2010). *Identifying effective classroom practices using student achievement data* (NBER Working Paper No. 15803). Cambridge, MA: National Bureau of Economic Research.

Abstract: Recent research has confirmed both the importance of teachers in producing student achievement growth and in the variability across teachers in the ability to do that. Such findings raise the stakes on our ability to identify effective teachers and teaching practices. This paper combines information from classroom-based observations and measures of teachers' ability to improve student achievement as a step toward addressing these challenges. We find that classroom based measures of teaching effectiveness are related in substantial ways to student achievement growth. Our results point to the promise of teacher evaluation systems that would use information from both classroom observations and student test scores to identify effective teachers. Our results also offer information on the types of practices that are most effective at raising achievement.

Kardos, S M., & Johnson, S. (2007). On their own and presumed expert: New teachers' experience with their colleagues. *Teachers College Record, 109*(9), 2083–2106.

Abstract: *Background/Context*: In order to develop effective strategies for retaining able and committed teachers, it is important to understand how new teachers experience their work with their colleagues. A previous qualitative study conducted by the authors and others presented a conceptual framework for understanding new teachers' experiences of the professional culture of their schools. The prior work suggested that new teachers might be more likely to stay in teaching and remain at their schools when they work in what the authors called integrated professional cultures. Such an approach promotes frequent and reciprocal interaction among faculty members across experience levels, recognizes new teachers' needs as beginners, and develop shared responsibility among teachers far the school Foots of Study. This study uses the concept of integrated professional culture to frame an inquiry about new teachers' experiences at their schools and with their colleagues. *Research Design*: The study examines the experiences of a representative random sample of 486 first- and second-year teachers surveyed in four states (California, Florida, Massachusetts, and Michigan). Participants were chosen using two-stage stratified cluster sampling. The mail survey achieved a response rate of 65 percent. The authors conducted descriptive analyses of the questionnaire data and summarized new Causes & Solution to Teacher Recruitment & Retention 7 teachers' experiences in a series of comparative tables *Conclusions/Recommendations*: The data revealed that many novice teachers report that their work is solitary, that they are expected to be prematurely expert and independent, and that their fellow teachers do not share a sense of collective responsibility for their school. In integrated professional cultures, new teachers interact with experienced colleagues in an ongoing way. However, the authors found that approximately one-half (in CA and MI) to two-thirds (in FL and MA) of new teachers generally plan and teach alone. In integrated professional cultures, new teachers are recognized as novices and offered extra assistance; however, the authors found that less than one-third (MI) to less than one-half (CA) reported that extra assistance was available to them. Finally, in integrated professional cultures, teachers share a sense of collective responsibility for the school. However, less than half of the new teachers in the four states reported that teachers share responsibility for the students in their school Taken together, these findings reveal that many new teachers work without the support of integrated professional cultures. Given these findings, the authors discuss in detail what policymakers and school leaders can do to address the critical challenge of supporting new teachers.

King, M.B., & Newmann, F.M. (2001). Building school capacity through professional development: Conceptual and empirical considerations. *International Journal of Educational Management, 15*(2), 86–93.

Abstract: Situates current research on professional development within an organizational perspective. Offers a framework for the study of professional development, and proposes that key factors that affect student achievement be conceptualized as school capacity. Argues that increases in school capacity will lead to gains in student achievement, and that professional

development should, therefore, be designed to enhance the following three dimensions of capacity. First, school capacity includes the knowledge, skills, and dispositions of individual staff members. Second, the diverse human and technical resources of a school need to be put to use in an organized, collective enterprise termed school professional community. Finally, a school's capacity is enhanced when its programs for student and staff learning are coherent, focused, and sustained. To illustrate comprehensive professional development that addresses all aspects of school capacity, describes one school from a current study.

Koedel, C. (2008). Teacher quality and dropout outcomes in a large, urban school district. *Journal of Urban Economics, 64*(3), 560–572.

Abstract: Recent research shows that variation in teacher quality has large effects on student performance. However, this research is based entirely on student test scores. Focusing on high school math teachers, this paper evaluates teacher quality in terms of another educational outcome of great interest—graduation. I use a unique instrumental variables approach to identify teacher effects and find that differences in teacher quality have large effects on graduation outcomes. Because teacher effects on graduation outcomes will be more pronounced for students who are on the graduation margin, the results imply an avenue through which high-quality teachers are more productive with disadvantaged students.

Koedel, C. (2009). An empirical analysis of teacher spillover effects in secondary school. *Economics of Education Review, 28*(6), 682—692.

Abstract: This paper examines whether educational production in secondary school involves joint production among teachers across subjects. In doing so, it also provides insights into the reliability of value-added modeling. Teacher value-added to reading test scores is estimated for four different teacher types: English, math, science and social studies. The initial results indicate that reading output is jointly produced by math and English teachers. However, while falsification tests confirm the English-teacher effects, they cast some doubt about whether the math-teacher effects are free from sorting bias. The results offer a mixed review of the value-added methodology, suggesting that it can be useful but should be implemented cautiously.

Koedel, C., & Betts, J.R. (2009). *Does student sorting invalidate value-added models of teacher effectiveness? An extended analysis of the Rothstein critique* (Working Paper 09-02). Columbia, MO: Department of Economics, University of Missouri. Retrieved April 21, 2009, from http://economics.missouri.edu/working-papers/2009/WP0902_koedel.pdf

Abstract: Value-added modeling continues to gain traction as a tool for measuring teacher performance. However, recent research (Rothstein, 2009; forthcoming) questions the validity of the value-added approach by showing that it does not mitigate student-teacher sorting bias (its presumed primary benefit). Our study explores this critique in more detail. Although we find that estimated teacher effects from some value-added models are severely biased, we also show that a sufficiently complex value-added model that evaluates teachers over multiple years reduces the sorting-bias problem to statistical insignificance. One implication of our findings is that data from the first year or two of classroom teaching for novice teachers may be insufficient to make reliable judgments about quality. Overall, our results suggest that in some cases value-added modeling will continue to provide useful information about the effectiveness of educational inputs.

Link: http://economics.missouri.edu/working-papers/2009/WP0902_koedel.pdf

Koedel, C., & Betts, J. (2010). Value added to what? How a ceiling in the testing instrument influences value-added estimation. *Education Finance and Policy, 5*(1), 54–81.

Abstract: Value-added measures of teacher quality may be sensitive to the quantitative properties of the student tests upon which they are based. This article focuses on the sensitivity of value added to test score ceiling effects. Test score ceilings are increasingly common in testing instruments across the country as education policy continues to emphasize proficiency-based reform. Encouragingly, we show that over a wide range of test score ceiling severity, teachers' value-added estimates are only negligibly influenced by ceiling effects. However, as ceiling conditions approach those found in minimum-competency testing environments, value-added results are significantly altered. We suggest a simple statistical check for ceiling effects.

Koretz, D. (2008). A measured approach. *American Educator, 32*(3), 18–27 & 39.

Abstract: Value-added models are a promising improvement, but no one measure can evaluate teacher performance.

Link: http://www.aft.org/pubs-reports/american_educator/issues/fall2008/koretz.pdf

Ladd, H.F. (2008). *Teacher effects: What do we know?* Paper presented at the Teacher Quality Conference at Northwestern University, Evanston, IL. Retrieved April 21, 2009, from http://www.sesp.northwestern.edu/docs/Ladd_Northwestern_paper_042108.pdf

Abstract: Not provided.

Lemov, D. (2010). *Teach like a champion: 49 techniques that put students on the path to college*. San Francisco: Jossey-Bass.

Abstract: Teach Like a Champion offers effective teaching techniques to help teachers, especially those in their first few years, become champions in the classroom. These powerful techniques are concrete, specific, and are easy to put into action the very next day. Training activities at the end of each chapter help the reader further their understanding through reflection and application of the ideas to their own practice. Among the techniques:

- Technique #1: No Opt Out. How to move students from the blank stare or stubborn shrug to giving the right answer every time.
- Technique #35: Do It Again. When students fail to successfully complete a basic task from entering the classroom quietly to passing papers around doing it again, doing it right, and doing it perfectly, results in the best consequences.
- Technique #38: No Warnings. If you're angry with your students, it usually means you should be angry with yourself. This technique shows how to effectively address misbehaviors in your classroom.

