Fifty Years of Federal Teacher Policy:

An Appraisal

Paper commissioned by the Center on Education Policy, Washington, D.C.
For its project on Rethinking the Federal Role in Education

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March 2009

The views expressed in this paper are those of the authors.

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Executive Summary

The federal role in developing the teacher workforce has increased markedly in the last decade, but the history of such involvement dates back fifty years. Relying initially on policies to recruit and train teachers, the federal role has expanded in recent years to include new policy initiatives and instruments around the themes of accountability, incentives, and qualifications, while also continuing the historic emphasis on teacher recruitment, preparation, and development. In recent years two views emerged that currently contend for policy influence. One seeks generally to develop or improve teaching as a profession. The other takes a market-oriented approach and seeks to deregulate important aspects of teaching in order to increase recruitment and better direct teaching via incentives and accountability. Each perspective has enjoyed some influence over federal policy, and the tensions between the two perspectives have led to unstable and often ill-coordinated policy at federal, state, and local levels.

The primary legislation directed to teachers and teaching have been the *Elementary and Secondary Education Act* (ESEA; amended in 2001 as No Child Left Behind); and the *Higher Education Act* (HEA; reauthorized in 2008 as the *Higher Education Opportunity Act*). Dating from 1965, both acts have included substantial funding for a range of programs that aimed to recruit and train teachers for shortage areas, provide professional development, and more recently impose accountability requirements and experiment with qualifications and incentives policy.

This paper reviews eight policy themes that include (1) recruitment to teaching; (2) teacher preparation and development; (3) teacher accountability policy; (4) incentives policy; (5) policy directed to teacher qualifications; and (6) class size reduction policy. Two additional themes, (7) teacher working conditions and (8) human resource management and policy coordination bear on the main goals of teacher policy but have received less attention in federal policy.

For each of these themes the paper supplies first, a description of past and current federal policy; then assesses the evidence on policy effects and effectiveness; and concludes with an overall appraisal. A final section provides recommendations for federal teacher policy in the future.

SUMMARY OBSERVATIONS

Looking across the policy themes, a number of observations stand out. One is the relative lack of policy research that might supply direction to ongoing policy investments. For example, the federal government has sponsored recruitment policies for shortage areas for over 50 years, but there is no body of evidence to supply authoritative guidance in policy design. Likewise, the federal government has made steady, continuing investments in teacher professional development across many initiatives, but there is little evidence on what might pay off in this important area.

Another observation is that teaching presents a number of crucial and seemingly intractable problems that policy has yet to address successfully. For example, high-need schools (serving concentrations of poor and minority students) always have had difficulty in retaining teachers, so that faculty turnover is an enduring problem. Policies here have included "grow your own" teacher preparation, mentoring and induction programs, and bonus pay together with accountability policy directed at providing qualified teachers. But problems persist with teacher turnover and with the continuing incidence of teaching out-of-area. The nation has not worked out a set of policies to alleviate this crucial problem.

A third observation is that local conditions in schools and districts play a large role in the effectiveness of federal teacher policy. For example, the effectiveness of comprehensive induction programs or alternate route teacher preparation depends in large part on conditions in particular schools. Federal policy supplies funds for such programs, but has modest leverage over what matters most: how the policies are implemented and how individual school factors influence their effectiveness. This means that policy innovations depend for their success on local conditions; and that large variability from school to school will play a large part in policy effectiveness.

A fourth observation is that federal teacher policy has accelerated and accumulated over the last decade alone. Much of this policy is so new that policy research is not available to provide good evaluations. For example, the Obama administration is proposing to double the *Teacher Incentive Fund*, but we know relatively little about how teachers will respond to new incentive programs that orient performance to pay. There is a history of such efforts, but the new programs springing up around the country have not received careful evaluations, so caution is warranted. Innovation is called for but must be accompanied by rigorous policy research.

Finally, our review raises questions about whether federal policy targets what matters. The current emphasis on accountability and incentives overlooks the importance of teacher working conditions as a powerful factor in shaping the teacher workforce. And the proliferation of teacher policy has created new problems of coordination and management up and down the education system. The management of human resources (or human capital) at state, district, and school levels has emerged as an important problem. At the same time, some states are making headway in developing comprehensive teacher policies that have achieved some success. Rather than single innovations (e.g., bonus pay), it is the body of coordinated policy, cultivated over time, that is more likely to be effective. Studying such cases and disseminating the results looks to be a positive federal role.

Another response to problems of management and coordination is to mandate that more information be collected, but here we draw a distinction between the uses of information for sanctions-oriented accountability or for improved policy decision-making and action. The latter approach, we argue, is more likely to achieve good results.

POLICY RECOMMENDATIONS

The next administration should adopt a clear, focused mission statement to guide federal teacher policy. Our recommendation:

> ***The federal mission is to enhance student access to teachers of high quality and to contribute to the steady improvement of teaching effectiveness.***

Federal policy then should address a small set of goals around which to concentrate and coordinate initiatives. We recommend four goals: (1) attract and retain qualified teachers in high-need districts and schools; (2) attract and retain qualified teachers in critical shortage fields including math, science, special education, and foreign languages; (3) attract high-priority candidates to teaching, including those of high academic ability and teachers from the spectrum of minority groups; and (4) improve teacher and teaching effectiveness, including development of better measures and evaluation procedures.

A strategic plan includes these elements:

Target and Strengthen Teacher Recruitment. Form a study group to review evidence on effects of recruitment policies that include scholarship, fellowship, and loan forgiveness programs as the basis for better design, targeting, and effectiveness. Make such modifications to existing policies as the review indicates so such policy works more effectively on the key strategic goals of federal policy. And launch special recruitment efforts aimed at historically black colleges and other institutions that educate minority students. Finally, continue class size reduction policy, within *Title II ESEA*, in the early grades, and work with states and districts to ensure effective implementation and recruitment of qualified teachers for new positions.

Build Capacity for Teacher Preparation and Development. Continue to cultivate "grow your own" teacher prep programs in urban and rural locales, particularly Teacher Residency programs as called for in the *2008 Higher Education Opportunity Act*. Encourage a range of providers to participate in such programs, but establish federal advisory "standards of safe practice" that all such programs should meet.

Given the sizable federal investment in professional development (PD), initiate more systematic study of PD through creation of a new federal R & D center linked to regional service agency dissemination in order to build usable knowledge for guidance of *ESEA Title II* monies. Work with states to better coordinate PD with other elements of state policy, including standards for learning, aligned curriculum materials, assessments, and instructional "best practice."

In addition, fund a new center for the study of teacher preparation to conduct a broad range of studies aimed at identifying practices that reliably produce "well-started" novice teachers ready for work in a range of school settings. Deepen understanding of how preparation programs, early induction experiences, and school conditions combine to support new teachers and to enhance their teaching.

Innovate and Build Capacity for Accountability. Initiate "zero-based" accountability to selectively deregulate *No Child Left Behind* and the *Higher Education Act* with respect to specific regulations, their implementation, and responses to regulation that have yielded adverse unintended consequences on teachers and teaching. Establish a new School Accountability Fund to launch experiments with new forms and measures of accountability. Create a research grants program to develop and test new models and methods of teacher evaluation, including richer measures of teaching effectiveness.

Expand Uses and Kinds of Incentives. Establish a Teacher Working Conditions Fund targeted to Title I schools that supplies resources to improve conditions of teacher work as these influence recruitment, retention, morale and commitment, and high expectations for students' learning.

Increase funding for states and districts to encourage more teachers to become National Board Certified, and to begin using these teachers for leadership and advanced positions in schools as part of more general efforts to create new staffing patterns in schools.

Study Teacher Qualifications Policy. Research to date has not found strong evidence about qualifications in teaching. Studies increasingly are turning away from qualifications to indicators of teaching effectiveness that include direct observations of instruction and of learning outcomes. To place teacher policy decisions such as initial licensure, tenure, and advancement to senior positions on stronger footing, the federal role should be to fund research that deepens knowledge about the relationship between qualifications, instructional practices, and student outcomes. Then, disseminate knowledge to states and localities for use in a range of teacher policies.

Improve Policy Management and Coordination. Conduct an internal review within the Education Department (ED) to improve coordination and management of federal teacher policy. Federal funds within ESEA should be allocated to state and district capacity-building and strategic management of human resources, and to study and dissemination of best practices that support the federal mission for teacher policy.

Develop State and Local Information Systems. Allocate funds through both ESEA and HEA to assist states in developing information management systems that track and link students, teachers, and dollars. The purpose of these systems should concentrate on assisting educators at state and local levels in teacher policy decision-making around equity and quality goals.

I. Introduction

Federal policy directed to teaching and teachers is the subject of this review. Beginning with the passage of the *National Defense Education Act* in 1958, the federal government has been involved in a half-century of policymaking directed to alleviating problems associated with the teacher workforce in America. Teacher policy currently is a large concern. In a workforce of 3.5 million teachers, nearly 2 million teachers must be recruited in the next decade, as the baby boomer generation retires. Further, researchers have begun to uncover the importance of effective teaching for student achievement, and the studies reveal that having a succession of good teachers makes a substantial difference in what students learn. At the same time, other studies document that effective teachers are unevenly distributed across the Nation's schools to the particular disadvantage of poor and minority children. Consequently, efforts to recruit, train, place, and retain effective teachers enjoy top priority in the incoming administration.

To assess the federal role in teacher policy, we have organized our paper around a set of topics that cover the major strategies employed by the federal government to influence teaching and teachers. They include (1) recruitment; (2) training; (3) accountability; (4) incentives; (5) qualifications; and (6) class size reduction. We also comment on two other topics that play an important role in shaping the teacher workforce, although they have not received much policy attention. These are (7) teacher working conditions and (8) human resource management and the overall coordination of teacher policy.

We also note what our analysis leaves out. We have concentrated on policy directed to the K-12 teacher workforce, omitting attention to early childhood education, special education, bilingual or ELL education, and vocational/career education. Each of these sectors deserves attention with respect to workforce issues, but they lie beyond the scope of this paper. Likewise, the federal government has become involved in leadership development for K-12 school administration, a topic that bears directly on teachers but also falls outside our scope. Finally, cross-occupational and cross-national studies can provide important illumination and ideas for new approaches, but we have not included analyses of this sort here.

As a target for federal policy, the teacher workforce presents a range of problems and a range of strategies for dealing with them. Appendix I provides a précis of these problems, each of which might serve as the target for federal policy. It is also important to recognize that policy strategies are influenced not only by evidence of "what works" but also by broad assumptions and convictions that are rooted in worldviews or ideologies. This is particularly the case today, when two positions have been staked out. Appendix II supplies a brief account of each. While the professional model advocates for high, rigorous standards and assessments in teaching, together with related aspects of professionalism, the deregulation model favors labor market policies that reduce barriers to entry, expand providers of teacher training, and exert more influence over teaching via incentives and evaluation directed to performance on the job. Federal policy then must set priorities in light of longstanding problems with the teaching occupation, and in response to contending viewpoints about the future of the teaching occupation. At this point, we

encourage the reader to review these appendices as they shed light on policy issues directed to the teacher workforce.

Our paper is organized into three parts. First, a brief account of trends in federal teacher policy. Next, a review of federal policies associated with each of the eight topics noted above. We organize our review of each topic into three parts: a description of the relevant policies, an account of evidence bearing on the topic, and an appraisal that examines arguments, raises questions, and offers commentary. The final section of the paper includes recommendations for future federal teacher policy, grounded in evidence and appraisals. To assist the reader in keeping track of the main policies under consideration, we use italics throughout the text to identify the major federal policies and programs under review.

And a note on sources. Our review included examination of Government Accounting Office reports; research, reports, and evaluations commissioned by the Education Department; policy-relevant studies and research directed to problems with the teacher workforce; websites, blogs, and position papers released by organizations that are influential in the teacher policy debates (e.g., American Enterprise Institute; Brookings Institution; Economic Policy Institute; Education Sector; Educational Testing Service; Education Trust; Fordham Foundation; National Board for Professional Teaching Standards; National Center on Teacher Quality; Urban Institute; and others); and histories of federal teacher policy.

II. Trends in Federal Teacher Policy

Over the fifty-year span of federal involvement with teachers, there have been three large streams of activity with many smaller tributaries (reviews of the history of federal teacher policy include Cohen-Vogel, 2005; Earley & Schneider, 1996; Imig & Imig, 2008; and Ramirez, 2004). One stream overlaps with federal efforts to underwrite college attendance. The major loan forgiveness, scholarship, and fellowship programs that have helped students pay for college have included special provisions for students who are willing to teach, particularly in high-need subjects such as math and science, and in high-need schools, such as those serving concentrations of poor and minority children. We have, then, a long history of efforts to recruit college students into teaching by providing forgivable loans, scholarships, work study and related programs. Such policy has been continuous over the past fifty years, accommodating a range of priorities that have included math and science students, students of high academic ability, students willing to serve in high-need schools; and others. For the most part, such policy has been housed within the *Higher Education Act* (HEA), administered through the Education Department, the National Science Foundation (NSF), and some smaller agencies.

The two other streams of policy were each launched in 1965 in two omnibus bills. The *Elementary and Secondary Education Act (ESEA)* is the single largest federal program aimed at K-12 schooling. Amended frequently and most recently in the *No Child Left Behind Act (NCLB)* (2001), the various titles of this legislation have included funds for states, districts, and local schools serving poor children (designated as “Title I” schools).

ESEA has been a major source of funding for teacher professional development (PD), together with new initiatives aimed at teacher qualifications and training. The second omnibus bill, the Higher Education Act, also has been amended frequently over the years, including its most recent reauthorization in 2008. As its name indicates, this legislation is directed to issues in higher education, including support for college attendance and pre-service teacher preparation. Over the years, the HEA has supported such programs as the *Teacher Corps* (1965-1980), the *Education Professions Development Act* (EPDA) (1967-1973), and other efforts aimed at training teachers for the nation's schools, especially for inner city and rural schools that historically have had difficulty in attracting teachers.

What can we note about the federal role over this time span? Several themes are prominent. One is expansion. The federal government has increased its influence over time, although not in continuous fashion. For example, following the creation of a cabinet-level Education Department in 1980 in the Carter administration, the Reagan administration sought to eliminate categorical programs and funnel money to the states in block grants, thereby de-emphasizing the federal role. Ironically, the *Nation at Risk* report (1983), released during the Reagan administration, helped stimulate increased federal involvement in the ensuing years. In 2001, NCLB represented a significant expansion of federal involvement, well beyond what previous administrations would have imagined possible (or appropriate).

Another theme concerns the instruments the federal government has used to influence teachers and teaching. Throughout much of this history, federal involvement concentrated primarily on recruitment to teaching tied to support for college attendance together with training and professional development. The historic emphasis has been on producing teachers where they are needed most through some combination of recruitment lures, training by institutions of higher education (IHEs) in high-needs locales, and ongoing professional development.

With the more general turn to standards in the 1980s, accountability surfaced as a major strategy. The 1998 HEA amendments called for institutions of higher education to be accountable for their graduates' performance on teacher licensing exams. And NCLB introduced the *Highly Qualified Teacher (HQT)* provisions that required new and veteran teachers to meet certain requirements mostly dealing with their knowledge of subject matter. The 2008 amendments to HEA introduce further accountability measures that states and institutions must track, and the Obama administration must determine how much of what kinds of accountability to sponsor in the upcoming reauthorization of NCLB. These measures have been advanced in the name of both quality and equity. Quality has been associated with the match between a teacher's qualifications (as measured by state licensure examinations and by indications of subject matter mastery) and the teaching assignment. Equity has been emphasized by requirements that qualified teachers be fairly distributed across all schools within districts.

Other policy themes also have emerged along with accountability. One has been class size reductions. The Clinton administration made this a prominent policy goal in 1999 with the intention of expanding the teacher workforce, especially in the early grades,

where smaller classes were shown to be associated with improved achievement. While federal policy traditionally concentrated on efforts to meet current supply, particularly in shortage areas, class size reduction policy instead expands demand while supplying funds to meet such expansion.