The book includes a DVD of 25 video clips of teachers demonstrating the techniques in the classroom.

Contents: Acknowledgments -- Foreword (Norman Atkins, founder of Uncommon Schools, founder and CEO of Teacher U) -- Introduction: The Art of Teaching and its Tools -- Part One: Teach Like a Champion: The Essential Techniques -- Chapter One: Setting High Academic Expectations -- Technique 1: No Opt Out -- Technique 2: Right is Right -- Technique 3: Stretch It -- Technique 4: Format Matters -- Technique 5: Without Apology -- Reflection and Practice -- Chapter Two: Planning that Ensures Academic Achievement -- Technique 6: Begin With The End -- Technique 7: 4Ms -- Technique 8. Post It -- Technique 9: Shortest Path -- Technique 10: Double Plan -- Technique 11: Draw the Map -- Reflection and Practice -- Chapter Three: Structuring and Delivering Your Lessons -- Technique 12: Hook -- Technique 13: Name the Steps -- Technique 14: Board = Paper -- Technique 15: Circulate -- Technique 16: Break It Down -- Technique 17: Ratio -- Technique 18: Check For Understanding -- Technique 19: At-Bats -- Technique 20: Exit Ticket -- Technique 21: Take a Stand -- Reflection and Practice -- Chapter Four: Engaging Students in Your Lessons -- Technique 22: Cold Call -- Technique 23: Call and Response -- Technique 24: Pepper -- Technique 25: Wait Time -- Technique 26: Everybody Writes -- Technique 27: Vegas -- Reflection and Practice -- Chapter Five: Creating a Strong Classroom Culture -- Technique 28: Entry Routine -- Technique 29: Do Now --

Technique 30: Tight Transitions -- Technique 31: Binder Control -- Technique 32: SLANT -- Technique 33: On Your Mark -- Technique 34: Seat Signals -- Technique 35: Props -- Reflection and Practice -- Chapter Six: Setting and Maintaining High Behavioral Expectations -- Technique 36: 100% -- Technique 37: What To Do -- Technique 38: Strong Voice -- Technique 39: Do It Again -- Technique 40: Sweat the Details -- Technique 41: Threshold -- Technique 42: No Warnings -- Reflection and Practice -- Chapter Seven: Building Character and Trust -- Technique 43: Positive Framing -- Technique 44: Precise Praise -- Technique 45: Warm/Strict -- Technique 46: The J-Factor -- Technique 47: Emotional Constancy -- Technique 48: Explain Everything -- Technique 49: Normalize Error -- Reflection and Practice -- Chapter Eight: Improving Your Pacing: Additional -- Techniques for Creating a Positive Rhythm in the Classroom -- Change the Pace -- Brighten Lines -- All Hands -- Every Minute Matters -- Look Forward -- Work the Clock -- Chapter Nine: Challenging Students to Think Critically: Additional Techniques for Questioning and Responding to Students -- One at a Time -- Simple to Complex -- Verbatim (No bait and switch) -- Clear and Concise -- Stock Questions -- Hit Rate -- Part Two: Learn How to Help Students Improve Their Reading: Critical Skills and Techniques -- Chapter Ten: How All Teachers Can (and Must) Be Reading Teachers -- Chapter Eleven: The Fundamentals: Teaching Decoding, Vocabulary Development, and Fluency -- Chapter Twelve: Comprehension: Teaching Students to Understand What They Read -- Appendix: Behind the Scenes Interviews – Conclusion -- About the Author -- Index.

Lissitz, R.W. (Ed.) (2005). ***Value added models in education: Theory and applications*****. Maple Grove, MN: JAM Press.**

Contents: Chapter 1 - Balancing Accountability and Improvement: Introducing Value-Added Models to a Large School System / Carol J. Schatz, Clare E. VonSecker, and Theresa R. Alban -- Chapter 2 - Value-Added Modeling: What Does Due Diligence Require? / Henry Braun -- Chapter 3 - Value Added Analysis of the Chicago Public Schools: An Application of Hierarchical Models / Stephen M. Ponisciak and Anthony S. Bryk -- Chapter 4 The Confounding Effects of Linking Bias on Gains Estimated from Value-Added Models / Harold C. Doran and Jon Cohen -- Chapter 5 - Challenges for Value-Added Assessment of Teacher Effects / Daniel F. McCaffrey, J. R. Lockwood, Louis T. Mariano, and Claude Setodji -- Chapter 6 - Value-Added Research: Right Idea but Wrong Solution? / William H. Schmidt, Richard T. Houang, and Curtis C. McKnight -- Chapter 7 - The Study of School Effectiveness as a Problem in Research Design / Joseph Stevens -- Chapter 8 - Value-Added Assessment of Teacher Quality as an Alternative to the National Board for Professional Teaching Standards: What Recent Studies Say / George K. Cunningham and J. E. Stone -- Chapter 9 - The Dallas School-Level Accountability Model: The Marriage of Status

and Value-Added Approaches / William J. Webster -- Chapter 10 - Value-Added Assessment: Lessons from Tennessee / Dale Ballou.

Lissitz, R.W. (Ed.) (2006). ***Longitudinal and value added models of student performance*****. Maple Grove, MN: JAM Press.**

Contents: Chapter 1 - Growth Modeling, Value Added Modeling and Linking: An Introduction / Robert W. Lissitz, Harold Doran, William D. Schafer, and Joseph Willhoft -- Chapter 2 - NCLB and Growth Models: In Conflict or in Concert?/ Susan L. Rigney and Joseph A. Martineau -- Chapter 3 - Models for Evaluating Grade-to-Grade Growth / Robert L. Smith and Wendy M. Yen -- Chapter 4 - IRT Models for the Assessment of Change Across Repeated Measurements / James S. Roberts and Qianli Ma -- Chapter 5 - Finite Mixture Modeling Approaches to the Study of Growth in Academic Achievement / David Kaplan and Heidi M. Sweetman -- Chapter 6 - Issues in the Implementation of Longitudinal Growth Models for Student Achievement / Joseph Stevens and Keith Zvoch -- Chapter 7 - The Impact of Linking Error in Longitudinal Analysis: An Empirical Demonstration / Harold C. Doran and Tao Jiang -- Chapter 8 - A Case Study of Some Practical Challenges of Longitudinal Student Achievement Modeling: The RAND Mosaic II Study / J. R. Lockwood -- Chapter 9 - Using Value Tables to Explicitly Value Student Growth / Richard Hill, Scott Marion, Charles DePascale, Jennifer Dunn, and Mary Ann Simpson -- Chapter 10 - Invariance Assumptions and Cross-Grade Scales in NAEP: Research and Real-Life Experience / Catherine A. McClellan, John R. Donoghue, Lydia Gladkova, and Xueli Xu -- Chapter 11 - Growth Scales and Pathways /
William D. Schafer and Jon S. Twing -- Chapter 12 - The Hybrid Success Model: Theory and Practice / G. Gage Kingsbury and Martha S. McCall -- Chapter 13 - Measurement of Academic Growth of Individual Students toward Variable and Meaningful Academic Standards / S. Paul Wright, William L. Sanders, and June C. Rivers -- Chapter 14 - Validating Achievement Gains in Cohort-to-Cohort and Individual Growth-Based Modeling Contexts / Laura S. Hamilton, Daniel F. McCaffrey, and Daniel M. Koretz -- Chapter 15 -
Designing Gross Productivity Indicators: A Proposal for Connecting Accountability Goals, Data, and Analysis / Yeow Meng Thum.

Little, O., Goe, L., & Bell, C. (2009). ***A practical guide to evaluating teacher effectiveness*****. Washington, DC: National Comprehensive Center for Teacher Quality. Retrieved June 10, 2009, from** http://www.tqsource.org/publications/practicalGuide.pdf

Abstract: This guide offers a definition of teacher effectiveness that states and districts may adapt to meet local requirements. In addition, the guide provides an overview of the many purposes for evaluating teacher effectiveness and indicates which measures are most suitable to use under different circumstances. The guide also includes summaries of various measures, such as value-added models, classroom observations, analysis of classroom artifacts (e.g., lesson plans and student work) and portfolios. The summaries include descriptions of the measures, along with a note about the research base and strengths and cautions to consider for each measure. The

guide is based on the TQ Center research synthesis *Approaches to Evaluating Teacher Effectiveness: A Research Synthesis* by Goe, Bell, and Little (2008).

Link: http://www.tqsource.org/publications/practicalGuide.pdf

Marsh, J.A., Kerr, K.A., Ikemoto, G.S., Darilek, H., Suttorp, M., Zimmer, R.W., & Barney, H. (2005). *The role of districts in fostering instructional improvement: Lessons from three urban districts partnered with the Institute for Learning* (RAND Research Brief). Santa Monica, CA: RAND Corporation.

Abstract: Improving school systems is critical to bridging the achievement gap and achieving federal accountability goals. Research in three urban districts partnered with a university-based intermediary organization sheds light on promising instructional reform strategies and challenges to bringing about systemwide change. Analyses of district efforts to promote the instructional leadership of principals, support teacher learning through school-based coaches, specify curriculum, and promote data-based decisionmaking identify common factors constraining and enabling instructional improvement. The research also shows that third-party organizations can help facilitate policy alignment and build the capacity of district staff to lead instructional change.

Link: http://www.rand.org/pubs/research_briefs/2005/RAND_RB9142.pdf

McCaffrey, D.F., Lockwood, J.R., Koretz, D.M., & Hamilton, L.S. (2003). *Evaluating value-added models for teacher accountability*. Santa Monica, CA: RAND Corporation.

Abstract: Value-added modeling (VAM) to estimate school and teacher effects is currently of considerable interest to researchers and policymakers. Recent reports suggest that VAM demonstrates the importance of teachers as a source of variance in student outcomes. Policymakers see VAM as a possible component of education reform through improved teacher evaluations or as part of test-based accountability. They are intrigued by VAM because of the view that its complex statistical techniques can provide estimates of the effects of teachers and schools that are not distorted by the powerful effects of such noneducational factors as family background. This monograph clarifies the primary questions raised by the use of VAM for measuring teacher effects, reviews the most important recent applications of VAM, and discusses a variety of statistical and measurement issues that might affect the validity of VAM inferences. The authors identify numerous possible sources of error and bias in teacher effects and recommend a number of steps for future research into these potential errors. They conclude that the research base is currently insufficient to support the use of VAM for high-stakes decisions

about individual teachers or schools. It is important that policymakers, practitioners, and VAM researchers work together, so that research is informed by the practical needs and constraints facing users of VAM and that implementation of the models is informed by an understanding of what inferences and decisions the research currently supports.

Link: http://www.rand.org/pubs/monographs/2004/RAND_MG158.pdf

McCaffrey, D.F., Lockwood, J.R., Koretz, D., Louis, T.A., & Hamilton, L. (2004). Models for value-added modeling of teacher effects. *Journal of Educational and Behavioral Statistics*, *29*(1), 67–101.

Abstract: The use of complex value-added models that attempt to isolate the contributions of teachers or schools to student development is increasing. Several variations on these models are being applied in the research literature, and policy makers have expressed interest in using these models for evaluating teachers and schools. In this article, we present a general multivariate, longitudinal mixed-model that incorporates the complex grouping structures inherent to longitudinal student data linked to teachers. We summarize the principal existing modeling approaches, show how these approaches are special cases of the proposed model, and discuss possible extensions to model more complex data structures. We present simulation and analytical results that clarify the interplay between estimated teacher effects and repeated outcomes on students over time. We also explore the potential impact of model misspecifications, including missing student covariates and assumptions about the accumulation of teacher effects over time, on key inferences made from the models. We conclude that mixed models that account for student correlation over time are reasonably robust to such misspecifications when all the schools in the sample serve similar student populations. However, student characteristics are likely to confound estimated teacher effects when schools serve distinctly different populations.

McCaffrey, D.F., Sass, T.R., Lockwood, J.R., & Mihaly, K. (2009). The inter-temporal variability of teacher effect estimates. *Education Finance and Policy*, *4*(4), 572–606.

Abstract: The utility of value-added estimates of teachers' effects on student test scores depends on whether they can distinguish between high- and low-productivity teachers and predict future teacher performance. This article studies the year-to-year variability in value-added measures for elementary and middle school mathematics teachers from five large Florida school districts. We find year-to-year correlations in value-added measures in the range of 0.2–0.5 for elementary school and 0.3–0.7 for middle school teachers. Much of the variation in measured teacher performance (roughly 30–60 percent) is due to sampling error from "noise" in student test scores. Persistent teacher effects account for about 50 percent of the variation not due to noise

for elementary teachers and about 70 percent for middle school teachers. The remaining variance is due to teacher-level time-varying factors, but little of it is explained by observed teacher characteristics. Averaging estimates from two years greatly improves their ability to predict future performance.

Miller, M. (2009). ***Achieving a wealth of riches: Delivering on the promise of data to transform teaching and learning*** **(Policy Brief). Washington, DC: Alliance for Excellent Education.**

Abstract: It is clear that throughout the nation, teaching and learning must be transformed to ensure all students are graduating from high school ready for college and careers. While many policy discussions focus on data-driven decisionmaking as the answer, too often these conversations do not include how classroom teachers can and should use data to improve instruction, the kinds of data that would be most useful to teachers, and the challenges inherent in teachers' use of data. Ensuring that teachers are rich in data, information, and skills that enable them to improve student achievement requires focused attention from leaders at all levels, including federal policymakers. This brief addresses why using data represents a significant shift for most teachers in how they perform their jobs; explains the importance of using multiple types of data to affect learning; details the infrastructure necessary to encourage teachers' use of data; and provides federal policy recommendations.

Link: http://www.all4ed.org/files/AchievingWealthOfRiches.pdf

National Governor's Association (2009). ***Perfecting the formula: Effective strategies = Educational success. A briefing prepared for the 2009 Governors Education Symposium*** **(June 14-15, 2009). Washington, DC: National Governors Association Center for Best Practices.**

Abstract: This briefing serves as a companion piece to sessions held at the 2009 Governors Education Symposium. It is divided into four issue briefs: (1) Standards and Assessments by Ilene Berman, National Governors Association Center for Best Practices; (2) Teacher Effectiveness by Sandi Jacobs, National Council on Teacher Quality; (3) Supporting Low-Performing Schools by Andy Calkins, Stupski Foundation; and (4) State Longitudinal Data Systems by Aimee Guidera, Data Quality Campaign.

Link: http://www.nga.org/Files/pdf/0906GESBRIEFS.PDF

Neuman, S.B., & Cunningham, L. (2009). The impact of professional development and coaching on early language and literacy instructional practices. *American Educational Research Journal*, *46*(2), 532–566.

Abstract: This study examines the impact of professional development on teacher knowledge and quality early language and literacy practices in center- and home-based care settings. Participants from 291 sites (177 centers; 114 home-based) in four cities were randomly selected to: Group 1, 3-credit course in early language and literacy; Group 2, course plus ongoing coaching; Group 3, control group. Analysis of covariance indicated no significant differences between groups on teacher knowledge. However, there were statistically significant improvements in language and literacy practices for teachers who received coursework plus coaching with substantial effect sizes for both center- and home-based providers. Professional development alone had negligible effects on improvements in quality practices. Coursework and coaching may represent a promising quality investment in early childhood.