In recent years the federal government also has sought to change the system of teacher preparation by encouraging new providers beyond traditional university programs, and altering teacher licensure requirements (generally by relaxing them). The strategy behind these developments has been to broaden entry to teaching by creating more sources of initial training—many located close to districts with high needs—and by reducing state licensure requirements that are deemed to restrict the potential supply of new teachers. While teacher licensure historically has been a state responsibility, federal policy in the last decade has sought influence over this function by funding alternative providers and new pathways into teaching, often aimed at non-traditional recruits such as mid-career changers, para-professionals, and minority applicants.

The federal government also has sought influence over qualifications to teach. Here, the government has supported both the National Board for Professional Teaching Standards (NBPTS), the American Board for Certification of Teacher Excellence (ABCTE), and the National Council on Teacher Quality (NCTQ), each dedicated to a particular view about qualifications to teach. While the first organization has staked out high and rigorous standards for advanced certification, together with a complex assessment system to evaluate the standards, the second organization certifies teachers based on paper and pencil tests alone; the NCTQ advocates for more open entry, performance measures of teacher quality, and tighter state and federal regulations to ensure program quality and equity.

Finally, considerable interest today focuses on incentives in teaching. The federal government now sponsors innovations directed to new incentives that may be oriented around pay-for-performance plans, extra pay for teaching in shortage areas, and others. Here, rather than increased regulation the emphasis is on new incentives directed toward federal teacher policy goals.

A summary of these trends suggests the key policy issues for the next administration. First, the federal government is now likely to play a more expansive role in teacher policy in light of the emphasis on teacher quality as a national concern. Recent research and advocacy has convinced policymakers that teacher quality is a critical leverage point. Consequently, as the federal government looks to exert influence, teacher quality is likely to be a major target. Second, the federal government now relies on an expanded set of policy instruments. In addition to the traditional concerns with recruitment and training, the federal government has added new emphases on various forms of accountability (i.e., increased regulations, data gathering, reporting), on class size reduction, on system-changing policies around preparation and qualifications, and on new incentive programs. And third, the overall strategy that unites federal teacher policy is unstable, composed of disparate, even conflicting elements arising out of the contending ideologies (see Appendix II). Professional reforms vie with deregulation and market-oriented reforms;

efforts to empower and educate teachers vie with efforts to increase external controls via a mix of regulation and incentives. Qualifications are enhanced or reduced. Class size reductions raise questions about the quality of new entrants, because increased demand for more teachers, especially in hard-to-staff schools, may require hiring less-qualified teachers from an already-thin talent pool.

Much of federal teacher policy is of relatively recent vintage—within the last decade of this fifty-year span—and so has not been well evaluated or studied. Consequently, we call for more careful policy reviews, better policy evaluations, and the marshalling of policy relevant research to help shape the federal role in this area. And it is important to note that the struggle over teacher policy is playing out in states and districts that also are initiating new policy along with the federal thrust. The sheer number of new policies launched from various sources raises issues of overall coordination and management.

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We turn next to a closer look at these issues as organized around the main topics selected for analysis.

III. Themes in Federal Teacher Policy

III.1. RECRUITMENT TO TEACHING

Policy Description. Beginning with the GI Bill in 1944, the federal government has subsidized college attendance for teachers (and for other public service positions such as doctors, military and police officers, and child care providers). The most common program variants are service payback and loan forgiveness programs. From the outset, the federal government has also made special provision in various college loan, fellowship, and scholarship programs for students intent on entering teaching. In this manner, teacher policy has been attached to federal policies that encourage and make available college attendance. While this kind of programming began with NDEA, forgiveness programs for *Perkins Loans* were incorporated into the *Higher Education Act* in the 1972 amendments. Though the amount of money available for borrowing (and, subsequently, forgiveness) is determined through the federal appropriations process, Perkins borrowers who meet specific criteria are entitled to loan forgiveness. Perkins loan borrowers are eligible for up to 100% forgiveness for teaching in a high-need school[1], or for filling shortage areas including full-time special education teachers, full-time teachers of math, science, foreign languages, bilingual education or other fields as determined by state education agencies; and other public-service professions are also included. Since 1972 the program has forgiven more than $524.8 million in loan principle to teachers (McCallion, 2005, p.6).

Currently, there are two chief loan forgiveness programs aimed at teachers: the *Federal Family Education Loans (FFEL)* and the *William D. Ford Direct Loan Program (DL)(aka Stafford loans)*, initiated through the 1998 reauthorization of HEA. Both are

[1] High-need defined by ESEA's Title I-A funding , where the percentage of children from low-income families enrolled in the school exceeds 30% of total student enrollment.

administered by the Department of Education, and both are the descendents of the *Guaranteed Student Loan (GSL)* program, originally under HEA's Title V for the purposes of broadening access to higher education for low-income students. FFEL and DL are, like Perkins Loan Forgiveness, entitlements, meaning that teachers who qualify are entitled to receive the award. Prior to 2004, full-time teachers serving at least five consecutive years in a high-need school are eligible for forgiveness of their unsubsidized or subsidized Stafford loans. Under the *Taxpayer-Teacher Protection Act* of 2004 (PL 108-409) loan forgiveness has been temporarily expanded to provide up to $17,500 for highly qualified teachers of math and science in secondary schools or special education. By expanding the amount of borrowed money that may be forgiven, college graduates may be more likely to enter the field of teaching. Independently of these large college loan programs, the National Science Foundation (NSF) has also offered funding over the years for teacher education, primarily in the form of in-service activities in math and science.

The most common program variants are service payback and loan forgiveness programs. Service payback programs cover all or a portion of a student's school costs if the student agrees to work for a specific period of time in a specified field or job after completing his/her education. These programs pay for a student's costs (or a portion thereof) while he/she is in school. Recipients in these programs are required to provide service in return for this assistance; they agree to provide this service in *advance* (sometimes years in advance). Army R.O.T.C. programs are an example of this approach. There is generally a financial penalty for students who fail to meet the terms of their agreement. Loan forgiveness programs repay a percentage of a former student's educational debt in exchange for work in a designated job. These programs pay off a student's loan (or a portion thereof) *after* he/she starts working in a specified job. Recipients' loans (or a portion thereof) may be repaid on a graduated basis over a period of years during which they provide service, or not until the end of a specified period of service (McCallion, 1995, p. 1). Grants, fellowships, or scholarships supply funds to reward achievement or to increase access to institutions. For example, students with high academic aptitude and an interest in teaching may be awarded scholarships for university attendance; or minority students interested in teaching may be provided scholarships. Such aid also may be targeted to specific institutions such as the historically black colleges and universities. Another kind of recruitment instrument is sponsored employment, which involves aid through subsidized employment for students while attending school. This instrument is based in the idea that work-study programs that engage students in education-related work (e.g., tutoring children) can serve as a recruiting tool while supporting college attendance. As indicated above, these various instruments have been used over the years by federal, state, and philanthropic agencies to address teacher shortages by subject area (math, science), teaching location (hard-to-staff schools), and teacher type (recruiting more minorities to the field).

Evidence of Policy Effects/Effectiveness. Over the years, the federal government has also created programs specifically tied to teachers. These include, for example, the *Paul Douglas Scholarship Program* launched in 1986 and most recently, the *TEACH grants.* In light of the substantial investment in all of these programs, relatively little is

known about their effectiveness. For example, one report summarized a review by noting that:

> …data on these programs' effectiveness are limited. Some outstanding questions for future research on these programs include acquiring more data on the extent to which loan forgiveness or service payback recipients would have taken the targeted job irrespective of the program, the extent to which participants remain in jobs after the expiration of the loan forgiveness or service payback program, how the efficacy of these programs compares to other forms of financial aid, and the extent to which these programs may be divisive when there are similar individuals working in similar jobs, but only some are eligible for loan forgiveness (in effect, creating a situation where one employee is paid more than another for the same work) (McCallion, 2005, p. 12)

Another cross-sectoral review of such programs reached a number of conclusions about recruitment policies of this type (Arfin, 1986):

- Small-size forgivable loans (eg. *National Defense Student Loans)* have but modest impact on teacher supply, while offering a windfall for those who already would enter teaching. Further, many potential recipients may not have information about such programs, undercutting their effectiveness. A Congressional Research Service (CRS) report (1983) found for example that, "…although over 1 million borrowers had nearly half a billion dollars forgiven, there is little positive effect noted in the literature concerning NDSL forgiveness" (p. 414).

- Scholarships (e.g., *Pell Grants*; Regents Scholarships) for recruiting future teachers yield questionable results insofar as there is no actual commitment to teach; unlike service payback programs government has no mechanism for collecting from "defectors."

- Subsidized student loans (without forgiveness provisions) suffer three defects: government must pay interest on the loans while the student is in school; when inflation adds to the cost of the loans, government must pay this as well; and, default rates tend to be high. Studies also have found that students with such loans take longer to complete school. Such programs can cost more than initially estimated while providing minimal boost to teacher supply.

- Service payback programs in the military and medical fields have proven relatively effective. While service payback seems identical to loan forgiveness, there appears to be a positive psychological effect in receiving benefits prior to service.

- Self-help sponsored employment programs have been successful in a number of instances. Such programs could supply financial aid to students to work in schools during college. Examples of this type of program include the Federal Work-Study

(FWS) Program (formerly the College Work Study [CSW] program) that has supplied support for low-income college students.

The newly reauthorized HEA will launch the *Teacher Education Assistance for College and Higher Education (TEACH)* program that offers scholarships of $4,000 per year to teacher candidates who are willing to teach in a low-income school or designated subject shortage area (Sawchuk, 2008, September). This is an entitlement program that is not needs-based, but rather is aimed at attracting students with high academic ability based on indicators such as grade point averages. In the event that students do not fulfill their teaching obligation, the grant will convert to an unsubsidized federal loan. Proponents argue that the program will help attract students to teaching in high-need areas and subject matters, while skeptics argue that the design of the program is flawed because many recipients will decide not to enter teaching.

Policy Appraisal. Several observations about the federal role here seem warranted. First, such policy has enjoyed a number of political advantages. Funds have been part of more general, bipartisan efforts to encourage college attendance; they have been targeted to "worthy" recipients, future teachers of America; they could be focused on any and every kind of teacher shortage problem, as these rose to public attention; and funds could be increased or decreased depending on conditions in the teacher labor market. Such factors help to account for the support such policies have enjoyed over the years, but this leads to a second point: there has been little to no systematic effort to gauge the impact of these programs on teacher recruitment and retention. One analyst comments, "There is, surprisingly, no published study to my knowledge on how targeted grant, loan, loan forgiveness, or housing assistance programs affect the likelihood that teachers will opt for employment in hard-to-staff schools" (Goldhaber, 2008, November, p. 17). Given the total investment from federal and state sources and the continuing enthusiasm for such policies, the absence of policy evaluation is striking.

Analysts have raised a number of questions about both the effectiveness and the efficiency of such programs. They ask, How many teachers receiving these funds would have entered teaching anyway? What are default rates on scholarships and loan forgiveness programs? Do these programs in fact attract effective teachers? How large must an incentive be to attract highly qualified applicants? Questions such as these have not been resolved, but bear directly on new and continuing efforts of this kind.

III.2. FEDERAL INVOLVEMENT IN TEACHER PREPARATION AND DEVELOPMENT

If recruitment seems a natural federal strategy for drawing qualified college graduates into teaching, especially in shortage areas, then teacher training is another obvious strategy. Over the years, the federal government has made considerable investments in teacher training for initial preparation, mentoring and induction, and ongoing professional development. Motivating federal involvement has been the goal of preparing teachers to serve in Title I and other high-need schools that have difficulty recruiting new teachers from traditional or mainstream teacher education programs. Also of note, nearly every federal effort over the years to improve or reform some specific aspect of education has

included funds to provide teacher training linked to the particular reform effort. Hence, federal funds for professional development have accompanied math and science programs, bilingual and vocational programs, special education, literacy (including most recently the Reading First initiative), whole-school reform, technology, and many others. We have not conducted a full review of the entire range of such programs, but instead concentrate on three major variants: federal sponsorship of partnership programs intended to draw universities, districts, and schools together around teacher preparation and induction; the more recent approach that favors creation of alternate route entry programs offered by new providers such as Teach for America; and a review of general professional development for teachers who are already on the job. We begin with federal programs aiming to create partnerships for teacher preparation.

III.2.1. Description of Policy. School-University Partnerships. Early federal involvement in teacher training concentrated on creating partnership arrangements between universities and schools/districts to prepare teachers for work in high-priority schools. Federal policymakers have long recognized that teacher preparation is and must be a shared responsibility among liberal arts faculties who preside over future teachers' subject matter knowledge; faculties in education schools charged with various forms of professional knowledge; and schools where the practice of teaching takes place. This fact calls for partnership arrangements for teacher preparation that might include school districts, universities, and possibly other interests such as local communities. States too might be implicated in managing such partnerships through the allocation of federal monies. A basic federal strategy has been to create partnerships among local entities for the recruitment and training of education personnel. The original program of this kind was the Teacher Corps, but the general strategy has continued to the present day. Both the *HEA's Title II Teacher Quality Enhancement Grants* to states and to local partnerships, and the *ESEA's Title II Improving Teacher Quality State Grants* support partner arrangements, including funds for new teacher mentoring and induction programs. This approach also is implicated in the *Teaching Residency programs* projected in Title IV of the 2008 reauthorization of the *Higher Education Act.* Regulations accompanying these programs over the years have stressed a variety of features and priorities. For example, both the *Teacher Corps* and the EPDA favored arrangements that involved not only local universities and school districts but also representatives of the communities within which the schools were located. This theme, however, has not figured prominently in the more recent efforts to establish partner arrangements.

Evidence of Policy Effects/Effectiveness. Evaluation research on two past programs—*Teacher Corps* and the EPDA's *Trainers of Teacher Trainers*—illustrates some of the difficulties. The *Teacher Corps,* authorized under Title V of HEA, operated from 1965 to 1980, and began with two-year demonstration projects, later extended to five-year projects that included in-service education (as the teacher shortage problem abated over these years). The original purpose of the program was to, "…strengthen the educational opportunities available to children in schools having concentrations of low-income families and to encourage colleges and universities to broaden their programs of teacher preparation and local educational agencies to improve programs of training and

retraining for educational personnel" (Steffensen et al., 1978, p. 1). The program aimed to accomplish four outcomes that included improving school climate for children from low-income families; creating a better personnel development system for persons willing to serve in poor schools; continuing programs after federal funding ends; and spreading program adoption to other schools and universities.

The program's structure involved from 30 to 40 liberal arts graduates and 5 experienced teachers as team leaders. After some eight weeks of training at a college, five teams of 6-7 interns led by the master teacher were assigned to a school (typically elementary) in a high-poverty area. Their work initially involved support of instruction alongside additional university coursework. Over two years, the interns worked toward certification and an MA. As well, interns were expected to spend one-fifth of their time engaged in the surrounding community. Over 100 universities and 250 school systems in 37 states participated in the program, with about one-half the programs in city districts.

From 1965-1975, nine separate evaluations sought to gauge the effects and effectiveness of the program (see Steffensen et al., 1978), and some of the findings are worth recounting:

- A 1970 evaluation found that the *Teacher Corps* was able to recruit motivated teachers for poor schools, but the program had little impact on the participating universities, where the training was isolated; little institutional cooperation extended beyond the term of the grants;

- Another evaluation in 1971 found that the *Teacher Corps* placed trainees in contradictory roles of change agent, student, and servant to the schools, with resulting role strains; the principal emerged as a key mediator, but there was not much evidence that the program induced instructional changes in the schools.