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

Abstract: It is widely accepted that teachers differ in their effectiveness, yet the empirical evidence regarding teacher effectiveness is weak. The existing evidence is mainly drawn from econometric studies that use covariates to attempt to control for selection effects that might bias results. We use data from a four-year experiment in which teachers and students were randomly assigned to classes to estimate teacher effects on student achievement. Teacher effects are estimated as between-teacher (but within-school) variance components of achievement status and residualized achievement gains. Our estimates of teacher effects on achievement gains are similar in magnitude to those of previous econometric studies, but we find larger effects on mathematics achievement than on reading achievement. The estimated relation of teacher experience with student achievement gains is substantial, but is statistically significant only for 2nd-grade reading and 3rd-grade mathematics achievement. We also find much larger teacher effect variance in low socioeconomic status (SES) schools than in high SES schools.

O'Day, J., & Quick, H.E. (2009). Assessing instructional reform in San Diego: A theory-based approach. *Journal of Education for Students Placed at Risk*, *14*(1), 1–16.

Abstract: This article provides an overview of the approach, methodology, and key findings from a theory-based evaluation of the district-led instructional reform effort in San Diego City Schools, under the leadership of Alan Bersin and Anthony Alvarado, that began in 1998. Beginning with an analysis of the achievement trends in San Diego relative to other California

urban districts during this period, we then examine the theory of action that guided the San Diego effort, including the focus on instructional change as the primary means to improve student achievement and on the role of site-based instructional leadership and teacher professional development as central strategies for moving instructional practice. The article outlines the study design and introduces the set of papers in this special issue of *JESPAR*. Reviewing key findings and themes across the article, we conclude that although the reform demonstrated that instructional improvement at scale is possible, sustaining that reform may be more elusive.

Odden, A., Borman, G., & Fermanich, M. (2004). Assessing teacher, classroom, and school effects, including fiscal effects. *Peabody Journal of Education, 79*(4), 4–32.

Abstract: In this article, we argue that too much previous research has tended to assess the effects of student, classroom, and school variables in isolation from other variables and has often used statistical techniques that ignored the nested nature of the 3 classes of factors. We then argue that a more educationally oriented framework should be used to assess the effects of various student, classroom/teacher, and school variables on student learning, particularly student learning gains, and we identify several variables within each class of factors that research so far has identified. In the article, we suggest some standard hierarchical linear modeling models that could be used to conduct analyses that do account for the nested nature of all variables.

Parise, L.M., & Spillane, J.P. (2010). Teacher learning and instructional change: How formal and on-the-job learning opportunities predict change in elementary school teachers' practice. *Elementary School Journal, 110*(3), 323–346.

Abstract: Recent education reform has emphasized the importance of teacher learning in improving classroom instruction and raising student achievement. This article focuses on teachers' learning opportunities, including formal professional development and on-the-job learning that occurs through interactions with colleagues. Using data from 30 elementary schools in a mid-sized urban school district, the authors concurrently explore the relationships between teachers' formal professional development and on-the-job learning opportunities and instructional change. Results suggest that formal professional development and on-the-job opportunities to learn are both significantly associated with changes in teachers' instructional practice in mathematics and English language arts.

Player, D. (2010). Nonmonetary compensation in the public teacher labor market. *Education Finance and Policy, 5*(1), 82–103.

Abstract: Because of the rigid salary structure in the public teacher labor market, principals may have the incentive to align classes favorably for high-quality teachers as a form of nonmonetary compensation. This article tests whether higher-quality teachers, holding other characteristics constant, tend to be matched with more favorable assignments. The findings show that elementary teachers with higher licensure exam scores and greater observed classroom success tend to be matched to students with higher prior math ability, fewer students with learning disabilities, fewer students eligible for subsidized lunch, and more female students. Several tests indicate that matching patterns are not entirely driven by parental pressure or the technology of learning, providing evidence that principals use class assignments as a way to compensate teachers.

Podgursky, M.J., & Springer, M.G. (2007). Teacher performance pay: A review. *Journal of Policy Analysis and Management, 26*(4), 909–949.

Abstract: Not provided.

Quick, H.E., Holtzman, D.J., & Chaney, K.R. (2009). Professional development and instructional practice: Conceptions and evidence of effectiveness. *Journal of Education for Students Placed at Risk, 14*(1), 45–71.

Abstract: As with many districtwide reform efforts, the San Diego reform sought to improve classroom instruction by focusing on building the capacity of teachers. This article examines practices of teacher professional development in the district and their impact on literacy instruction. Through examination of the literature on effective professional development, school staff's conceptions of what makes professional development effective, and detailed data on professional development experiences from 100 elementary teachers, we explore the extent to which characteristics of effective professional learning align with what is actually taking place in schools. We also examine relationships between professional development characteristics and teachers' use of instructional practices that have been shown to predict student growth in reading comprehension. We find that professional development characterized by an emphasis on content and curriculum and that incorporates coaching is related to a higher frequency of this type of instruction.

Reardon, S.F., & Raudenbush, S.W. (2009). Assumptions of value-added models for estimating school effects. *Education Finance and Policy, 4*(4), 492–519.

Abstract: The ability of school (or teacher) value-added models to provide unbiased estimates of school (or teacher) effects rests on a set of assumptions. In this article, we identify six assumptions that are required so that the estimates of such models are well defined and the models are able to recover the desired parameters from observable data. These assumptions are (1) manipulability, (2) no interference between units, (3) interval scale metric, (4) homogeneity of effects, (5) strongly ignorable assignment, and (6) functional form. We discuss the plausibility of these assumptions and the consequences of their violation. In particular, because the consequences of violations of the last three assumptions have not been assessed in prior literature, we conduct a set of simulation analyses to investigate the extent to which plausible violations of them alter inferences from value-added models. We find that modest violations of these assumptions degrade the quality of value-added estimates but that models that explicitly account for heterogeneity of school effects are less affected by violations of the other assumptions.

Rice, J.K. (2010). *Principal effectiveness and leadership in an era of accountability: What research says* (CALDER Policy Brief 8). Washington, DC: National Center for Analysis of Longitudinal Data in Education Research.

Abstract: In an era of greater school accountability, leadership matters. For decades, principals have been recognized as vital to the effectiveness of schools, but strong empirical evidence on the extent to which, and the ways in which, school leaders matter has not been available. CALDER researchers have advanced our knowledge in this area by skillfully drawing on rich state longitudinal databases. This brief synthesizes new findings on the effectiveness and distribution of principals, the characteristics of good leadership, and how best to prepare principals for this increasingly demanding job.

Link: http://www.caldercenter.org/upload/CALDER-Research-and-Policy-Brief-8.pdf

Rivkin, S.G., Hanushek, E.A., & Kain, J.F. (2005). Teachers, schools, and academic achievement. *Econometrica*, *73*(2), 417–458.

Abstract: This paper disentangles the impact of schools and teachers in influencing achievement with special attention given to the potential problems of omitted or mismeasured variables and of student and school selection. Unique matched panel data from the UTD Texas Schools Project permit the identification of teacher quality based on student performance along with the impact of specific, measured components of teachers and schools. Semiparametric lower bound estimates of the variance in teacher quality based entirely on within-school heterogeneity indicate that teachers have powerful effects on reading and mathematics achievement, though

little of the variation in teacher quality is explained by observable characteristics such as education or experience. The results suggest that the effects of a costly ten-student reduction in class size are smaller than the benefit of moving one standard deviation up the teacher quality distribution, highlighting the importance of teacher effectiveness in the determination of school quality.

Rockoff, J.E. (2004). The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review, 94*(2), 247–252.

Abstract: This study presents evidence that suggests that raising teacher quality may be a key instrument in improving student outcomes in the U.S. However, in an environment where many observable teacher characteristics are related to teacher quality, policies that reward teachers based on credentials may be less effective than policies that reward teachers based on performance. Test scores do not capture all facets of student learning. Nevertheless, test scores are widely available, objective, and are widely recognized as important indicators of achievement by educators, policymakers, and the public. Teacher evaluations may also present a simple and potentially important indicator of teacher quality. There is already substantial evidence that principals' opinions of teacher quality are highly correlated with student test scores. Moreover, while evaluations introduce an element of subjectivity, they may also reflect valuable aspects of teaching not captured by student test scores. Efforts to improve the quality of public-school teachers face some difficult hurdles, the most daunting of which is the growing shortage of teachers. There is also evidence that union wage compression and improved labor-market opportunities for highly skilled females have led to a decline in the supply of highly skilled teachers.

Rockoff, J.E., Jacob, B.A., Kane, T.J., & Staiger, D.O. (2008). *Can you recognize an effective teacher when you recruit one?* (NBER Working Paper No. 14485). Cambridge, MA: National Bureau of Economic Research. [Forthcoming in *Education Finance and Policy*]

Abstract: Research on the relationship between teachers' characteristics and teacher effectiveness has been underway for over a century, yet little progress has been made in linking teacher quality with factors observable at the time of hire. However, most research has examined a relatively small set of characteristics that are collected by school administrators in order to satisfy legal requirements and set salaries. To extend this literature, we administered an in-depth survey to new math teachers in New York City and collected information on a number of non-traditional predictors of effectiveness including teaching specific content knowledge, cognitive ability, personality traits, feelings of self-efficacy, and scores on a commercially available

teacher selection instrument. Individually, we find that only a few of these predictors have statistically significant relationships with student and teacher outcomes. However, when all of these variables are combined into two primary factors summarizing cognitive and non-cognitive teacher skills, we find that both factors have a modest and statistically significant relationship with student and teacher outcomes, particularly with student test scores. These results suggest that, while there may be no single factor that can predict success in teaching, using a broad set of measures can help schools improve the quality of their teachers.

Link: http://libproxy.uncg.edu:2790/papers/w14485

February 2009 Version: http://closup.umich.edu/publications/workingpapers/papers/closup-wp-11-recognize-effective-teacher.pdf

Ross, J., & Bruce, C. (2007). Professional development effects on teacher efficacy: Results of randomized field trial. *Journal of Educational Research, 101*(1), 50–60.

Abstract: We designed a professional development (PD) program to increase the teacher efficacy of mathematics teachers. We randomly assigned 106 Grade 6 teachers in I school district to treatment and control conditions in a delayed treatment design. The PD explicitly addressed 4 sources of teacher-efficacy information identified in social-cognition theory (Bandura, 1997). Treatment teachers outperformed control-group teachers on 3 measures of teacher efficacy, but results were statistically significant only for efficacy for classroom management. We attributed the teacher-efficacy effects of the PD (6% of the variance) to the priority given in the PD to management of classroom discussions and overt attempts by PD leaders to redefine teacher conceptions of classroom success.

Rothstein, J. (2009). Student sorting and bias in value-added estimation: Selection on observables and unobservables. *Education Finance and Policy, 4*(4), 537–571.

Abstract: Nonrandom assignment of students to teachers can bias value-added estimates of teachers' causal effects. Rothstein (2008, 2010) shows that typical value-added models indicate large counterfactual effects of fifth-grade teachers on students' fourth-grade learning, indicating that classroom assignments are far from random. This article quantifies the resulting biases in estimates of fifth-grade teachers' causal effects from several value-added models, under varying assumptions about the assignment process. If assignments are assumed to depend only on observables, the most commonly used specifications are subject to important bias, but other feasible specifications are nearly free of bias. I also consider the case in which assignments depend on unobserved variables. I use the across-classroom variance of observables to calibrate

several models of the sorting process. Results indicate that even the best feasible value-added models may be substantially biased, with the magnitude of the bias depending on the amount of information available for use in classroom assignments.

Rothstein, J. (2010). Teacher quality in educational production: Tracking, decay, and student achievement. *Quarterly Journal of Economics*, *125*(1), 175–214.

Abstract: Growing concerns over the inadequate achievement of U.S. students have led to proposals to reward good teachers and penalize (or fire) bad ones. The leading method for assessing teacher quality is "value added" modeling (VAM), which decomposes students' test scores into components attributed to student heterogeneity and to teacher quality. Implicit in the VAM approach are strong assumptions about the nature of the educational production function and the assignment of students to classrooms. In this paper, I develop falsification tests for three widely used VAM specifications, based on the idea that future teachers cannot influence students' past achievement. In data from North Carolina, each of the VAMs' exclusion restrictions is dramatically violated. In particular, these models indicate large "effects" of fifth grade teachers on fourth grade test score gains. I also find that conventional measures of individual teachers' value added fade out very quickly and are at best weakly related to long-run effects. I discuss implications for the use of VAMs as personnel tools.

Rutledge, S.A., Harris, D.N., & Ingle, W.K. (2010). How principals "bridge and buffer" the new demands of teacher quality and accountability: A mixed-methods analysis of teacher hiring. *American Journal of Education*, *116*(2), 211–242.

Abstract: In this mixed-methods study, we examine the degree to which district- and building-level administrators accommodate teacher-quality and test-based accountability policies in their hiring practices. We find that administrators negotiated local hiring goals with characteristics emphasized by federal and state teacher-quality policies, such as knowledge of the subject and teaching skills. While district administrators and principals largely "bridged" to external certification requirements, some principals "buffered" their hiring decisions from the pressures of test-based accountability. Principals who bridged to test-based accountability gave greater weight to subject knowledge and teaching skills. We find that bridging and buffering differs by policy and cannot be easily applied to accountability policies. Specifically, separating the indirect effect of external accountability from other policies influencing principal hiring is difficult. Our analysis also highlights tensions among local, state, and federal policies regarding teacher quality and the potential of accountability to permeate noninstructional school decision making.

Sailors, M., & Price, L.R. (2010). Professional development that supports the teaching of cognitive reading strategy instruction. *Elementary School Journal, 110*(3), 301–322.

Abstract: In this article, we describe and report on the results of a study in Texas that tested 2 models of professional development for classroom teachers as a way of improving their practices and increasing the reading achievement of their students. To meet this goal, 44 participating teachers in grades 2–8 learned to teach their students cognitive reading strategies through 1 of 2 models of professional development. One group attended a traditional 2-day summer in-service; the second attended the workshop and received classroom-based support from a reading coach. Using a random-effects, multilevel, pretest-posttest comparison group design and a multilevel modeling analytic strategy, we determined the effects of these 2 models. The full intervention group (teachers who were coached) outperformed the partial intervention group (workshop only) in all the teacher observation and student achievement measures. This study demonstrates the potential of coaching as a viable model of the professional development of reading teachers.

Sanders, W.L. (2000). Value-added assessment from student achievement data: Opportunities and hurdles. *Journal of Personnel Evaluation in Education, 14*(4), 329–339.

Abstract: Let me share with you how honored I am to receive an award named after the late Dr. Jay Millman. In 1983, after completing the first of our research studies that began our continuing work in value-added, our report was sent by officials in the Tennessee Department of Education for review by Dr. Millman. It is no secret that many in the Department at the time were assuming that his anticipated critical review would put an end to such a preposterous idea—that student achievement data could be used as part of teacher evaluation. Days turned into weeks; each time that I would inquire of the Department as to when we would hear from the review, I was always told that they had not received it. One day I called Dr. Millman and explained my frustration of not hearing from the review and inquired as to when it might be available. He immediately interrupted and explained that he had sent the review several weeks previous to that day and that he would be glad to send me a copy of his remarks, obviously very angry that they had not been passed on to me. Upon receiving and reading his review, it became obvious why I had not received a copy from the Department. Even though he raised many important questions, his review was most objective and generally very positive. Later, he asked us to submit chapters to the book on student outcomes assessment models that he edited. In all of my interactions with Jay, I developed the utmost respect for this distinguished scholar, and I am glad that fate let our paths cross.

Sanders, W.L., & Rivers, J. C. (1996). *Cumulative and residual effects of teachers on future student academic achievement* (No. R11-0435-02-001-97). Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center. Retrieved April 20, 2009, from http://www.mccsc.edu/~curriculum/cumulative%20and%20residual%20effects%20of%20teachers.pdf

Abstract: Summary of Findings: Differences in student achievement of 50 percentile points were observed as a result of teacher sequence after only three years. The effects of teachers on student achievement are both additive and cumulative with little evidence of compensatory effects. As teacher effectiveness increases, lower achieving students are the first to benefit. The top quintile of teachers facilitate appropriate to excellent gains for students of all achievement levels. Students of different ethnicities respond equivalently within the same quintile of teacher effectiveness.