- Several other studies in 1973 found that the *Teacher Corps* was successful in producing certified teachers, the great majority of whom served in Title I schools; another finding revealed little change in instruction, touted the importance of boundary spanning personnel between the university and the school, but concluded that university partners were resistant to much real change; and,

- A 1974 study found that nearly 9 of 10 *Teacher Corps* graduates sought teaching jobs, found jobs in education (85%), in teaching (77%), in schools serving low-income students (80%), and all who had jobs intended to stay in the field for 5 years or more (82%), although many intended to move out of the classroom to other positions.

- *Teacher Corps* in these years was successful in recruiting minorities to the field to teach in high-need schools.

The most rigorous and substantial of these studies (Corwin, 1973) yielded other interesting findings. For example, the *Teacher Corps* was successful in recruiting "mavericks" to the field, teachers interested in becoming agents of change. With the

passage of time, the new recruits tended to become disillusioned, to fall back on more custodial, less student-centered forms of teaching, and either to become assimilated to prevailing routines and sentiments, to withdraw into their classrooms, or to leave teaching. University faculty, this study found, tended to be too remote from the schools. University-school collaboration was fragile and fleeting, but more successful when effective boundary spanners were in place. The assumption that change-oriented novices could change the schools and the profession proved unrealistic, and the effort to create new, enduring partnerships between universities, schools, and communities also failed to materialize. *Teacher Corps* was a complex organizational intervention that met some of its goals while falling well short of its more ambitious reform purposes.

A second example is the *Trainers of Teacher Trainers (TTT) Program* that was created under the *Education Professions Development Act* in the 1967 amendments to the HEA. This program supplied institutional grants to colleges and universities over its short life between 1967 and 1973, when it distributed $40 million to 58 universities (Provus, 1975). This program's rationale also took aim at institutional collaborations around the preparation of those who would train teachers, insisting that a broad coalition of parties come together under conditions of parity to plan, implement, and sustain the programs launched with the federal dollar. The idea was to locate key brokers within universities to champion programs of training "…whose greatest leverage for change was to be had by focusing efforts and resources on those who prepare the trainers of teachers" (Provus, quoting Merrow, p. 16). And the focus was to be more responsive to the "real world" of the public schools via projects to involve schools of education and liberal arts faculties in closer working relations with practitioners in schools and communities.

These evaluation findings echo themes in the *Teacher Corps* experience:

- The program combined unclear goals with demands for instant results;
- Program designs often were ad hoc with few organizing principles; proposals for funding did not really include designs for programs and their implementation;
- Resulting projects depended upon institutional supports that often were lacking;
- Projects did little to alter the reward structure of universities, so that deep and sustained effects were unlikely; and,
- Despite the talk of parity, universities remained the dominant partner with little impetus to change prevailing modes of thought and action.

More recently, an interim evaluation of the *HEA Title II* grants revealed a turn to the Professional Development School model (U.S. Department of Education, 2004b). The descriptive evaluation found that programs were attempting to align with state standards, and had fostered more cooperation between education and liberal arts faculty, but outcome evaluation was not conducted. Partner projects went forward in many locales, but the GAO judged that evaluating a project's impact on teaching quality is difficult and

it was critical of ED for not approaching this task systematically and for failing to provide adequate guidance on the assessment and reporting requirements necessary to allow for such evaluation (Kuenzi, 2008b, p. 7).

Finally, the main federal programs also specify that funds may be used for new teacher mentoring and induction. Many states also have built in requirements for mentoring in the first year of teaching. Here, some research indicates that such policy can have pay-off in terms of teacher retention (Smith & Ingersoll, 2004; Smith, 2007), and features of high-quality teacher induction have been identified, largely based on case studies of promising programs (e.g., Strong, 2009).

However, a recent interim evaluation using a randomized, controlled design studied the effects of two highly regarded induction programs on measures of teacher retention and other outcomes (Glazerman et al., 2008). Conducted in 13 states, in 17 districts reporting more than 50% of FRL (free or reduced lunch) students, the study examined comprehensive induction programs in a total of 418 elementary schools. While teachers receiving the two programs reported more time spent in induction activities and targeted PD than teachers who received routine induction by the districts, the study reported no differences either in teacher instructional practices or in student achievement in reading in the first year; nor did the study find any differences in teacher retention in the first year (overall, about 25% of teachers stayed in their original school after the first year).

One study alone cannot settle the question, but this research is disquieting as it challenges the conventional wisdom that better mentoring and induction will have a strong pay-off, especially in retaining teachers in high-need schools **(note 1).**

Policy Appraisal. These examples illustrate some of the problems involved in federal grants to localities that seek to forge partnerships among local actors. While the logic of institutional cooperation is sound, producing and sustaining complex relationships among institutions quite different from one another brings inevitable difficulties. The likely prospect is that such partnerships are dependent on local conditions, are resistant to deep and enduring forms of cooperation, but have some positive outcomes. The *Teacher Corps,* for example, was relatively effective in recruiting new teachers, many of whom stayed on. At the same time, the more ambitious goals of these policies, especially concerning institutional change, were not realized.

Policies and programs of this kind have sought to work improvements at both the individual and organizational levels. “Grow your own” teacher preparation programs in large urban districts have evident advantages in tailoring training to district programs and in recruiting teachers who wish to teach close to home. These programs also have sought to work changes in organizations that cooperate in the preparation of teachers. But organizational change coupled with inter-organizational change is a tall order as a policy goal. When federal funds have been made available for such efforts, some grants have produced useful and intended changes while others have not; such variable results accompany all capacity-building policy. This history is worth attending to more closely with the advent of the Teacher Residency programs called for in the new HEA.

The policy emphasis on teacher mentoring and induction in both ESEA and HEA is premised on the assumption that improvements in such programs can play a strong role in retaining teachers in high-needs schools. In light of contradictory findings, however, the best estimate is that favorable, whole-school conditions must accompany such programs if they are to yield strong outcomes.

III.2.2. Policy Description. Alternate Route Programs. In recent years, the federal government has followed the lead initiated by states and others to support so-called "alternate route" programs, a term that conceals a broad range of approaches and features. Analysts now distinguish among "college recommending," (university-based baccalaureate or post-BA programs that supply most of the coursework prior to practice teaching in the schools); "fast-track" or "early-entry" programs (that typically offer a summer of training before full teaching responsibility in the fall); and the residency model (that provides eased entry into teaching with ongoing coursework and support throughout the first and sometimes subsequent years of teaching) (Grossman & Loeb, 2008).

The George W. Bush administration (2000-08) encouraged development of alternate route programs and a competitive certification system by funding establishment of the National Center for Alternative Certification; by classifying teachers as "highly qualified" under NCLB who entered via alternative routes; and by providing funds to start up the American Board for Certification of Teacher Excellence (ABCTE) that certifies teachers via paper and pencil tests alone (see below) (Zeichner & Hutchinson, 2008). The federal government also has sponsored the *"Troops to Teachers"* program that assists armed forces veterans in making the transition into teaching, and Teach for America, a privately initiated innovation that now supplies several thousand teachers annually to urban and rural schools. The primary and current federal investment in the alternate route strategy is the *Transition to Teaching Program* (also known as TTT), authorized under ESEA Title II as amended by NCLB.

Evidence of Policy Effects/Effectiveness. New programs and new developers have an apparent advantage because they do not need to change entrenched patterns in existing organizations. Such programs can also reduce entry costs of time and money in order to enhance supply, particularly in high-need categories that include minority teachers, teachers for high-need schools, teachers of high academic ability, and others. We found one midterm evaluation of the TTT program that reported the following results (U.S. Department of Education, 2007c):

- The grantees represented a microcosm of the 600 alternate route programs currently in operation in 48 states; the majority of grants went to IHEs and most programs focused on the local level; most of the grants built on existing programs established by states and localities.

- Programs initially recruited 14,000 applicants for 4,000 positions in schools designated as high need; over the first three years these programs supplied 7,000

new teachers, drawn largely from the pool of midcareer professionals; entrants were teaching in high-need subject areas and locales and 20% report some teaching out of their certification area.

- Programs focused on meeting NCLB guidelines for qualified teaching, with emphasis on content knowledge; only 40% of participants reported having a student teaching experience.

- Programs revealed some difficulties: "TTT projects also report generally succeeding in finding placements in high-need schools in high-need districts for eligible participants, however, they reported many challenges associated with this process, including budget shifts that reduced positions, changing state requirements, competition from other routes to teaching, some negative views toward alternate routes, and a lack of LEAs in their areas that meet the program standard for high-need. As a result, in their three-year interim evaluations, many grantees recalled that the challenge of meeting recruiting and placement goals for those specific districts was felt each year" (retrieved 11-3-08 from http://www.ed.gov/rschstat/eval/teaching/ttt-interim/execsum.html).

- Participants reported that financial incentives, an employment guarantee, and support while obtaining certification were the three main "draws" of these programs; 20% of TTT applicants indicated they would not have entered teaching without the program.

- Reports of mentoring and induction support and of retention rates in the early years uncovered no large differences in comparison with entrants from traditional routes.

- One-quarter of grantees reported difficulty in meeting the definition of "high-need" schools so that graduates sought to teach in schools not so designated.

In addition to such reports on the federal program, studies are beginning to illuminate effects of alternate route programs (for summaries see Cohen-Vogel & Smith, 2007; Grossman & Loeb, 2008; Humphrey, Wechsler, & Hough, 2008; Humphrey & Wechsler, 2007). These studies have found great variability within program types so that comparisons between types miss important factors. Studies also indicate that outcomes or effects depend on some combination of (1) who is being recruited, (2) features of programs, and (3) schools into which they are placed (see, e.g., Grossman & Loeb, 2008). "Teacher effectiveness" then depends on how these factors interact with one another, making simple, overall assessments misleading. Still, a few broad findings have emerged. First, alternate route programs tend to recruit higher proportions of minorities than traditional programs; to recruit from age ranges similar to regular entry programs; to recruit individuals who already have some experience working with children and students; and to recruit individuals who vary considerably, by program type, on measures of academic ability (Hammerness & Reininger, 2008). The evidence also indicates that "fast track" entry does assist in recruiting individuals whose main concerns are costs of

tuition and loss of income. Investigators have concluded that, "…many candidates who selected early-entry programs may have not entered teaching had early entry programs not been available" (Hammerness & Reininger, p. 60), and this is particularly true for older entrants and for minority candidates (see also Peterson & Nadler, 2008).

Studies also have begun to compare entrants from different programs in terms of their effects on student achievement, typically measured by standardized tests in mathematics and reading achievement. For example, research comparing Teach for America (TFA) teachers with others has uncovered no large differences. The most rigorously conducted study, for example, found that TFA teachers produced slightly better achievement growth in mathematics but not in reading for grades 1-5 in comparison with control-group teachers. But overall achievement in this study was still extremely low for all teachers in these schools that were 95% FRL; and, control teachers included a mix of certified and uncertified teachers, raising questions about the aptness of the comparison (see Glazerman, Mayer, and Decker, 2006, for details). Another study of TFA high school teachers also recorded positive results for TFA teachers in comparison with others (Xu, Hannaway, & Taylor, 2008, March).

The most recent study along these lines employed random assignment in comparing pairs of teachers in the same school, one of whom entered via an alternate route program, the other through a college-recommending program (Constantine et al., 2009). In this case, the sample of alternate-route programs was selected to rule out those that recruited high-academic ability students or students from elite universities (e.g., TFA). A total of 87 comparisons were studied across 63 schools, in 20 districts, in 7 states. Findings revealed no substantial differences between pairs in student achievement in reading and math in the first year of teaching. Because the length and duration of preparation overlapped between college and alternative-route programs, this study also examined whether the number of hours of pre-service preparation mattered, comparing teachers who had more than 308 hours with those who had less than 274 hours. Again, they found no significant differences. And the study located no correlations between the content of coursework and student achievement.

Evidence on retention in teaching and in difficult-to-staff schools is harder to interpret. The research indicates that alternate route teachers are less likely to stay in teaching than entrants from traditional programs, although this also varies by program; but alternative route entrants are more likely to start teaching in difficult-to-staff schools, from which they are more likely either to transfer to other schools or to leave the profession. Consequently, retention differences may be due more to conditions of work than to effects of entry routes (Grissom, 2008).

Policy Appraisal. The turn to alternative routes (and providers) presents several issues. Some research has shown that a combination of state policy that closes certification loopholes coupled with aggressive use of alternate route programs (e.g., the NYC Teaching Fellows Program, TFA) has improved teacher qualifications in hard to staff schools in New York City, which in turn has raised student achievement (Boyd et al., 2008a). At the same time, however, teacher salaries were increased and this

undoubtedly affected teacher recruitment. These authors comment that, “These changes resulted from policy interventions that changed the qualifications of the teachers of poor, minority and low achieving students in New York City. In particular, these changes can be attributed to the New York State policy that eliminated uncertified teachers and the New York City policy that established the Teaching Fellows program and, to a lesser extent, employed Teach for America teachers. The sorting of the least qualified teachers to the students most in need of better teachers requires forceful action by policy makers and a commitment by local hiring authorities to attract more highly qualified teachers” (p. 18). And they conclude, “Perhaps most intriguing, much larger gains could result if teachers with strong teacher qualifications could be recruited. Among teachers teaching 4th and 5th grade math students in schools with the highest proportions of students in poverty, we found there are substantial differences in student achievement solely attributable to differences in observed teacher qualifications. The top quintile has value added that differs from the bottom quintile by three times the effect accruing to the first year of experience. Thus, recruitment can substantially change outcomes for students.”

The evidence described above tends to find no significant differences between entry routes per se and student achievement. In some locales, then, the turn to multiple pathways has enhanced supply with no apparent loss of quality. But there are several important caveats to remember. One is that good teaching involves more than producing achievement on standardized tests. The comparative studies to date shed no light on other aspects of good teaching. Second, teacher preparation relies not only on gross features of training programs (e.g., number of hours of instruction), but also on more fine-grained aspects that have yet to receive careful study. And third, teacher quality involves an interaction among what recruits bring, the nature of their preparation, and the school context in which they teach. So, while the current research involves increased rigor (e.g., use of random assignment and careful designs), there is much more to be learned about effects of pathways, programs, and certification requirements.

On another point, alternate route programs that reduce entry costs may enhance recruitment without improving retention. A steady influx of unevenly prepared teachers into hard-to-staff schools perpetuates the longstanding problem of high teacher turnover. Moreover, research has documented that improvement in teaching effectiveness occurs over a three to five year span so that regularly restocking schools with novices fails to reap gains from teaching experience and is quite expensive (some estimates place the cost of replacing teachers who turn over in the early years at $15-20,000 per teacher in our large urban districts).

And yet another issue concerns the quality of alternate route programs. For the most part, these programs are unregulated by federal, state, or local agencies, excepting the Highly Qualified requirements of NCLB. One result is great unevenness in potential indicators of program quality around such issues as who is being recruited; the nature of their prior experience; their placement and follow-up support in schools; and other factors (Cohen-Vogel & Smith, 2007). While it is true that research has not uncovered clear indicators of program quality (either for conventional or alternate route programs), the variability of such programs on many dimensions gives pause. If the presence of program

accountability has not increased confidence in teacher education, its absence is unlikely to. At a time of accelerating accountability for university-based preparation, the lack of accountability around alternative programs is noteworthy.

A third issue concerns scale-up of alternate route programs. A good example is Teach for America. This program recruits graduates from the Nation's elite universities who bring a combination of high academic ability and strong liberal education together with a desire to serve for short terms. As indicated, research comparing TFA teachers with others has not uncovered sharp differences. TFA Corps members may outperform teachers with sub-standard credentials and to measure up reasonably well against teachers with full credentials (although TFA teachers also improve once they have achieved full licensure). Since its inception in 1990, the Teach For America network has grown to include more than 20,000 individuals. Currently, some 6,200 TFA corps members teach in 29 urban and rural areas. Likewise, since its inception 14 years ago Troops to Teachers has helped train and place 9,500 veterans in public school classrooms.

A policy conclusion might be to scale up these programs (i.e., dramatically increase federal support), but if their major claim to effectiveness centers on high talent recruits (rather than the quality of preparation), then there is likely to be a low ceiling on how many Ivy League grads can be lured into teaching given their alternative employment opportunities. The "bright well educated person" model (Becker, Kennedy, & Hundersmarck, 2003) is unlikely to scale up, absent other changes in labor market dynamics, such as dramatic increases in teacher starting salaries and lifetime earnings.

And if teachers on average prefer to teach in high-performing schools filled with middle to upper class students, then how to close the "teacher gap" between rich and poor schools, high and low performing schools, schools in affluent suburbs and inner cities? One danger in the turn to largely unregulated alternate route programs of uneven quality is that such programs will be regarded as the solution to systemic problems for which they can serve, at best, as a supplement (as research on teacher qualifications under NCLB indicates; see below). The available research reveals that by lowering entry costs, alternate routes are effective in recruiting teachers, but their stays in teaching are short, so the revolving door problem remains, to the particular disadvantage of hard-to-staff schools.

In the likely event then that (1) training prior to and continuing in teaching will be needed to improve teaching effectiveness (because the occupation is too large to recruit primarily from the top quarter of the college talent pool); and (2) the overwhelming majority of teachers will enter through conventional undergraduate (and some graduate) teacher education programs, federal involvement in teacher preparation must attend to these two facets of the problem. At the same time, efforts should be made to improve the quality of alternate route programs, which are proliferating. We return to these matters in our recommendations.

III.2.3. Policy Description. Teacher Professional Development. The federal government has also invested heavily over the years across many programs in

professional development for teachers. This makes sense because many if not most education reforms require some kind of new learning by teachers. The terms "policy implementation" and "capacity-building" most often refer to teacher knowledge and skill that requires enhancement supplied through training. Such training has typically been offered in a small number of formats that have included intense summer institutes, whole-school faculty workshops and in-service days, initial training with follow up during the school year, and more recently, training provided by new positions in districts and schools such as instructional coaches. *ESEA Title II* programs currently fund $3 billion in professional development and class size reduction efforts (Rotherham, 2008, November). The National Science Foundation also has supported much of this activity, especially through summer institutes for math and science teachers, but many other federal programs have supported professional development as well.

Evidence of Policy Effects/Effectiveness. Much has been written on this subject, but efforts to identify the most effective forms of professional development have proven elusive because of this issue's difficulty as a topic of research. One recent review, for example, found only 9 studies out of 1,300 that met standards of rigor (Yoon, et al., 2007). The good news from this review is that these few studies found relatively strong results from well designed and conducted professional development. But as a related analysis makes clear, such studies are small scale and usually involve the developers delivering the professional development (Wayne et al., 2008). They note that we know less about the effectiveness of PD when delivered under typical conditions in a wide range of schools, which is the case for use of federal funding.

One of the main studies of PD was a federally sponsored evaluation of the *ESEA Title II Eisenhower Math and Science program* (Garet et al., 2002; Desimone et al., 2002; U. S. Department of Education, 1999). It contributed to the current consensus that, "…intensive, sustained, job-embedded PD focused on the content of the subject teachers teach is more likely to improve teacher knowledge, classroom instruction, and student achievement. Furthermore, active learning, coherence, and collective participation have also been suggested to be promising best practices in PD" (Wayne et al., 2008, p. 470). But other findings from this evaluation indicated that high-quality PD is rare, not least in districts that most require it. And, over the period of this longitudinal evaluation (1996-99), the researchers found that teaching practices, as reported on surveys, did not change significantly, and that there was considerable variability in the professional development that teachers received from one year to the next, even from one teacher to the next in the same school. The investigators also found that school districts are not organized optimally to provide consistent, high-quality professional development. PD, then, relies for effectiveness on coordination with other features such as aligned standards, instructional materials and assessments, and shared or common instructional practices.

A recent effort to test the premises of effective PD studied the implementation of a research-based early literacy program (Garet et al., 2008). In this study the researchers first selected a literacy program that aligned with the recommendations of the National Reading Panel, then located 90 schools in six urban school districts containing substantial numbers of FRL and ELL (English language learner) students. The study then compared

three conditions in each of 30 schools: (1) an intensive eight-day summer institute; (2) the summer institute plus follow-up coaching by a half-time trained instructor in each school; and (3) the PD that the districts were routinely providing to teachers. Schools were randomly assigned to conditions, and the outcome measures included second grade reading achievement at the end of the first year, and again at the end of the second year. The findings were surprising. The investigators found positive effects on teachers' knowledge of scientifically based reading practice and one of three key instructional practices, but no differences in student scores across the three conditions at the end of one or of two years. Despite the apparent validity of the criteria for effective PD, it appears difficult to replicate these reliably in follow-up experimental studies. This particular study, then, yields disconcerting evidence about professional development.

Policy Appraisal. Professional development for teachers is a strategy of obvious importance that has potential to influence many outcomes, including improved instruction, teacher retention, and higher student achievement. The federal government has invested steadily and strongly in professional development through a range of agencies and under a range of legislative acts. Alongside its investment in loan forgiveness and scholarship programs, training teachers on the job has been a major target for funding.

The evaluation of professional development presents a puzzle. While such investment seems worthwhile on its face, findings across carefully conducted studies are inconclusive, spotty, and in some cases contradictory. Given the overall size of the federal investment, better studies are clearly warranted because authoritative guidance that might be represented in federal regulations, competitive grants, reporting requirements, and the like is lacking. Further, the available advice still lacks specificity on many points, is uncertain with respect to scaling up and implementation issues, and includes few estimates of cost effectiveness. Many schools are now investing in new positions such as instructional coaches, mentors, and program facilitators who are assumed to play an important role in ongoing school-based PD. Indeed, such positions have been growing at a faster rate than any others over the past 15 years and now include 30% of the overall educator workforce (see Quartz et al., 2008). But such positions are costly and their use raises many questions. Here too more policy research is needed to help guide the design and execution of PD as it intersects with new staffing patterns in the schools.

For strong effects, PD requires that instruction generally be well organized and managed on a district-wide basis, and this is often what is most lacking. Some evidence indicates that large urban districts are beginning to organize instruction more effectively and to manage professional development more skillfully so that improvements may be in the offing. But no recent large-scale and longitudinal studies have tracked these developments so that evidence is mostly anecdotal and bound to particular cases.

Targeted incentives and more precisely defined regulations might exert some influence on the use of federal PD funds, but the larger issues of local capacity will remain. The original theory of standards-based reform included PD as one among the critical elements

that must be aligned and coordinated in order to produce higher student achievement. States and districts over the past 15 years have been orchestrating such alignment, but the effective use of PD in conjunction with the other elements of systemic reform remains a major issue for many districts, and the sources of fragmentation, inattention, poor management, and incoherence in instructional programs continue to plague many locales.

While NCLB calls for states to demonstrate how teachers have access to high-quality professional development, no measures or reporting requirements accompanied the mandate, so the provision has had no effect. Furthermore, an audit of the program in 2005 found that Title II funds have been spent by districts on general PD programs rather than being targeted specifically to Title I schools and teachers (Education Trust, 2007). One reform then might be to tighten the regulations to ensure that the funds get to their main targets—Title I children—but such targeting cannot guarantee effective uses. We must redouble our efforts in learning how to meet the local capacity issues and to understand how to direct PD funds to effective uses.

III.3. TEACHER ACCOUNTABILITY POLICY

Only in the last decade has the federal government begun to develop accountability policy of various kinds, including a focus on teachers. There are two streams of such policy, one oriented to the provision of qualified teachers in K-12 schools, the other oriented to teacher training programs. The first stream resides in NCLB, the second in HEA, and we take up each. As well, a new development has emerged that involves uses of so-called "value-added models" for assessing teacher effects on student learning. Advocates believe that such models hold promise for reforming teacher evaluation, allocating merit pay, and other uses. We comment on this new approach to teacher accountability at the end of this section.

Policy Description. Beginning in the late 1990s and continuing through the recent reauthorization of HEA, federal policy increasingly has relied on a range of accountability-oriented measures. These policies began with the 1998 reauthorization of HEA that mandated annual state reports of the percentage of teacher candidates who pass state certification tests (Wilson & Youngs, 2005). Then, the 2001 NCLB federal regulations for Title I schools imposed a new requirement that all teachers be "highly qualified." Over the ensuing seven years, the regulations have been amended and extended by the Department of Education, dealing with such complexities as the meaning of HQT for special education teachers, ELL teachers, and others for whom "subject matter" competence may not be a good gauge of qualifications.

NCLB's full regulations concerning qualified teachers are complex, but have been summarized succinctly: "The No Child Left Behind Act requires all core academic classes to be taught by teachers who are 'highly qualified' according to the law's definition. This generally means they must have a bachelor's degree, be fully certified, and demonstrate their knowledge and skills in the subjects they teach by having sufficient subject-matter coursework, passing a state test, or meeting other state criteria. NCLB also requires states to ensure that low-income and minority students are not taught by inexperienced, unqualified, or out-of-field teachers at higher rates than other children"

(Center on Education Policy, 2007a, p. 1). States then set the standards in their licensing and certification requirements. NCLB also covers qualifications for paraprofessionals, and for teachers already teaching, who must meet the *High Objective Uniform State Standard of Evaluation (HOUSSE)* requirement, specified by each state and oriented around teachers' content knowledge in all subjects taught (Kuenzi, 2008, January). NCLB also requires annual reports by states and districts on their compliance with the law, and specifies uses of Title I funds for content-driven professional development, together with other funds supplied under *Title II, Part A and Title III, Part A* (the latter directed to preparation of educators of limited and non-English speaking students).

The second stream of accountability policy takes aim at teacher preparation through regulations in the HEA. Initiated in the 1998 HEA reauthorization, such policy has been extended in the 2008 reauthorization and includes a broader and more specific set of reporting requirements about teacher preparation programs from the states. The strategy here is to require detailed reports on the quality of teacher preparation as a condition for receiving funds under this act (see HEA, Title II, Sections 204, 205, and 206 for details of this new legislation). Reporting requirements stipulate the data that new partnerships must provide; institutional and program report cards submitted to the states; state report cards submitted to the federal government; and an annual report from the Secretary of Education to the Congress. Such reports cover both traditional and alternate route programs, and the Act targets a wide range of requirements, including, for example, pass rates for graduates compared to state averages, training for LEP (limited English proficient) and special needs students, use of technology, plans for improvement, addressing shortages in high need schools, alignment of teacher preparation with state standards, and identification of low-performing teacher education programs with steps for remediation. These requirements have not yet gone into effect, but continue the accountability theme initiated in the 1998 HEA reauthorization.

Evidence of Policy Effects/Effectiveness. A number of major studies have examined the effects of the HQT requirement on the distribution of teacher qualifications across schools. We highlight several findings, drawing on a survey conducted by the Center on Education Policy (2007, August) and on an evaluation commissioned by the U.S. Department of Education (2007b) (see also Kolbe & King, 2009). The two recent studies converge on a number of findings. First, state respondents report minimal or no impact of the new requirements either on student achievement or on teacher effectiveness (see also Desimone, Smith, & Frisvold, 2007). Most districts report being in compliance with the law, but one-third of states reported they were not by the end of the 2006-07 school year; and one-fifth of the states and 6% of districts doubted they would ever be in full compliance. Districts reported that the biggest challenge was special education teachers for whom the subject matter requirements were not a good fit with their teaching responsibilities.

Nearly three-quarters of teachers report meeting their states' requirements to be considered highly qualified under NCLB. However, state policies concerning highly qualified teachers vary greatly, both in the passing scores that new teachers must meet to demonstrate content knowledge on assessments and in the extent to which state HOUSSE

policies give existing teachers credit for years of prior teaching experience versus emphasizing more direct measures of content knowledge and teaching performance. The measures used to qualify teachers are largely multiple choice tests focused on basic skills and subject matter knowledge with no attention to actual teaching skills or capability in reaching diverse students. And, for teachers of multiple subjects at elementary and middle levels and in rural schools, the requirement to pass tests in each subject they teach is burdensome. For new teachers, states differ dramatically in the passing scores for tests used to determine teachers' knowledge. For example, on the Praxis II, a professional knowledge test, the minimum required scores ranged from 135 in Mississippi to 168 in Pennsylvania (out of a maximum score of 200).

To meet the HOUSSE requirements, districts reported reliance on induction/mentoring programs and content-driven professional development, but only 20% of teachers reported receiving more than 24 total hours of PD, mostly focused on reading and mathematics. The CEP report also indicates that many state and district officials felt the HQT definition was focused too narrowly on the content of instruction at the expense of other kinds of teacher knowledge and skill.

Traditionally disadvantaged schools had higher percentages of teachers who were not considered highly qualified than did other schools. Although the percentages of non highly qualified teachers were generally low overall, the percentage of teachers who reported that they were not highly qualified under NCLB was higher in high-poverty and high-minority schools and in schools that were identified for improvement than in other schools. For example, teachers who were not highly qualified were three times more likely to be teaching in high-minority schools than in low-minority schools (7% compared with 2%).

Highly qualified teachers in high-poverty, high-minority schools were more likely to be new to the profession, to have three or fewer years of experience, than highly qualified teachers in low-poverty or low-minority schools. Moreover, among highly qualified secondary teachers in English and math, those in low-poverty schools and suburban schools are more likely to have a degree in their field, compared to highly qualified teachers in high-poverty and rural schools. High-poverty, high-minority districts also had more trouble recruiting teachers in shortage fields such as math, science, and special education. For example, in mathematics and science the percentage of high-minority districts that struggled to attract and retain highly qualified applicants was nearly double that of low-minority districts.

High-poverty and high-minority districts were most likely to offer financial incentives and alternate certification routes to recruit highly qualified applicants. Even though fewer than one-quarter of districts used financial incentives, such as increased salaries, signing bonuses, or housing incentives to attract highly qualified candidates, more than three-quarters of high-minority districts offered such incentives. High-poverty, high-minority and large districts were also more likely than low-poverty, low-minority, and small districts to offer alternate or "fast track" certification routes as a strategy to attract highly qualified applicants.

The evaluators concluded that:

> If the goal of having an improved teaching workforce and thus better-served students is to be fully realized, several issues warrant attention. First, the variation across states in their policies concerning highly qualified teachers raises questions about whether some states have set high enough standards for teacher qualifications under NCLB to ensure that teachers have a solid understanding of the subjects they teach. Second, variation in teachers' highly qualified status across types of teachers and schools highlights enduring inequities in access to highly qualified teachers. Third, because many teachers were not aware or notified of their NCLB status, they may not have taken necessary steps to become highly qualified. Finally, the low proportion of teachers participating in content-focused professional development over an extended period of time suggests that more could be done to deepen teachers' content knowledge. The potential for the NCLB provisions to effect positive change in the nation's teaching workforce depends, in part, on addressing these issues (U.S. Department of Education, 2007b, p. xxx).

Data from a recent report based on the 2003-04 Schools and Staffing Survey (SASS) add to this picture (Education Trust with R. Ingersoll, 2008, November). This study finds that "out-of-field" teaching[2]—a problem that NCLB's HQT provisions were intended to fix—remains significant, especially in middle schools, in mathematics, and in high-poverty, high-minority schools. For example, about four in ten classes in middle grade (5-8) core subjects are assigned to out-of-field teachers. In high-poverty schools of all types, more than one in four teachers of the core subjects are out-of-area, compared to half as many classes in low-poverty schools. As well, 22% of all secondary math courses are taught by out-of-area teachers, and this problem is more acute in high-poverty and high-minority high schools. Furthermore, states vary widely in the incidence of out-of-area teaching, with some states making aggressive moves to address the problem; and there are large differences between the federally mandated Consolidated State Performance Reports and the SASS data (an example: Ohio reports that 93% of teachers in the core subject areas meet the HQT standards, but the SASS data reveal that only 62.5% of teachers taught in their areas of certification). Although definitions of HQT vary between these two data sources, the size of these discrepancies provokes concern.