Link:
http://www.mccsc.edu/~curriculum/cumulative%20and%20residual%20effects%20of%20teachers.pdf

Saunders, W.M., Goldenberg, C.N., & Gallimore, R. (2009). Increasing achievement by focusing grade-level teams on improving classroom learning: A prospective, quasi-experimental study of Title I schools. *American Educational Research Journal, 46*(4), 1006–1033.

Abstract: The authors conducted a quasi-experimental investigation of effects on achievement by grade-level teams focused on improving learning. For 2 years (Phase 1), principals-only training was provided. During the final 3 years (Phase 2), school-based training was provided for principals and teacher leaders on stabilizing team settings and using explicit protocols for grade-level meetings. Phase 1 produced no differences in achievement between experimental and comparable schools. During Phase 2, experimental group scores improved at a faster rate than at comparable schools and exhibited greater achievement growth over 3 years on state-mandated tests and an achievement index. Stable school-based settings, distributed leadership, and explicit protocols are key to effective teacher teams. The long-term sustainability of teacher teams depends on coherent and aligned district policies and practices.

Scher, L., & O'Reilly, F. (2009). Professional development for K–12 math and science teachers: What do we really know? *Journal of Research on Educational Effectiveness, 2*(3), 209–249.

Abstract: As investments in K–12 math and science professional development programs expanded over the past decade, researchers and policymakers have questioned whether and how such programs work to improve student learning. This article summarizes the current knowledge base and offers a theoretical framework researchers can use to design studies that explore mechanisms through which professional development programs influence teacher knowledge, teacher practices, and ultimately student achievement. We quantitatively pool the most rigorous evaluation research available to determine whether currently held beliefs in the field are supported by the evidence. Although this study does find some support for the guidance propounded by experts, it cautions policymakers and practitioners that the current evidence base is thin. We urge researchers to build on what we have learned through theory and practice to increase the rigor of evaluations on this important topic by incorporating valid and reliable measures of professional development components as well as valid measures of teacher knowledge and practices.

Sebring, P.B., Allensworth, E., Bryk, A.S. Easton, J.Q., & Luppescu, S. (2006). *The essential supports for school improvement*. Chicago: Consortium on Chicago School Research. [*See also Bryk et al., 2010*]

Abstract: In this report, which draws on data from Chicago public elementary schools in the 1990s, the authors present a framework of essential supports and community resources that facilitate school improvement. The authors provide evidence on how the essential supports contribute to improvements in student learning, and they investigate how community circumstances impact schools' ability to embrace the essential supports. The authors offer empirical evidence on the five essential supports—leadership, parent-community ties, professional capacity, student-centered learning climate, and ambitious instruction—and investigate the extent to which strength in the essential supports was linked to improvements in student learning, and the extent to which weakness was linked to stagnation in learning gains. The authors also find that a school's capacity for improvement is heavily influenced by its community context. Although improving and stagnating schools were found in all different communities, those with particularly strong social capital and low crime rates were likely to have schools with strong essential supports, whereas those with weak social capital were likely to have weak essential supports in their schools. Social capital, in addition to the presence of abuse and neglect among children in the community, impacted the essential supports in complex ways, which the authors describe in detail. Marshalling a wide variety of evidence—CCSR's biannual surveys of CPS; standardized test scores; and data from the Chicago Police Department, the Chapin Hall Center for Children, and the Project on Human Development in Chicago Neighborhoods—the authors set forth a framework for guiding school improvement efforts and illustrate the barriers that stand in the way of this task.

Link: http://ccsr.uchicago.edu/publications/EssentialSupports.pdf

Silk, Y., Silver, D., Amerian, S., Nishimura, C., & Boscardin, C.K. (2009). *Using classroom artifacts to measure the efficacy of professional development* (Report 761). Los Angeles: University of California, National Center for Research on Evaluation, Standards, and Student Testing (CRESST).

Abstract: This report describes a classroom artifact measure and presents early findings from an efficacy study of WestEd's Reading Apprenticeship (RA) professional development program. The professional development is designed to teach high school teachers how to integrate subject-specific literacy instruction into their regular curricula. The current RA study is notable in that it is the first to include random assignment in its design. The National Center for Research on Evaluation, Standards, and Student Testing (CRESST) designed a teacher assignment instrument to address the question of whether treatment teachers demonstrate greater integration of literacy into their instructional practice than control teachers. Early findings based on preliminary data from participating history teachers indicate that treatment teachers outperformed control teachers on 6 out of 11 rubric dimensions. These dimensions address opportunities for reading in the assignment, the strategies in place to support successful reading, teacher support for reading engagement, and student feedback. Data collection will conclude at end of the 2008–2009 school year, followed by a final report.

Link: http://www.cse.ucla.edu/products/reports/R761.pdf

Smith, J.B., Lee, V.E., & Newmann, F.M. (2001). *Instruction and achievement in Chicago elementary schools*. Chicago: Consortium on Chicago School Research.

Abstract: This report is part of a series of special topic reports developed by the Chicago Annenberg Research Project. The study reported here explored the link between different forms of instruction and learning in Chicago elementary schools. The report presents clear and consistent evidence that in Chicago's elementary schools the instructional approach teachers use influences how much students learn in reading and mathematics. It discusses the important relationships which were found between teachers' professional preparation and the presence of key organizational supports within their schools, and their use of the more effective methods. It concludes that efforts to engage all students in deeper and broader thinking about subject matter are a hallmark of "good teaching," and that Chicago students' achievement could improve further if teachers across the school system were encouraged to achieve a better balance among their use of review, interactive teaching, and didactic teaching practice.

Link: http://ccsr.uchicago.edu/publications/p0f01.pdf

Smylie, M.A., Allensworth, E., Greenberg, R.C., Harris, R., & Luppescu, S. (2001). *Teacher professional development in Chicago: Supporting effective practice*. Chicago: Consortium on Chicago School Research.

Abstract: This is one of a series of reports of the Chicago Annenberg Research Project that explore ways of supporting the high-quality instruction which has been shown to improve student learning. The authors begin by examining the concept of and defining effective teacher professional development. Next, they summarize teachers' reports of the extent to which they experience effective professional development, and their thoughts on how their professional development experiences could be improved. Data from 1997 and 1999 citywide teacher surveys are analyzed to identify the sources, means of delivery, and organizational supports (particularly at the school level) that promote effective professional development.

Link: http://ccsr.uchicago.edu/publications/p0d01.pdf

Suell, J.L., & Piotrowski, C. (2007). Alternative teacher education programs: A review of the literature and outcome studies. *Journal of Educational Psychology, 34*(1), 54–58.

Abstract: This paper provided an overview on alternative teacher education programs (ATEP). This review covered the formation, development, and design of these non-traditional certification approaches over the past two decades. Research studies on five critical issues: teacher retention and attrition, importance of mentors, teacher education and needs assessment, minorities and male, and student achievement were emphasized. Recent comparative studies on traditionally trained and ATEP teachers were noted. Research, to date supports the ATEP model for training teachers.

U.S. Department of Education (2009). *State and local implementation of the No Child Left Behind Act, Volume VIII—Teacher quality under NCLB: Final report*. Washington, DC: U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service.

Abstract: Provides updated information on the progress that states, districts, and schools have made in implementing NCLB's teacher quality, professional development, and paraprofessional provisions. The report is based on the second round of data collection from the National

Longitudinal Study of NCLB and the Study of State Implementation of Accountability and Teacher Quality Under NCLB. The report presents findings from interviews with state education officials in all states and surveys of nationally representative samples of districts, principals, and teachers conducted in 2004–05 and 2006–07. Key findings include: By 2006–07, the vast majority of teachers met their states' requirements to be considered highly qualified under NCLB. However, state requirements for the demonstration of content-knowledge expertise varied greatly. Teachers in high-poverty and high-minority schools were more likely to report that they were not highly qualified. Moreover, even among teachers who were considered highly qualified, teachers in high-poverty schools had less experience and were less likely to have a degree in the subject they taught. Although nearly all teachers reported taking part in content-focused professional development related to teaching reading or mathematics during the 2005–06 school year and summer, a relatively small proportion participated in such learning opportunities for an extended period of time.