These data may be qualified in a number of ways. First, early responses to NCLB in the period from 2001 to 2004 do not reflect improvements in subsequent responses, 2004-08. And, as certification is not a good predictor of teacher effectiveness, these numbers may be discounted. But the evidence is relatively strong that qualifications in mathematics do matter to student achievement and to student college attendance, so there is reason to worry about out-of-field teaching, at least in this subject area. More generally, these data add to the overwhelming evidence concerning inequality in access to qualified teachers, however such qualifications are measured; the

[2] For this report, out-of-field teaching was defined as the absence either of the relevant teacher certificate or an academic major for the teaching assignment.

continuing incidence of out-of-area teaching also masks the true dimensions of the teacher recruitment problem.

Turning from NCLB to HEA, the federal government is also increasing accountability requirements for IHEs and their teaching graduates, but no studies have yet examined the impact of these policies. Anecdotal evidence suggests however that most institutions so far have been able to comply by having their students complete initial state certification requirements as a condition of program completion, so this measure exerts little influence on programs. Federal accountability over teacher preparation appears to have had little effect to date, prompting some analysts to call for more stringent accountability policy (Walsh (2007, April). The new regulations may exert more influence by introducing a comparative dimension into the reporting, where states must compare programs on common measures. But the Congress determined not to include sanctions attached to the new accountability measures, so it is unclear whether these more extensive data-gathering and reporting requirements will exert much leverage on teacher preparation programs.

Policy Appraisal. Today, accountability policy is on the rise, although the federal role is quite new and relatively untested. The *Highly Qualified Teacher* provision of NCLB is the main policy at the moment, and the enthusiasm for accountability remains strong, paradoxically alongside the deregulation critique leveled against teacher licensure policy. Studies that have examined the relationship of licensure or certification policy to student outcomes have produced results sufficiently mixed that strong policy recommendations are not in the offing. As HQT is pegged to state requirements and as these typically show but modest effects on student achievement, the accountability case appears compromised from the outset. Furthermore, the federal government has had to tread lightly—but with increasing heaviness—in deferring to state authority over the regulation of teaching. In consequence, federal accountability does not set regulations; it merely requires that new teachers meet state regulations, but with particular emphasis on content knowledge. As state standards vary considerably, federal accountability cannot impose a high, uniform standard, so the existing patchwork across states remains.

NCLB has made some progress toward a more equitable distribution of qualified teachers (based at least on the HQT definition), but the hard equity problems remain. High-poverty, high-minority districts still cannot recruit and retain qualified teachers, particularly in areas like math, science, and special education. HQT provisions have yet to work strong effects on out-of-area teaching in the crucial shortage areas.

Most urban districts have invested in a range of state and federally supported programs to attract and train teachers, but there is not strong evidence that these efforts have paid off; they may do so, but there is no clear demonstration of "what works." Recourse to alternate routes, especially of the "quick entry" variety may produce recruits, but their effectiveness and their retention in teaching remains open to question.

As an engine for teacher training, NCLB appears to be quite weak. State responses to the HOUSSE requirements appear thin and inconsequential, although counter-examples also have emerged in some locales. The norm appears to be modest training, some mentoring,

and a range of other expediencies that comply with the letter of the law but not with its deeper intent of producing a fully qualified workforce. NCLB is not a primary driver of effective professional development. At the same time, the (over)-emphasis on teacher content knowledge raises questions as well. Knowledge of content, many observers of teaching believe, is a necessary but insufficient condition for effective practice. Educators have begun to complain that the NCLB teacher requirements are too narrowly focused, leaving aside too many aspects of teaching effectiveness. This raises the question of whether the federal government is and can be the arbiter of teacher preparation. Federal assumption of this role reflects distrust of other agencies—states, universities, and districts—to determine the content and character of teacher learning. But no evidence has emerged to support the efficacy of the federal prescriptions.

Finally, accountability visited upon organizations confronts a perplexity. In research conducted on the effects of external accountability policies on K-12 schools, one observation is that the key to school improvement is internal accountability forged through interactions among school faculty that yield cooperation, critique, feedback, and mutual responsibility. At the same time, external accountability in the form of standards, assessments, sanctions, and remedies does not automatically produce internal accountability (see Abelman et al., 1999; O'Day, 2002). The puzzle then concerns this relationship: under what circumstances can external accountability promote internal responsibility among educators in a school (or in a university)?

As the federal government moves to export K-12 accountability to higher education, this puzzle looms large. From one angle this new regulatory approach to teacher preparation in federal policy makes sense: it is a natural extension of the accountability strategy visited on K-12 schools. From another angle, though, the approach is odd. Preparation programs already must meet state accreditation standards that call for many of the same features stipulated in the reauthorized HEA, so the added federal regulations appear redundant. The trend is to output measures and to comparisons, so that these policies might assist in shoring up the bottom of the quality distribution of teacher preparation programs, but such policy raises questions. How will the quality and accuracy of the evidence be assessed? Who will read, judge, and respond to all of these reports? What mechanisms does government have to respond to the evidence? Absent sanctions, incentives, or defined capacity to respond, how will such policy work beneficial effects on programs of preparation?

If federal regulations are pegged to state licensure standards that are highly variable, the lack of a common measure comparable across states emerges as a large problem (see Kuenzi, 2008a, March). It is difficult to imagine how increasing forms of external accountability will work improvements in university-based teacher education when the key is likely to be how programs hold themselves accountable for teacher preparation. As evidence has not converged on program features that lead reliably to the performance of graduates, federal accountability policy has little to go by. In principle, IHE's (and all other teacher preparation programs) should be held to account for their performance and their results, but in practice the means for doing so have proven elusive. Under these

circumstances, externally mandated institutional accountability is likely to prove illusory if not counter-productive.

A Note on Value-Added Models in Teacher Evaluation. We also take note of a new development in the evaluation of teachers for such decisions as tenure, merit pay, advancement in teaching, and others. Value-added models use standardized test score data from two points in time to measure growth in student learning associated with an individual teacher. Such models are used in research and in some U.S. school districts, most notably in Tennessee in a state-wide initiative to measure teacher effectiveness. While they hold promise for the evaluation of teaching and teacher education, they also present a range of technical problems. These include, for example, selection bias of students placed into particular teachers' classrooms (Rothstein, 2008); questionable assumption that assessments measure achievement on interval scales (Ballou, 2008); student mobility between test administration points (Hanushek & Jorgenson, 1996); co-teaching and other collaborations among teachers so that learning results are shared; models not accounting for student background and demographics (McCaffrey et al., 2003; Tekwe et al., 2004); over-sensitivity to class size of teachers (McCaffrey et al., 2003; Sanders, Saxton & Horn, 1997); and a range of validity and reliability issues (Amrein-Beardsley, 2008). At present, then, their use for policy decisions in teaching should be pursued with care. While value-added methods are contributing to our research knowledge, we judge they are not ready for use as a policy tool.

A further issue concerns whether to base teacher evaluation on student outcome measures alone. Most professions attend both to the evaluation of the practice itself and to client outcomes (see Fenstermacher & Richardson, 2005). Today, many policymakers are dissatisfied with the nature of teacher evaluation, and regard this as a target for new policy. The federal government has a limited role to play here, focused primarily on research and development. We pursue this issue in our recommendations.

III.4. INCENTIVES POLICY

Many economists believe that the incentives in teaching are wrong. They argue that the single salary schedule makes it difficult to differentiate pay to meet longstanding shortages. They argue that salary is not adequately linked to performance as it is in many other fields. They argue that the salary structure is back loaded and heavy on retirement and health benefits at the expense of better starting salaries (a growing concern in the face of rising medical costs) (Vigdor, 2008); and that pay for advanced degrees bears no relationship to improvements in teaching. They argue for more local experimentation with innovative compensation and pay plans. The federal government recently initiated work in this area, and here we review evidence on incentives policy (for a general review, see Hanushek & Jorgenson, 1996).

Policy Description. There is a history of incentives-oriented reforms, but most of the action has taken place at state and local levels, often with support from the private sector; the federal government has not played a central role until very recently. In fall 2006, however, the federal government launched the first *Teacher Incentive Fund (TIF)* grants to support innovative uses of incentive funding to address teacher workforce issues

(for a full account of this program and its grantees, go to http://cecr.ed.gov/initiatives/). Many of the nation's large urban districts have received awards under this program and are implementing a range of programs (high-profile examples include Denver, Colorado, Washington, D.C., Charlotte-Mecklenburg, North Carolina, Dallas and Houston, Texas among others), including pay for performance plans, uses of bonus pay for difficult teaching assignments, and others.

Evidence of Policy Effects/Effectiveness. It is too early to tell which among the local plans might prove successful, but evidence from past initiatives supplies some clues. Merit and bonus pay, pay for career advancement, and related ideas have a long history, even as the lessons tend to be cautionary. Such plans have come and they have gone, and evidence of their impact on such matters as teacher recruitment, retention, and job satisfaction, or on student achievement is insufficient. At least three difficulties have plagued these past efforts. First, such plans are politically fragile (Johnson, 1986). They depend on sustained cooperation among interests that are often adversarial. The clash of interests may include jockeying between political parties at the state level, school board-Superintendent-teacher union relations at the local level, and informal relations among administrators and teachers in individual schools. Plans are usually launched with strong leadership from one or more such interests, but when the leaders change or the governing interests come into conflict, the plans become political casualties, often before they have had time to produce effects.

Implementation is a second familiar problem. Here the evidence suggests that the "schools change the reforms" rather more than the reverse (Tyack & Cuban, 1995). One widely noted example is the tendency for merit pay to be allocated on a rotating basis to all or nearly all teachers, rather than strictly based on evaluations of merit. The egalitarian principles observed in most schools triumph in practice over the idea of performance-based merit (Murnane & Cohen, 1986). Technical difficulties in measuring student achievement (using status or growth models) and in linking it unambiguously to individual teachers have stymied pay for performance plans in the past.

Still, a recent celebrated case—the Benwood plan in Hamilton County, Tennessee, launched in 2001—reveals that the new incentives there have contributed to more highly qualified staff in the eight low-income schools in the experiment. But the evaluators of the plan also note that other reforms were simultaneously instituted so that the unique contribution of the new incentives could not be teased apart from other reforms that included improvements in instruction and mentoring and harmonious labor-management relations (Silva, 2008). The likelihood then is that the success of new incentives will rely on a complex set of local factors that interact with compensation reforms to produce better results.

A third problem has been fiscal sustainability. Innovative pay plans tend to last as long as the additional external funds are maintained. But when funds are ended and budgets are threatened, innovations of most kinds are the first to be cut. New incentive plans have been highly vulnerable to the ups and downs of state and local budgets. External funders

of such plans usually provide time-limited grants on the assumption, frequently false, that grantees will gradually assume the costs.

If pay for performance has encountered difficulties in education, so has bonus pay for particular assignments. A relatively straightforward policy is to offer extra pay for math and science teachers or to teachers willing to work in hard-to-staff schools. Today, policies of this kind are unfolding rapidly with infusions of federal and state funding (see Loeb & Miller, 2006, for a review of state policy). For example, 20 states offer financial incentives, typically multi-year pay supplements, to teach in hard-to-staff schools; a teacher in California can receive up to $5,000 more a year for four years. Questions here concern how such policies influence the recruitment and the retention of qualified teachers based on the new availability of bonus or incentive pay. Researchers have attempted to estimate and model the size of additional pay for working in hard-to-staff schools, and these studies supply a range of estimates. One study, for example, reported that North Carolina's $1,800 bonus for math, science, and special education teachers to teach in hard-to-staff, low-performing schools helped reduce turnover by 10-12%. Another study reported teachers would require salary increases between $4,000 and $5,000 to teach in low-performing schools, while yet another indicated that salary increases of 15-20% would be needed. One more study estimated that salary might need to be increased by 30-50% for teaching in high-poverty, low-performing schools. Researchers caution then that such estimates are likely to vary by locale and teacher, and that factors other than salary, such as principal leadership, staff cohesion, and working conditions, are likely to play an important role (For review of this evidence see "Compensation for teachers of hard-to-fill subjects and teachers in hard-to-staff schools" at http://cecr.ed.gov/guides/researchSyntheses/Research%20Synthesis_Q%20B8.pdf).

A look back supplies some further insight. Early interventions along these lines included the "Schools of Exceptional Difficulty" policy in London, England, instituted in 1968; and pay differentials for teaching in Los Angeles and Houston in 1980. Research on these programs came to a number of conclusions:

- In the London experiment, teachers still found these schools unattractive despite the extra pay (Zabalza, Turnbull, & Williams, 1978);

- In Los Angeles, an 11% salary differential proved only modestly effective in attracting and retaining teachers in "racially isolated schools" (Bruno & Negrete, 1983; Bruno, 1986). While turnover declined somewhat in the racially isolated (RI) schools, it actually increased in the "nearly racially isolated" (NRI) schools nearby that were not on the plan (e.g., those less than 90% minority enrollment). Young, inexperienced probationary teachers at NRI schools were most likely to move to RI schools, a finding similar to that of the London study. Study authors conclude that, "The high expenditure of limited school resources to monitor, evaluate, and implement the program yielded a very small decrease in teacher turnover rates, and more important did not address the effects of racial isolation" (Bruno, 1986 p. 439). And, "…at best, the pay program is only moderately successful in decreasing teacher turnover rates, the success might be short-lived,

and it tended to be at the expense of neighboring, similarly racially isolated schools" (Bruno, 1986) Finally, because the pay was allocated to all teachers willing to teach in the RI schools, many experienced teachers already in residence received the pay, which might not have been the most efficient use of marginal funds (e.g., an alternative might be class size reductions).

- Bruno also noted political difficulties in offering salary differentials based on locale, because once this principle is established for dealing with shortages, then pressures may mount to use it for shortages of all kinds, which could greatly increase overall compensation costs.

Policy Appraisal. There is considerable interest today in innovative compensation plans, and the federal government is joining state and private sources in funding a variety of experiments across the country. While history supplies reasons for caution, the best position currently is to nurture and encourage the new incentives while studying them closely. Technical advances such as the development of value-added models for measuring student achievement and of state-wide databases that permit tracking of achievement at teacher and student levels hold promise for resolving some of the difficulties that past plans have encountered. But the history of new incentives in teaching indicates that the impediments have extended beyond the technical. Rather, it has proven difficult to negotiate and implement such plans in turbulent political environments where sustained cooperation among the interested parties is hard to achieve and maintain. Still, some evidence indicates that there has been relatively limited use of powerful and properly targeted economic incentives; in particular the size, nature, and duration of incentives has not been sufficient yet to produce strong effects (King & Roelke, 2009, pp. 151-54).

Incentives oriented around performance and shortages constitute a natural instrument of federal and state policy. But a critical question concerns the base of knowledge about the effects of new inducements in teaching. There is a major role for policy research around such questions, particularly in conjunction with the increased federal role in this area. Design issues are particularly important. Questions such as the size of incentives, their allocation to individuals or schools, their timing, the regulations that accompany their use, and others have to be studied carefully, as the devil may be in such details. While some evidence on these kinds of questions is available, much more needs to be learned (see Figlio & Kenny, 2006, October). And beyond the success of particular plans in particular places is the larger policy question of whether such plans can "travel." At least one such reform, the Teacher Advancement Program developed by the Milken Foundation in the late 1990s, has been adopted in over 100 schools in a dozen states (Glazerman et al., 2007). This is a whole-school model that features professional development, pay for performance, and other elements. Such models that are implemented in multiple sites hold promise for better understanding of how local context interacts with new compensation models to produce effects; they constitute important targets for policy research.

III.5. QUALIFICATIONS POLICY

Teacher licensing is firmly established as a state responsibility, but the federal government in recent years has supported a number of forays that take up questions about qualifications to teach, and several of these initiatives suggest both the promise and the difficulties.

Policy Description. Authorized under Part A of ESEA's Title II is the *Advanced Certification program.* Advanced Certification (AKA Advanced Credentialing) addresses teacher supply concerns by furnishing competitive grants to "LEAs (local education agencies), SEAs (state education agencies), the National Board for Professional Teaching Standards (NBPTS) working with an LEA or SEA, the National Council on Teacher Quality (NCTQ) working with an LEA or SEA, or another certification or credentialing organization working with an LEA or SEA" for numerous purposes including the promotion of recruitment efforts tied to achieving advanced teaching credentials (U.S. Department of Education, 2007a). Advanced Certification funds can be used to "support intensive outreach, communications, candidate support, and professional development programs to encourage teachers to undergo the advanced certification process" (DE). This program directly aligns recruitment with the credentialing procedure, using NBPTS certification in particular as an incentive for prospective teachers to make themselves more attractive candidates on the job market, who might also command higher salaries.

The National Board was established in 1986. The Board developed a complex set of advanced standards for teaching together with an equally complex assessment system that has been used to evaluate teachers who wish to become "board certified." Today, nearly 75,000 teachers across the country have become board certified.

Some years later the NCTQ was created, and this second organization took a different approach, advocating alternative pathways and qualifications. This organization promotes efforts to increase regulations governing teacher preparation programs and to stimulate alternative programs for entry to teaching. Then, in 2001, the American Board for Certification of Teacher Excellence (ABCTE) was founded with federal support to help the nation's educational entities meet the NCLB's HQT requirement. The organization's mission is to increase the supply of these teachers by providing a more cost-effective alternative to traditional, often state-specific certification. By basing its certification almost solely on demonstrated mastery of subject matter and professional teaching knowledge as measured by scores on a series of written exams, ABCTE endeavors to encourage career-changers to become teachers. In this view, qualifications for entry to teaching could be streamlined, simplified, and focused on content knowledge in the teacher's primary area.

In 2003, ABCTE began offering the Passport to Teaching certification in Elementary Education (K-6), and one year later certifications were also available in English Language Arts (6-12) and Mathematics (6-12), with other areas added subsequently. The Passport to Teaching is recognized under NCLB as an approved way to demonstrate that a teacher is highly qualified, despite the fact that it allows individuals to become teachers

of record with no pre-service preparation. It is now an approved route to state licensure in eight states: Pennsylvania, Idaho, Utah, New Hampshire, Florida, Mississippi, South Carolina, and Missouri (Glazerman, Seif, & Baxter, 2008). The Passport to Teaching appears to be the choice of mid-career professionals (average entry age is 39), even though it has been used both to enter teaching and to move laterally within the profession.

Evidence of Policy Effects/Effectiveness. The NBPTS has been subject to a body of research over its history, summarized most recently in a report by the National Research Council (2008). The weight of the evidence indicates that National Board Certified teachers are effective in producing student achievement when compared to teachers holding other credentials (see in particular, Cantrell et al., 2008). Such an effect likely is due to a combination of selection and training, but in any event, the NBPTS does serve as a policy signal for high-quality teaching.

In most cases, however, NBPTS teachers are not located in hard-to-staff schools (Los Angeles is the exception, due to concerted district policies there) (Humphrey, Koppich, & Hough, 2005). Once again, the equitable distribution of qualified teachers remains a crucial policy issue, and the Board is developing an initiative to encourage greater participation in high-need schools and among minority teachers.

With a combination of private and public funding, including support from federal, state, and local sources, the NBPTS also has had influence beyond the assessment of teachers for certification, including impact on initial licensure. For example, the Interstate Teacher Assessment and Support Consortium (INTASC) was launched by the Council of Chief State School Officers (CCSSO) to develop model standards and assessments for initial licensure, and these have influenced a number of states together with the Board's emphasis on performance assessments for use in licensure and certification. Many states have provided incentives of various kinds to support teachers in becoming board-certified, and this new status in teaching is also finding its way into many of the new incentive plans supported by the federal *Teacher Incentive Fund.*

In contrast, no research has validated the Passport in relation to student achievement or other outcomes.

Policy Appraisal. These policies represent the first federal efforts to intervene directly in the teacher labor market by supporting the development of qualifications to teach. The strategy represented by the NBPTS and its offshoots advocates for a substantial and rigorous body of professional knowledge that must be carefully assessed and required for entry and advancement in teaching. This approach restricts entry around more extensive qualifications, which in turn requires higher salaries and other inducements to meet market demand. The alternative strategy, represented by the NCTQ and the ABCTE, suggests that a smaller body of knowledge grounded not so much in specialized professional knowledge as in subject matter knowledge with just a minimal amount of general technical knowledge (e.g., classroom management) is necessary. The latter organizations seek to reduce entry requirements and to encourage multiple talent

pools and entry pathways. This strategy is less dependent on salary increases to clear the market.

Two problems have emerged with these new federal initiatives. One concerns policy instability. A consensus has not emerged in our society about the nature of teaching as work and occupation. Rather, as set forth in Appendix II, a political and ideological contest pits rival interests, organizations, research, and policies against one another with the federal government drawn into the fray, first on one side, then on the other. Whatever the merits of each case, policy in this vein is likely to be unstable, which will influence its long-run effectiveness. As neither side can claim decisive victory, policy around teacher qualifications is likely to jump from one battle to the next.

The second problem concerns the evidence that might help resolve such policy disputes. Both sides point to research studies, but the research is equivocal, uneven, and subject to bias and exaggerated claims. There is a contested case for rigorous qualifications that tend to restrict entry; and there is a contested case for streamlined qualifications and eased entry. One implication of these problems is that the federal government ought to refrain from joining the campaign on either side, investing rather in improved policy research. On the other hand, it would be naïve to think that research is likely to settle policy disputes that revolve rather more around political interests, ideological clashes, and institutional stasis. In this fray, however, the National Board has been subject to considerable research and has emerged as a worthwhile endeavor in American education. As we make clear in our recommendations, board certification is an under-utilized policy tool that should be employed more aggressively by federal, state, and local agencies.

III.6. CLASS SIZE REDUCTION POLICY

Class size reduction research has had a powerful impact on policymakers. Experiments in class size reduction, particularly the Tennessee and the Wisconsin studies (see e.g., Achilles, 1999; Special issue, *Educational Evaluation and Policy Analysis,* 1999) have convinced the policy and education community that smaller classes in the early grades might be one strategy in helping to close achievement gaps among groups of students. The federal government along with many states has supplied funds to reduce class size. But class size reduction increases the demand for more teachers. When CSR policy is targeted to locales that historically have had difficulty attracting teachers, a tension emerges between the quality of new recruits and the smaller classes. Research is just beginning to illuminate this trade-off, but much more needs to be known about this issue.

Policy Description. The first federal foray on this issue was the 1999 *Federal Class Size Reduction Program* launched by the Clinton administration. This program established funds to recruit and retain new teachers and to supply professional development. Then, CSR policy was folded into Title II under NCLB, where formula grants to states support both professional development and class size reductions. A study by the Education Department (undated) found that 58% of Title II funds in 2002-03 were used for class-size reduction (resulting in the hiring of 30,000 new teachers). Funding subsequently shifted more strongly to professional development. A tension then arose between the policy goal to produce highly qualified teachers and to produce more

teachers to fill smaller classes. CSR policy raises questions about the trade-off between teacher quality and class size, because increases in demand for teachers—in order to reduce class size—might lead to greater hiring of un- or under-qualified teachers out of thin talent pools available to many urban and rural districts.

Evidence of Policy Effects/Effectiveness. An interim evaluation of the federal CSR program offered some findings (U.S. Department of Education, 2004a). In the program's first year (2000-01) 25,000 teachers were hired in grades K-3, and districts spent the money as prescribed, although much of it was carried over because many districts were unable to hire new teachers quickly. One-third of large urban districts reported being unable to find qualified teachers, as compared with 10% of small districts. And large urban districts also reported facilities problems that hindered the addition of teachers and classes. As well, lack of state capacity to support the program, late notification practices in many districts, and fears that the program would come and go all contributed to the slow response.

In the schools and grades where federally funded CSR teachers were placed, average class size decreased with the advent of federal CSR funds, typically by one or two students. After the federal CSR program, overall average class size ranged from 18 students per class in kindergarten, to 20 in 1st grade and 21 students per class in grades 2 and 3. There are two reasons for the modest reduction in average class size. Many schools (44%) did not assign the CSR teacher to a separate classroom, but rather assigned the teacher to special subjects or team teaching. Even in schools where teachers were assigned to their own classrooms, 52% had simultaneous increases in enrollment that mitigated class size reduction. Overall, 73% of schools either did not assign teachers to separate classes or had enrollment increases that reduced CSR's impact. And, on a curious note, the legislation also set aside funds for professional development (15% in the first year, 25% in the second), but districts did not spend these funds (only 13% in the first year, 14% in the second).

Other evidence suggests additional difficulties with class size reduction policy. The California case has been widely studied. There, state CSR policies resulted in an influx of un- or under-qualified teachers in high-need schools, so the trade-off between small classes and qualified teachers appeared to tilt in a negative direction. A recent study, however, updates the story and challenges the conventional account. Jepsen and Rivkin (in press) examined the longer-run impact of the California experiment, linking student achievement data to newly hired and other teachers. They found first that, "Although the results show that smaller classes raised mathematics and reading achievement, they also show that the increase in the share of teachers with neither prior experience nor full certification dampened the benefits of smaller classes, particularly in schools with high shares of economically disadvantaged, minority students" (p. 1).

Over time, however, the CSR effect increased relative to the teacher certification effect, and differences declined in new teacher effects between high-poverty, high-minority schools and other schools. The investigators conclude that, "CSR reduced class size across the state and led to a short-term increase in the share of teachers lacking

experience and a persistent increase in the share of teachers lacking full certification, both of which were larger in higher-poverty, higher-minority enrollment schools. This raised the possibility that the program benefits would be tilted toward higher-income communities, but the results suggest that any meaningful differences in the effects of CSR by income were limited to the years immediately following implementation when there was a spike in the share of teachers with no prior experience" (p. 26). Class size reduction, according to this study, does not lead automatically to a long-term decrease in teacher quality. Although a single study, the results at least are suggestive with respect to the policy trade-off between class size and teacher quality. We note, though, that this study did not examine teacher retention patterns, which also are a major policy concern. The impact of CSR policy on the retention of able teachers in high-need schools has not been studied.

Policy Appraisal. Reducing class size has the advantage of simplicity as a policy tool. Federal and state funds can be allocated and the policy can be carried out without any apparent need for capacity building or organizational learning. But evaluations have discovered that CSR is less simple, at least in the short run, than meets the eye. Schools need classroom space, expanded applicant pools, additional materials, and means for inducting, evaluating, and retaining qualified new teachers. And, to reap benefits from CSR, classes should be in the 15-17 student range, not the 20-22 student range; reductions from 25-28 students to 20 students may not yield the achievement benefits posed in the research.

The trade-off between more teachers and qualified teachers also is not obvious. Almost all teachers learn from experience, and those that don't may be more likely to exit teaching. This means that over time, as Jepsen and Rivkin found, teachers with substandard credentials may learn how to teach, making their entering qualifications matter less. But other questions lurk. When districts hire more teachers under CSR policy, does this in fact lead to smaller, self-contained classes? What applicants present themselves and with what kinds of qualifications? And what is the retention rate of the new teachers? How can poor schools in poor communities provide smaller classes, given space and other limitations? And if initial applicants on substandard credentials tend to produce poor achievement in their first few years, is this cost to some students an acceptable one under CSR policy?

We raise these questions simply to indicate that CSR policy involves issues that have not been carefully examined in the research. Class size reductions still may be a powerful tool in the arsenal, but with the lessons from past implementation, it can be better directed and provided for in the future.

III.7. TEACHER WORKING CONDITIONS AS A POLICY TARGET

Incentives and accountability figure greatly in contemporary federal policy. But considerable research has demonstrated that teachers are responsive to a variety of working conditions so that mandates and financial inducements do not tell the whole story about recruitment, performance, and retention. The main question here concerns

how federal policy can influence conditions that are largely under control of districts and schools.

Policy Description. The federal government has not directed any policies per se at issues of teacher working conditions. Various kinds of policy have implicated aspects of teacher working conditions. In particular, reauthorizations of *ESEA Title I* over the years favored various policy themes about the reform of schooling. For example, in the late 1980s, the idea of "school restructuring" was prominent and received some attention in federal policy. This theme had a number of meanings, among which was the prospect of developing new staffing patterns, roles, and responsibilities for teachers. The 1994 amendments to ESEA called for whole-school models and plans, rather than simply the insertion of Title I teachers into schools for the delivery of "pull out" instruction. And in 1996 the federal government sponsored a grants program that supplied funds to Title I schools willing to adopt whole-school models from a preferred list of options. A variety of such models now operate around the country and have penetrated Title I elementary schools in particular.

The primary engine directed to reforms of the school then has been *ESEA Title I*. But such reforms have not highlighted teacher working conditions as particularly salient to the improvement of schooling, nor to the shaping of the teacher workforce. Still, the direction of reform, at least prior to 2001's emphasis in NCLB on accountability, was toward whole-school improvement rather than just to the provision of Title I teachers. With NCLB, this direction was altered in favor of the strong accountability thrust.

Evidence of Policy Effects/Effectiveness. Research on the effects of teacher working conditions has not provided strong direction for policy. First, specifying what constitutes "working conditions" is an issue, as this term might refer to everything from the physical plant in a school to the school's work culture and leadership. Second, it is difficult to pin down how such conditions might affect outcomes such as teacher attitudes (e.g., commitment, morale, collegiality), teacher behavior (e.g., retention), or student achievement. The literature on school factors is quite large and has identified a range of features or correlates of "effective schools," including aspects of schools that have positive influences on teachers (for review of the studies, see King & Roelke, 2009, pp. 155-58; and The Project on the Next Generation of Teachers, http://www.gse.harvard.edu/~ngt/).

Further, economists have divided incentives into "pecuniary" and "non-pecuniary" factors, the latter term covering unspecified working conditions, and economic research generally demonstrates that while teachers are responsive to wages, working conditions play a large role in such matters as their decisions about where to teach.

A hypothetical contrast serves to make the point. In the first scenario a new teacher receives a protected assignment that includes a reduced teaching load and extra planning time. The teacher also is assigned an experienced mentor with the same or similar teaching specialization as hers, and she is given a small budget with which to purchase instructional materials. She joins a teaching team as junior member (either grade-level

team in an elementary school or subject department in high school) that works with her on common issues of instruction, curriculum, and assessment. The team develops and discusses curriculum materials and formative assessments of student learning, is involved in assigning students to classes, and has a healthy culture of critique and deliberation. The weekly schedule includes ample time for meetings and follow up work, including regular staff development keyed to the school's curriculum and the state's standards. The school guidance counselor and social worker introduce themselves and indicate how they can help with particular students. Special education teachers also are members of the team and provide expertise around the inclusion of special need students. A highly respected veteran principal runs a tight ship, schedules regular meetings with new teachers to discuss any issues or problems, and has developed ways and means of involving teachers in shared school-wide decisions. The school has a well-developed parent outreach program into which the novice is inducted. Over her first two years of teaching, the school makes notable progress on its student achievement goals, and the staff feels they are on the right track. The contrasting scenario, then, would be the absence of these and other conditions of support, with salary and benefits held constant.

Working conditions influence almost everything about a teacher's working experience, from her desire to remain teaching in a school to how effective she is in her career. Other matters also might make a difference, such as whether the school physical plant is relatively new, offers access to the new learning technologies and so on, but mainly it is the social environment of the school that makes the difference. Additionally, offering considerably higher salaries and/or other incentives (e.g. signing bonus, housing allowance) might induce individuals to teach in a school that lacks supportive conditions. But absent the social, cultural, and material supports, the financial inducement is unlikely to encourage them to stay and to improve steadily. Conversely, schools with these positive characteristics—even those located in poor neighborhoods serving poor children—develop reputations for excellence and are more likely to attract/retain qualified teachers without any additional incentives.