Report Highlights: http://www2.ed.gov/rschstat/eval/teaching/nclb-final/highlights.pdf

Full Report: http://www2.ed.gov/rschstat/eval/teaching/nclb-final/report.pdf

U.S. Department of Education (2010). *Recent trends in mean scores and characteristics of test-takers on Praxis II licensure tests*. Washington, DC: Author, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service.

Abstract: This study examines changes in teacher licensure scores from 1999 to 2006. The study focuses specifically on nine tests in the Praxis II series because these tests are among the most widely used assessments across multiple states for purposes of measuring content knowledge for initial teacher licensure. The purpose of this study is to identify trends in Praxis scores on a select number of tests across recent years and across as many states as possible. The study focuses on trends in mean scores for those who pass the Praxis II tests, as these are individuals who are eligible to enter teaching. Analyses are disaggregated by passing status, gender, race, and whether or not the test candidate has prior teaching experience.

Key findings are as follows:

- For the Praxis tests examined in this study, there is little change in mean test scores observed over time. The study identifies many significant trend effects, but the magnitude of these effects is relatively small. Because the samples include thousands of individuals, even small differences can be statistically significant, though substantively unimportant.
- Those who pass Praxis tests have scores substantially higher than those who do not. Individuals who pass these Praxis II tests have mean and median scores that are approximately two standard deviations higher than those who fail. Standard deviations

are based on all test-takers from the respective samples. This pattern is consistent across all tests examined in this study.

- There has been an increase in the number of individuals taking the Praxis II tests and the increase is seen both among individuals with teaching experience and without teaching experience. For many of the tests included in the analyses, the size of the sample of test-takers nearly doubled over the different range of years included. At the same time that a substantial increase in test-takers was occurring, there was very little movement in scores. There is no clear rationale for why this pattern of data exists. It appears that the increase in candidates has not materially affected the overall preparation of individuals to succeed on the respective tests.
- The large, positive trends in SAT scores by Praxis II candidates observed in prior research are not echoed here in similarly large positive trends in Praxis II scores. This may be due to the more limited number of years included in this study as well as several other factors. Gitomer (2007), primarily on the basis of SAT scores, concluded that the academic quality of teachers had improved a substantial amount over recent years. This begs the question of whether there are reasons to explain the current study's more modest findings compared with the prior study. As explained in the report, there are a number of critical differences between these studies that might account for the somewhat different findings.

Link: http://www2.ed.gov/rschstat/eval/teaching/praxis-ii/report.pdf

U.S. Government Accountability Office (2009a). ***Teacher quality: Sustained coordination among key federal education programs could enhance state efforts to improve teacher quality*** **(GAO-09-593). Washington, DC: Author.**

Abstract: Policymakers and researchers have focused on improving the quality of our nation's 3 million teachers to raise the achievement of students in key academic areas, such as reading and mathematics. Given the importance of teacher quality to student achievement and the key role federal and state governments play in supporting teacher quality, GAO's objectives included examining (1) the extent that the U.S. Department of Education (Education) funds and coordinates teacher quality programs, (2) studies that Education conducts on teacher quality and how it provides and coordinates research-related assistance to states and school districts, and (3) challenges to collaboration within states and how Education helps address those challenges. GAO interviewed experts and Education officials, administered surveys to officials at state educational agencies and state agencies for higher education in the fall of 2008, and conducted site visits to three states. Education allocates billions of federal dollars for teacher quality improvement efforts through many statutorily authorized programs that nine offices administer. Education officials said these offices share information with one another as needed, and from

time to time Education has established and completed broader collaborative efforts. Yet, GAO found little sustained coordination and no strategy for working systematically across program lines. Education also has not described how it will coordinate crosscutting teacher quality improvement activities intended to support its goal of improving student achievement in its annual performance plan. Our previous work has identified the use of strategic and annual plans as a practice that can help enhance and sustain collaboration. Without clear strategies for sustained coordination, Education may be missing key opportunities to leverage and align its resources, activities, and processes to assist states, school districts, and institutions of higher education improve teacher quality. Education has conducted evaluations for some of its teacher quality programs and has awarded grants to researchers for a variety of research on teacher quality interventions, which are intended to inform policymakers and educators about program operations and which programs or interventions are having an impact. While evaluations have been done or are under way for about two-fifths of these programs, little is known about whether most of the programs are achieving their desired results. Education provides information from evaluations and also from research through the Internet and a system of regional and national providers. These providers also either conduct or synthesize research and provide assistance mainly to states and school districts. These providers coordinate among themselves and with one another in various ways. State agency officials reported through our surveys that limited resources and incompatible data systems were the greatest challenges to their collaborative efforts to improve teacher quality. State officials reported that data systems could be used to inform teacher quality policy efforts by linking student and teacher data, or linking data from kindergarten through 12th grade and the postsecondary education systems. To help address these challenges, Education provides some financial support and other assistance. For example, one $65 million program that helps states develop statewide data systems also received another $250 million in the American Recovery and Reinvestment Act of 2009. Also, the act requires states to report on the progress they are making toward linking statewide data systems that allow matching of individual student achievement to individual teachers. This additional funding could help states defray costs associated with these efforts.

Highlights: http://www.gao.gov/highlights/d09593high.pdf

Full Report: http://www.gao.gov/new.items/d09593.pdf

U.S. Government Accountability Office (2009b). ***Student achievement: Schools use multiple strategies to help students meet academic standards, especially schools with higher proportions of low-income and minority students*** **(GAO-10-18). Washington, DC: Author.**

Abstract: The federal government has invested billions of dollars to improve student academic performance, and many schools, teachers, and researchers are trying to determine the most effective instructional practices with which to accomplish this. The Conference Report for the Consolidated Appropriations Act for Fiscal Year 2008 directed GAO to study strategies used to prepare students to meet state academic achievement standards. To do this, GAO answered: (1) What types of instructional practices are schools and teachers most frequently using to help students achieve state academic standards, and do those instructional practices differ by school characteristics? (2) What is known about how standards-based accountability systems have affected instructional practices? (3) What is known about instructional practices that are effective in improving student achievement? GAO analyzed data from a 2006–2007 national survey of principals and 2005–2006 survey of teachers in three states, conducted a literature review of the impact of standards-based accountability systems on instructional practices and of practices that are effective in improving student achievement, and interviewed experts. Nationwide, most principals focused on multiple strategies to help students meet academic standards, such as using student data to inform instruction and increasing professional development for teachers, according to our analysis of data from a U.S. Department of Education survey. Many of these strategies were used more often at high-poverty schools—those where 75 percent or more of the students were eligible for the free and reduced-price lunch program—and high-minority schools—those where 75 percent or more of students were identified as part of a minority population, than at lower poverty and minority schools. Likewise, math teachers in California, Georgia, and Pennsylvania increased their use of certain instructional practices in response to their state tests, such as focusing more on topics emphasized on assessments and searching for more effective teaching methods, and teachers at high-poverty and high-minority schools were more likely than teachers at lower-poverty schools and lower-minority schools to have made these changes, according to GAO's analysis of survey data collected by the RAND Corporation. Some researchers suggested that differences exist in the use of these practices because schools with lower poverty or lower minority student populations might generally be meeting accountability requirements and therefore would need to try these strategies less frequently. Research shows that standards-based accountability systems can influence instructional practices in both positive and negative ways. For example, some research notes that using a standards-based curriculum that is aligned with corresponding instructional guidelines can facilitate the development of higher order thinking skills in students. But, in some cases, teacher practices did not always reflect the principles of standards-based instruction, and the difficulties in aligning practice with standards were attributed, in part, to current accountability requirements. Other research noted that assessments can be powerful tools for improving the learning process and evaluating student achievement, but assessments can also have some unintended negative consequences on instruction, including narrowing the curriculum to only material that is tested. Many experts stated that methodological issues constrain knowing more definitively the specific instructional practices that improve student learning and achievement. Nevertheless, some studies and experts pointed to instructional practices that are considered to be effective in raising

student achievement, such as differentiated instruction. Professional development for teachers was also highlighted as important for giving teachers the skills and knowledge necessary to implement effective teaching practices.