Studies over many years have documented that supportive conditions for new teachers (and teachers in general) are not present in many schools, especially schools serving concentrations of poor and minority students. Rather, new teachers report that they get the tough assignments; feel isolated and unsupported by peers, principal, or experienced mentors; and lack the advantages of a school-wide professional community (see, e.g., Kardos & Johnson, 2007). Many schools and districts have not developed carefully staged induction processes for new teachers that serve the multiple purposes of retaining effective teachers; detecting and either remediating or counseling out teachers who are ineffective; and enhancing new teacher learning on the job and in the early years of teaching. Teacher support and evaluation are equally lacking in some large but unspecified percentage of schools as a function of both school and district practices.

Goldhaber (2008, November) notes that, "…much of the variation in teacher qualifications is instead due to sorting of teachers within a district, and since there typically are not within-district differences in salaries beyond those associated with degree and experience, this variation therefore suggests that differences in working

conditions among schools are a significant reason for TQI [Teacher Quality Index] inequities" (p. 13). If teacher preferences strongly influence inequitable sorting among schools in districts, then the problem is to change the incentives so that disadvantaged schools are *relatively* more attractive places to work, since across the board interventions would only attract teachers to districts, not to particular schools within districts.

The individual school then remains the crucial context for teaching and learning, and decades of research have uncovered school level factors that are associated with high and/or steadily improving student achievement. Such achievement in inner city schools constitutes a draw for teachers, who then want to stay on. A stable teaching staff contributes to improved achievement, so the circle is completed: achievement promotes retention of capable teachers, who in turn promote achievement. How to initiate such virtuous circles that link teacher recruitment and retention to rising achievement is the question, and these observations, widely shared by most close observers of teaching, produce a tough nut to crack for policy.

Policy Appraisal. Though federal policy today emphasizes a combination of accountability and incentives, school conditions are critically important. These issues are difficult to address with large-scale, generalized policy. The school principal is obviously a key actor in the drama of school improvement, so policy might aim at recruiting and developing good principals for hard-to-staff schools; but recruitment, training, placement, and support for principals raises many of the same issues that surround teaching. Effective principals are in short supply, face difficult working conditions of their own, are inadequately compensated, and so on.

Some studies indicate that state policy can exert influence on issues of teacher support, evaluation, and development, which in turn might influence retention of capable teachers. Such policies, for example, close certification loopholes, create stronger and more rigorous certification systems that build performance assessments into staged entry requirements, fund effective mentor programs, and establish common standards for alternative route programs. The state emerges in this account as a critical policy actor, but the federal role remains murky. Over the years, the federal government has funded state initiatives through either block or categorical grants in both ESEA and HEA, but there has been little research that examines the effects of these federally supported state capacity-building efforts. A well-designed and coordinated combination of state and district policy looks to supply some leverage, but a clear federal role in support has not emerged.

III.8. ISSUES OF HUMAN RESOURCE MANAGEMENT AND POLICY COORDINATION

Description of the Policy Problem. A final area of concern that has grown in significance concerns how the increasing body of policy directed to teachers and teaching is being managed and coordinated to yield coherent strategies up and down the federal system of education. The scope of this issue was modest in the early years of federal involvement simply because the sum total of governmental policy was relatively small. In the period from 1950 to 1980 (roughly), federal and state policy directed to teaching

included some initiatives to be sure, but nothing like the body of policy that exists today. As teaching became a crucial matter in providing sound education for all students, policymakers at all levels became active around common themes that included accountability, incentives, qualifications, preparation, and professional development. At the same time that federal policies grew in number and weight, so too did state policies in many locales, abetted in part by federal funds to the states to increase and coordinate teacher policy. Then, local agencies, chiefly school districts, had to respond to the increased flow of policy from higher levels of governance. A difficulty that has emerged is how the totality of teacher policy today is being managed and coordinated to supply steady support and direction. Some evidence suggests that this has become a problem in itself.

Evidence of Policy Effects/Effectiveness. Starting at the federal level, a number of GAO reports have questioned how education programs are being managed; in fact, GAO reports addressing Congressional efforts to reform teacher policy date back almost as far as the programs themselves. In general, if public dollars have been spent on teacher issues, the GAO has written an audit, evaluation, or investigation of the program. Such evaluations range from *Teacher Corps* to the *Eisenhower Program* through to a comparative evaluation of HEA's and NCLB's Title II programs. In each, the GAO outlines program goals, describes how funds are used and how the program is implemented, and addresses whether the program is effective and efficient (although evidence on these latter questions is often unavailable).

A review of these evaluations reveals a common theme, that management problems in the Department of Education (ED) confound implementation. These reports repeatedly call on ED to improve communication between offices, clarify goals, and streamline reporting processes. Though the reports all address concerns specific to particular programs, the message is the same—ED can and should enhance its implementation practices and in turn improve the programs themselves.

None of this is surprising, as the reports are commissioned for the purposes of critically evaluating programming, but it is notable that this theme can be traced back to some of the earliest attempts to reform teacher policy. In a 1972 report on the state of Teacher Corps, the GAO suggested that federal education officials attempt to "monitor the LEA's progress in integrating successful teaching approaches and concepts into their regular education programs," indicating that LEAs were implementing *Teacher Corps* without the kind of supervision that continually improves program quality (Government Accounting Office, 1972, p. 29) Similarly, a 1992 report on the *Eisenhower Math and Science program* suggests that evaluation data collection was insufficient and this lack was preventing the GAO from performing its investigation (Government Accounting Office, 1992). In 2002, the GAO suggested that ED take pains to clarify the terms of HEA's Teacher Quality Enhancement Grants, as the ambiguity prevented the GAO from effectively assessing whether SEAs or LEAs were accountable (Government Accounting Office, 2002).

In 2007, the GAO issued a report addressing the teacher training provisions under NCLB,

paying particular attention to the ways in which ED has responded to continual recommendations to improve its implementation efforts. The report was noticeably more positive than past appraisals, suggesting that Ed had:

> made progress in addressing GAO's concerns by disseminating more information to recipients, particularly on teacher quality requirements, and improving how the department measures the results of teacher quality activities by establishing definitions and performance targets under HEA. (Government Accounting Office, 2007)

In opening the door in these reports to the possibility of more positive implementation mechanisms, GAO paves the way for ED to improve its overall management of teacher policy.

But the problem has grown immeasurably more complex with the growing thicket of regulations and programs from all levels of the system. The federal government has increased its activity, but in all these areas—recruitment, preparation, incentives, accountability, professional development—the states also have become active in parallel with and accompanied by federal funding. A recent comprehensive review of state programs (Loeb & Miller, 2006) has documented the explosion of state teacher policies, where the same problems have emerged concerning lack of evaluation and careful policy development. These authors conclude that:

> Despite their popularity, there is sparse research on the effects of these [state] incentive polices on the recruitment, retention, and assignment of teachers in general, and in critical shortage subject areas and difficult-to-staff schools in particular. We found no evaluations of the effectiveness of tuition support, loan assumption or housing incentive programs (p. 48).

They go on to note that little policy research that has been done:

> The reports and evaluations of these incentive programs emphasize three key lessons. One, implementation errors doom most programs. Two, targeting the incentives to specific teachers and schools, while appealing from a policy and financial standpoint, is challenging to carry out. And three, the ability to draw policy-relevant conclusions regarding the programs' effects on teacher recruitment, retention, and assignment is substantially hampered by lack of data (p. 48-49).

Moving to the local level, concerns also have been raised about human resource management in many school districts. A recent manifesto to initiate study and improvement in this vein finds that many large districts across the country have not developed integrated and aligned strategic management systems to support the recruitment, retention, distribution, and development of their teacher workforce (Odden & Kelly, 2008). This perspective builds on many of the problems already noted (e.g., shortages of math and science teachers, high turnover, shallow recruitment pools, poorly

managed professional development, inequitable distribution of teachers across schools), but argues that a main problem is overall strategic management that works on these problems as part of concerted, districtwide actions aimed ultimately at the continuous improvement of instruction. Case studies have revealed how districts mismanage human resources and how vanguard districts are instituting innovations that greatly aid in such functions as timely recruitment and strategic placement of teachers; high-quality professional development; retention of teachers in high-need schools; and new compensation systems to support higher performance. But the crucial issue in these accounts is how to take up all of the teacher policies available to a locale and coordinate them to attract, retain, and develop a teacher workforce around district-wide instructional goals and purposes. And a strong presumption is that such strategic management is weak in many districts, particularly those serving concentrations of poor and minority students.

Policy Appraisal. As more agencies have sought to influence teachers and teaching, the overall management and the combined effects of so much involvement is unclear. The problems here are not well specified. They include policymaking and implementation without much knowledge for guidance; both gaps and duplication in policies; policies that work at cross-purposes to one another; inefficient and wasteful uses of funds; inadequate accountability for programs; and poor management of human resources at the point of impact. A presumption is that district leaders in particular must place a higher priority on how they manage their human resources. Evidence indicates that school-level expenditures vary widely within districts because low-performing schools have more trouble retaining teachers so their human capital is less developed than in better-positioned schools with veteran, experienced staffs. Federal policies should be directed to the improvement of the management of teachers and teaching within districts as a crucial priority. At the same time, states also need better management of the sum of teacher policies and of federal funds. Improved managerial capacity throughout the system should become a priority.

IV. Recommendations for Federal Teacher Policy

Based on this review, we recommend that the Secretary of Education advance four key objectives for federal teacher policy, pursued via seven strategies. We also indicate the kinds of policy research that is integral to this agenda. First, though, a comment on several related issues. A teacher policy agenda must be developed within a larger federal strategy for education that includes attention to three sectors—early childhood, K-12 education (including special education under the Individuals with Disabilities Education Act and the education of ELL and ESL students), and post-secondary education. Our analysis concentrates just on the K-12 regular education sector, but federal policymakers must aim for a balanced portfolio across the sectors. The nation also needs qualified early childhood and special education teachers, for example, and more funding to make college affordable, so a comprehensive federal agenda must contribute in each of these sectors.

A second point concerns federal support for improvements in K-12 school infrastructure as part of the larger national imperative to fund public works projects to assist in economic recovery. Such an investment is related indirectly but importantly to teachers

as it influences the conditions of their work. The American Federation of Teachers (2006), among other groups, has documented a steady decline in school infrastructure investment by states and localities yielding school facilities in many locales that are crumbling, unsafe, and overcrowded. Estimates place the bill for repairs at over $250 billion, and the federal government must act on this imperative for its value both as an economic stimulus and as a material support for schools, teachers, and students. We include this recommendation at the outset, noting that its full development bears on but lies outside the scope of this review.

IV.1. THE FEDERAL MISSION

Turning to our recommendations, the federal teacher policy agenda should be oriented around a clear and focused mission:

> ***The federal mission is to enhance student access to teachers of high quality and to contribute to the steady improvement of teaching effectiveness.***

Then, we recommend that federal policy be directed to four basic goals:

(1) Attract and retain qualified teachers for high-need districts and schools

As we have noted throughout this analysis, poor students in poor schools do not have access to the best teaching. This is a stubborn problem with deep roots in how our education system has been constructed over the years. Past measures have not made enough headway, so bolder approaches are needed. The next administration should make this a top priority. We believe no single policy can make a difference, but that a combined body of policy, orchestrated across federal, state, and local levels, can produce change. As we have noted, this is a problem for recruitment and for retention, so a policy strategy must attend to both aspects of this problem.

(2) Attract and retain qualified teachers for high-priority fields

Next, of great importance to the national welfare is the recruitment of qualified teachers in the STEM fields—science, technology, engineering, and mathematics. These are the subjects that will build human capital for our economy and our society, and there is ample evidence that we have longstanding shortages in these fields, often masked by recourse to out-of-field teaching. Other shortage areas also should receive attention, including teachers for non- or limited-English speaking students; special education; and foreign languages. These teachers are vitally important in our urban and rural districts in particular, where supply is chronically short.

(3) Attract and retain high-priority candidates to teaching

We must work steadily at attracting academically able students from the college ranks and attracting a more diverse talent pool into teaching, including more minority teachers of all kinds. Here too these priorities overlap: teaching particularly needs academically

talented minority teachers willing to work in inner city and other locales serving high-needs populations.

(4) Improve teacher/teaching effectiveness

Coupled with getting the best teachers in the schools where they are needed most must be a continuing effort to improve teaching. This broad aim may be accomplished via a wide range of policies including new uses of incentives, better preparation and development, and enhanced teacher evaluation. Research on what constitutes teacher and teaching effectiveness together with better measures and indicators will be a critical component of an overall strategic approach.

IV.2. STRATEGIES FOR FEDERAL TEACHER POLICY

A seven-point program makes up our recommendations. Taken together, these strategic priorities aim to work on all four goals; linked to each is an R & D agenda that requires federal support.

Strategy 1. Target and Strengthen Teacher Recruitment

For fifty years the federal government has provided a variety of loan forgiveness, fellowship, and scholarship programs designed to attract talent to teaching, but we could locate little evidence about the effectiveness of these policies. Consequently, our first recommendation is that a study group be established to conduct a thorough review of issues associated with federal and other recruitment policies as a basis for future policies, including the new TEACH grants. The charge to the study group should include examination of evidence from other fields, including medicine, the military, and law enforcement, together with attention to how other countries recruit talent to teaching. The study group should issue a report on their findings intended to shape all of the current federal policies aimed at recruitment to teaching. We need to have better guidance about such issues as the size, timing, nature, and oversight of recruitment policies.

Then, these programs should concentrate on the three strategic goals of recruiting teachers for high need schools, in high priority fields, and for high-priority candidates. The various instruments already in use, including Stafford and Perkins loans, Pell grants, and the new TEACH grants should be treated as a combined strategy and managed accordingly by the Education Department. Currently, the various federal programs are scattered across legislation, are uncoordinated with one another and with similar state programs, and lack transparency to applicants. Better coordination and management is needed by the Education Department.

Recruiting more qualified minority teachers will require a targeted strategy that begins by encouraging more minority college attendance, then encouraging more minority graduates to enter the teaching profession. Special recruitment efforts can be targeted to the historically black colleges and to other institutions that attract minority students. Incentives might be devised for both individuals and for institutions that prepare teachers.

The critical point to be made though is that recruitment policy must be grounded in better evidence of "what works." As we indicated in our review, some evidence from past practice suggests that federal efforts have been inefficient and ineffective to some degree. We believe that if recruitment policy were to become a top priority in the Education Department, carefully monitored and studied, then it would be an area to leverage. Taken together, federal funding for recruiting teachers is quite sizable, yet little attention has been paid to whether the combined funding from multiple programs is having intended effects on the three priority goals. We recommend a broad review to yield improvements, monitoring, and ongoing research.

Finally, small classes in the early grades continue to be a worthwhile policy goal, but the implementation of CSR policy needs improvement. The federal government must work more closely with Title I districts to assist them in implementing CSR policy in ways that genuinely reduce class size to optimal levels while ensuring that qualified teachers are recruited. Better targeting, guidance, and capacity-building are needed so that CSR implementation realizes its goal of influencing student achievement.

Strategy 2. Build Capacity for Teacher Preparation and Development

Regarding teacher preparation. Three themes help point to a productive federal role in teacher preparation: "grow your own;" "portfolio of pathways;" and "urban teacher residencies." First, local district and university partnerships to prepare homegrown teachers for work in hard-to-staff schools may be the best bet, particularly when linked with efforts to improve working conditions in such schools as a basis for improved retention of effective teachers (**note 2**). Districts that experience chronic teacher shortages will need to "grow their own" teachers via partner arrangements with a variety of outside agencies, including local universities and others. Federal funds should support the expansion of "grow your own" programs where these are most needed.