Highlights: http://www.gao.gov/highlights/d1018high.pdf

Full Report: http://www.gao.gov/new.items/d1018.pdf

Wallace Foundation (2009). ***Research findings to support effective educational policymaking: Evidence & action steps for state, district & local policymakers*****. New York: Author.**

Abstract: After a decade of work with states, districts, city governments and community organizations around the country to expand learning and enrichment opportunities both in and out of school, The Wallace Foundation has accumulated a body of knowledge and field-based lessons that are highly relevant for developing comprehensive approaches to achieving the Race to the Top reform objectives and other federal strategies to improve public education. As recently described in the Federal Register, those submitting plans and grant applications to address those objectives will be asked to demonstrate a high degree of policy and strategy coordination at all levels of public education. This brief report highlights a number of research findings and action steps drawn from policies and practices that have been shown to be critical to the success of educational reforms at the local, district and state levels. The report focuses on the following topics:

- A letter from Wallace president M. Christine DeVita;
- Coordinating state, city and district policies;
- Turning around the lowest-performing schools—the role of district leaders;
- Turning around the lowest-performing schools—the role of the principal;
- Preparing and developing effective school leaders;
- Expanding opportunities for out-of-school learning.

Link:
http://www.wallacefoundation.org/KnowledgeCenter/KnowledgeTopics/CurrentAreasofFocus/EducationLeadership/Documents/Research-Findings-Action-Items-to-Support-Effective-Educational-Policymaking.pdf

Wayne, A.J., & Youngs, P. (2003). Teacher characteristics and student achievement gains: A review. ***Review of Educational Research, 73*****(1), 89–122.**

Abstract: A large body of studies exists that examines the relationship between student achievement gains and the characteristics of teachers. To help policymakers and researchers use and build on this body of studies, this article reviews the studies systematically and synthesizes their results with deliberate consideration of each study's qualities. Determinate relationships are described for four categories of teacher characteristics: college ratings, test scores, degrees and coursework, and certification status. The review details the implications of these relationships in light of study limitations and proposes directions for future research.

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

Abstract: On Feb. 4, NSDC released *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the United States and Abroad*. This also marks the launch of a multi-year research effort to measure the effectiveness of professional learning at the state level. The report was written by Linda Darling-Hammond and a team of researchers from the Stanford University School Redesign Network. It examines what research has revealed about professional learning that improves teachers' practice and student learning. The report describes the availability of such opportunities in the United States and high-achieving nations around the world, which have been making substantial and sustained investments in professional learning for teachers over the last two decades. Funding for the multi-year research effort comes from the Bill and Melinda Gates Foundation, MetLife Foundation, NSDC, and The Wallace Foundation.

Abridged Report: http://www.nsdc.org/news/NSDCstudy2009.pdf

Technical Report: http://www.nsdc.org/news/NSDCstudytechnicalreport2009.pdf

Web Site: http://www.nsdc.org/stateproflearning.cfm

Xu, Z., Hannaway, J., & Taylor, C. (2007). *Making a difference? The effect of Teach for America on student performance in high school* (Working Paper 17). Washington, DC: National Center for Analysis of Longitudinal Data in Education Research.

Abstract: Teach for America (TFA) selects and places graduates from the most competitive colleges as teachers in the lowest-performing schools in the country. This paper is the first study that examines TFA effects in high school. We use rich longitudinal data from North Carolina and estimate TFA effects through cross-subject student and school fixed-effects models. We find that TFA teachers tend to have a positive effect on high school student test scores relative to non-

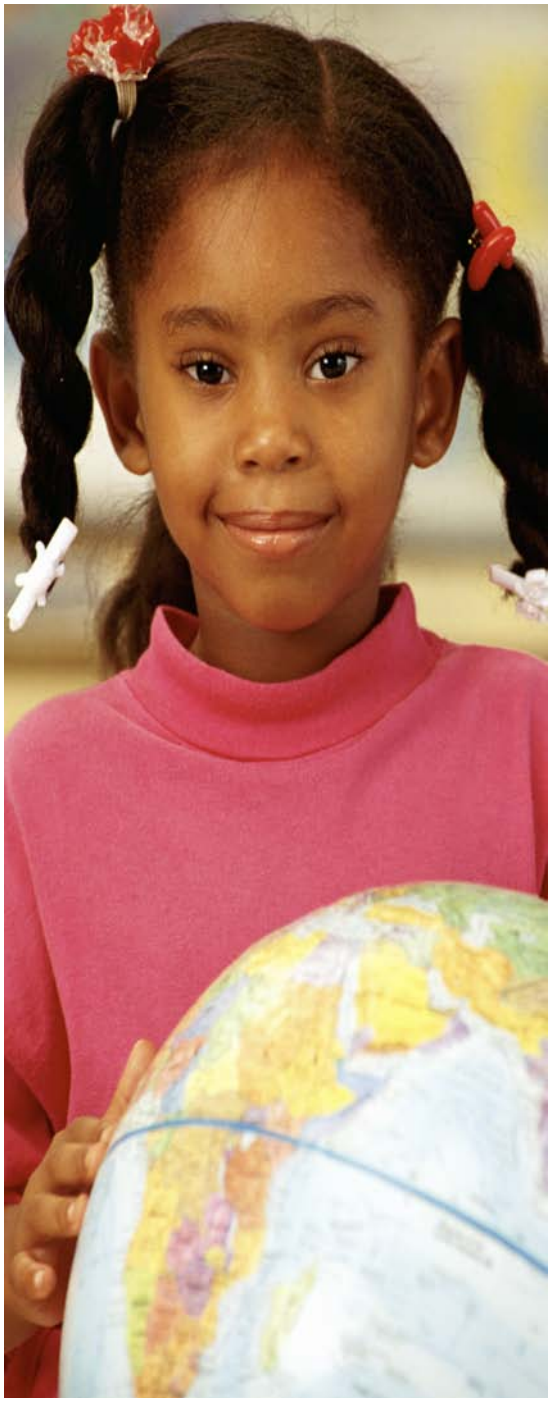
TFA teachers, including those who are certified in-field. Such effects exceed the impact of additional years of experience and are particularly strong in math and science.

Link: http://www.urban.org/UploadedPDF/411642_Teach_America.pdf

Methodology

In order to answer this request, we looked in Wilson Web (UNCG education database) and ERIC databases. In addition, we also searched Google using the phrases "teacher quality," "teaching quality," "teacher effects," etc. We also searched the websites of the following organizations: Alliance for Excellent Education; American Enterprise Institute (AEI); American Institutes for Research (AIR); Brookings; Center for Comprehensive School Reform and Improvement; Center for Public Education; Center for the Study of Evaluation (CSE)/National Center for Research on Evaluation, Standards, and Student Testing (CRESST); Center on Education Policy (CEP); Center on Innovation & Improvement; Council of Chief State School Officers (CCSSO); Economic Policy Institute (EPI); Education Commission of the States (ECS); Educational Testing Service (ETS); Institute for the Study of Labor (IZA, Bonn, Germany); Institute of Education Sciences (IES); Mathematica Policy Research, Inc.; MDRC; National Governors Association; National Bureau of Economic Research (NBER); National Comprehensive Center for Teacher Quality (TQ Center – Learning Points Associates); RAND Corporation; Urban Institute; U.S. Department of Education; and U.S. Government Accountability Office (GAO).

REGIONAL EDUCATIONAL LAB May 2010, EBE # 591D



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