A related recommendation is to encourage a "portfolio of pathways" approach into teaching that recruits from expanded talent pools (Hassel & Sherburne, 2007). New York City is a case in point, where, as we described, the NYC Teaching Fellows Program coupled with Teach for America has helped relieve teacher shortages in hard-to-staff schools. Federal grants then may be used in cities across the country to develop multiple programs and pathways to help fill chronic shortages.

A key question, though, concerns the quality of preparation programs across the spectrum, from "early entry" to "college recommending." All programs should provide a minimum baseline of preparation that meets a standard of "safe practice" on behalf of the students who will be taught by novice teachers **(note 3)**. Absent a common standard we fear that a two-tier system of preparation might take shape in which affluent schools can afford teachers who have received more careful and thorough preparation, while less favored schools serving poor children receive "raw recruits" who are (1) unable to meet the safe standard; and (2) are more likely to leave early, perpetuating the revolving door.

On behalf of the safe standard, prudence dictates some reasonable requirements. One basis is studies that have been conducted on alternate route programs, as these have uncovered some common elements of effective programs (see for example Grossman & Loeb, 2008; Humphrey, Wechsler, & Hough, 2007). The federal role then is to work with professional organizations to develop a common "safe" standard of practice that all programs should meet, to disseminate information to states in the form of "best practice" guidance, and to encourage sharing of innovative programs that meet these objectives.

The third policy idea, authorized under the new HEA, is the Teaching Residency program—or Urban Teacher Residency—deriving from pilot programs already launched, for example, in Boston and Chicago. These two programs are small-scale efforts, quite different from one another, yet sharing the basic idea of a partnership that provides substantial training and classroom experience for homegrown recruits. These programs potentially help to bridge the need to prepare and support recruits willing to stay on in high-need schools. They have been described as follows:

> In UTRs, aspiring teachers – known as Residents – are selected according to rigorous criteria aligned with district needs. They integrate their master's level course work with an intensive, full-year classroom residency alongside an experienced Mentor. In their second year, they become a teacher with their own classroom while continuing to receive intensive mentoring.
> UTRs are distinctive in that they:
>
> • tightly weave together education theory and classroom practice
> • focus on Residents learning alongside an experienced, trained Mentor
> • group candidates in cohorts to cultivate professional learning community and foster collaboration
> • build effective partnerships among school districts, higher education institutions, and nonprofit organizations
> • serve school districts by recruiting and training teachers to meet specific district needs
> • support Residents once they are hired as teachers of record
> • establish and support differentiated career goals for experienced teachers
> (Berry et al., 2008, p. 5).

The main issue here concerns how to establish and nurture such programs around the country, and there are many details to manage. The original *Teacher Corps* experience suggests that such programs can be a potent source of recruits, but the real questions concern the conditions of work in the schools, the kinds of support that novices receive, the bridges and boundary-spanning positions that must be built between districts and universities, and the like. As a shared enterprise, teacher preparation can easily reduce to a low priority for partner institutions, and so be poorly managed and maintained. Federal funds may be useful in launching such efforts, but history teaches that such arrangements wither when the funding ends. This suggests that UTR grantees demonstrate how such programs will be continued and institutionalized beyond receipt of the initial grants. One option to be explored is P-20 funding systems that could build in support for partnerships

across the three sectors of early childhood, K-12 schooling, and post-secondary education.

As the federal government moves forward with the Teacher Residency idea under the new HEA, program regulation and oversight should review past efforts of this kind and establish careful tracking systems to gather data on program implementation and impact. As well, ED might also establish a technical assistance and training operation to support the development of these programs in high-need districts and schools. Already an Urban Teacher Residency Institute has been founded, and the National Council for the Accreditation of Teacher Education is considering development of program standards for UTRs. These are promising developments, but this innovation will be successful only if it serves as one part of an overall human resource strategy managed by districts in conjunction with enduring partner arrangements.

Finally, a new round of research, funded via a federal center or other means, is needed to conduct careful studies of teacher preparation and induction across a variety of programs. Research that compares programs has focused on gross features, leading researchers to conclude that variability among program types is as great as variability between types, and that such variability "makes no difference" to outcomes. Finer-grained studies are needed to understand "what works" under what conditions in the preparation and development of teachers. Our recommendation then is to back away from increasing federal accountability to engage the logical prior task of understanding what works best in teacher preparation.

The next round of federally supported research should move beyond "horse race" comparisons between, for example, "early entry" vs. "college recommending" programs to examine how program features contribute to teacher learning. Such features include, for example, the content of coursework, the nature of assignments, the instructional practices that are used, and how practical experience in schools is directed and managed. Needed is research that explores how practices in teacher preparation contribute both to short- and long-run teacher effectiveness.

Regarding teacher development. Federal policy currently makes an investment in the early years of teaching by supporting mentor and induction programs. What seems clear is that simply pairing a new teacher with a mentor is unlikely to exert powerful effects on retention. Rather, supports must include sheltered placements, no out-of-field teaching, sufficient planning time, faculty-wide collaboration and teamwork, and others. Federal policy then might expand the conception of "support" for new teachers to include a broader array of human resource strategies and practices. Support for and development of new teachers is a very high priority as it bears directly on the retention of qualified teachers in high-need schools. Needed are a full set of supports that include actions by the principal, enhanced working conditions, and good colleagueship. Consequently, federal support should be directed broadly to such conditions rather than narrowly to particular programs that may operate in unsupportive schools.

Some $3 billion in funding now flows to states and districts through Title II of ESEA. These funds currently are used for such purposes as class size reductions, principal and teacher professional development, and teacher recruitment activities. While some analysts call for new allocations of these funds together with more specific targeting to Title I schools and teachers **(note 4)**, the real issue concerns how to shape this investment to be more effective. Already, federal regulations direct PD around such features as alignment with state standards, focus on the content of instruction, and others, but evidence indicates that PD remains ineffective in many locales. Consequently, our recommendation calls for a new research and development center dedicated to the study of effective PD, with emphasis on uses of such funds in Title I schools. The research base to assist in the targeting and use of PD funds has yet to provide firm guidance.

The research also suggests that state policy plays a role in setting the stage for effective professional development by establishing clear standards for learning coordinated with assessments and curriculum materials. So the primary action is at state and local levels, but federal funds are an important resource, particularly in the current economic climate, when many states are struggling with budget shortfalls. The likely scenario will be cuts in professional development funding without federal support. Consequently we believe improved federal management should focus on better uses of ESEA Title II monies for professional development linked to progress in developing state policy systems. This should be a primary target for R & D funding, given the size of the federal investment.

Strategy 3. Innovate and Build Capacity for Accountability

Regarding NCLB and HEA. NCLB has undoubtedly drawn attention to grave inequalities in educational opportunities and outcomes, and this is a signal accomplishment. Views on its reauthorization run the gamut from "mending it" to "ending it" **(note 5)**. Taking up the teacher quality provisions of NCLB, we recommend a two-step response at this juncture. First, a strategic retreat from the regulatory role via a process of "zero-based accountability." By this we mean that the Education Department should conduct a careful review of (1) specific regulations; (2) their actual implementation; and (3) responses to regulation with an eye toward selective deregulation where the evidence indicates either that the regulations are serving no useful purpose or are producing adverse unintended consequences.

For school accountability a second appropriate role for the federal government is to sponsor innovation and testing of new accountability models, procedures, and measures that states and localities might use for program improvement and capacity-building. Needed is experimentation with a wider range of accountability practices, measures, and programs (Finn, 2008). We recommend then that a new School Accountability Fund be created to support experiments with a range of accountability models that might include, for example, use of school "audits," development of inspector systems, independent reviews by expert panels, and creation of a richer set of school process and outcome measures that avoid over-reliance on state standardized tests and the tracking of teacher qualifications that are not strongly related to competence on the job. Other nations have practices to study, fields other than education have models, and there is an expanded

menu of measures and assessments that hold potential for use in accountability systems (e.g. Rothstein, Jacobsen, & Wilder, 2008). While some state experiments in the 1980s-90s with performance assessments turned up difficulties, further innovation has been forestalled by NCLB. This is an area ripe for new ideas and better practices in the face of the possibilities that are available.

In light of renewed interest in teacher evaluation, especially around uses of value-added models, we recommend that the federal government establish a competitive grants program to develop and study new methods of teacher evaluation that include experiments in combining multiple sources of information on teaching and its outcomes. We caution against simple uses of value-added methods in the evaluation of teaching, as some analysts now are recommending. Rather, teachers should be evaluated based on a range of indicators that might include principal ratings, classroom observations, evidence of student learning (including but extending beyond standardized tests), and others. Planned variation experiments are needed in this area, and only the federal government is in position to sponsor such work.

Strategy 4. Expand Uses and Kinds of Incentives

Already, plans are underway with continued federal support from the Teacher Incentive Fund, and the R & D community is poised to study these developments **(note 6)**. But school working conditions also are critically important to the central goals of teacher policy, particularly recruitment and retention of teachers for high-need schools (King & Roelke, 2009). As we described, working conditions are an elusive target for policy, as these include such things as principal leadership and professional community among teachers, teaching loads, appropriate assignments, and others. Policies that exert influence are fine-grained, located in the decisions and actions taken by administrators at district and school levels. But in light of the importance of the non-monetary aspects of teacher's work, we recommend then that the federal government create a new initiative aimed at enhancing school working conditions in support of teachers and teaching. If a Teacher Incentive Fund can launch and study complex innovations, then a Teacher Working Conditions Fund, targeted to Title I schools, could pursue parallel objectives. The federal government should supply leadership in advocating the importance of working conditions in the development of the teacher workforce.

The National Board for Professional Teaching Standards now has been studied and, by and large, the results indicate that board certification is a signal of teacher effectiveness. Because few measures of qualifications currently have unambiguous support from research, we consider the NBPTS to be a particularly important innovation in U.S. education. We recommend that the federal government sponsor greater extension and use of the NBPTS in incentive plans, staffing arrangements, and efforts to place highly qualified teachers in high-need schools. Some districts such as Los Angeles, CA, and Fairfax County, VA, together with states such as North Carolina have shown the way, but more widespread and aggressive support for national board-certified teachers now seems warranted.

Strategy 5. Study Effects of Teacher Qualifications Policy

The federal government's forays into underwriting teacher qualifications have suffered from unstable political preferences and priorities. The NBPTS looks to be a permanent addition to the Nation's standard-setting arsenal in teaching, and to have developed the most careful—and carefully studied—set of standards and assessments for teaching. But rivals have emerged—such as the Passport to Teaching—that also have attracted federal support, despite the lack of evidence in favor of such minimal qualification. At this juncture, the federal government's primary role should be to invest in research and development that examines the range of claims made for a variety of approaches to standards. If standards policy is to become "evidence-based," then the most appropriate role for the federal government is to support the careful accumulation and sifting of the evidence.

The ambit for qualifications policy research also should be extended. To date, the bulk of the research has simply examined whether particular qualifications are associated with student achievement, primarily in math and reading. New lines of research are developing measures of instructional quality (rather than teacher qualifications) for use in assessing teaching (see, e.g., Pianta & Hamre, 2009; Rowan & Correnti, 2009). Such work creates prospects for linking valid measures of instructional quality to teachers for purposes of evaluation, preparation and professional development, and accountability. Qualifications policy could utilize such measures as part of state licensure systems that extend into the first year of teaching to include performance measures (as some states such as California and Connecticut already are doing). States continue to develop licensure and certification policy, but lack the wherewithal to study the effects of new policy and to develop better measures of instructional quality. Here is where the federal government can play a key role in the future.

Strategy 6. Improve Policy Management and Coordination

Policy management and coordination needs improvement throughout the system. Cascading policies from federal and state levels require better overall management and coordination. Most critical is how district bureaucracies manage the teacher workforce and the development of human capital. What many large urban districts require are strategic plans that coordinate multiple policies around multiple functions including teacher recruitment, selection, placement, development, evaluation, reward, and retention.

At the same time, most states also have not advanced strategies for human capital development that assist in cultivating a state-wide teacher workforce. Many states currently lack capacity to effect such strategies, as State Departments of Education have been downsized and key personnel have been let go. The irony is that as more teacher policies have been developed, there is less capacity in state agencies to coordinate and implement such policy in effective ways.

Finally, the federal Education Department has had difficulty over the years in managing, monitoring, and studying teacher policies. GAO reports have consistently chided the Department for shortcomings along these lines, so there is need for better management at the federal level itself.

So problems of management and coordination exist at all three levels and across the levels of the education system. How might federal action work on these problems? First, an internal review at ED should be conducted with an eye to improved management of the range of teacher policies that the federal government currently supports. The outcome might be improved organization, better staffing, heightened coordination with policymakers on the Hill, or others. But we believe that federal teacher policy should be a top priority in the Department, necessitating better overall management of this function.

Second, states clearly require improved capacity to manage teacher policy. Here, federal funds from various sources should be concentrated on state capacity-building and strategic management around teacher policy, encouraging and monitoring state plans and programs. The federal government also can disseminate models of good practice as these have emerged in vanguard states; and allocate funds to study the effects of state policy systems on the three key federal policy goals. States should be encouraged to monitor improvements in these goals via improved data collection and tracking, and the federal government should develop a balance of incentives with regulations that encourage these state developments.

Finally, the federal government also can abet efforts to improve district operations around the teacher workforce. Such action already is underway, supported by private funding, but public funding is also needed to improve district capacity, especially where recruiting and retaining good teachers has proven difficult. Here a new targeted initiative should be developed that supplies funding to Title I districts for development of human resource management strategies. Such funds might be set aside out of current legislation or created as a new fund. The emphasis should be on R & D directed to improved human resource management at the district and school levels.

Strategy 7. Develop State and Local Information Systems

The federal government has a related role to play in supporting better information management systems at state and local levels. Computing technologies and other advances now create possibilities for collecting, analyzing, linking, and tracking a wide range of data that can be instrumental to policy development. Three streams seem most promising to track: dollars, students, and teachers. Individual level information on student achievement may be linked to teachers. Information on teacher qualifications may be linked to schools and districts. Fund allocations may be tracked to better equalize school budgets.

But we are at the dawn of building such systems at state and local levels. Some states and districts already have made strides, but many states lack the know-how, the capacity, or the political will. The development of such systems holds promise for leverage on all the

key goals of teacher policy. Equity goals involve tracking distributions of teaching resources and of funds. Excellence goals involve monitoring student achievement for a variety of purposes.

We concur with the Education Trust (2007) that a national effort is needed to fund such developments, to experiment with different configurations, to test new models, and to create capacity for the management and use of such information systems. Research and development is needed in conjunction with both state and district efforts. Already, the National Center on Education Statistics has supplied funding to the states for development of information systems, and the Data Quality Campaign (www.dataqualitycampaign.org), a non-profit organization, is contributing to efforts along these lines. To build on these early developments, a new federal initiative aimed at this priority should be launched. This might take the form, for example, of a new research center in conjunction with grants to states, regional agencies, and districts. This is a prime instance of an emerging priority in teacher policy that requires action at the federal level to stimulate developments at state and local levels.

But here a caution is warranted. Rather than advocating the development of such systems to increase detailed accountability, we propose instead that their use be oriented around better information for policy and program decision-making at state, district, and school levels. If such systems are linked to high-stakes accountability, the dangers of corruption are simply too high. The purpose should be better information for decision-making, rather than added accountability.

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Taken together, we believe these goals and strategies constitute a comprehensive approach to federal teacher policy that stands to achieve broad support. Funding for the various initiatives proposed might be secured through re-allocation of existing monies, set-asides in current programs, funds in newly- or soon-to-be authorized legislation, or new federal actions. With respect to accountability, these recommendations are conservative. With respect to innovation, research, and development, they are aggressive. The federal government, we have argued, should stimulate promising ideas, study alternatives closely, disseminate best practices, and supply wherewithal in the absence of state and local funding (e.g., around teacher professional development).

Appendix I: Policymaking and the Problems of Teaching

What problems with teaching might serve as targets for federal intervention? There are a range of problems and these are worth describing as one basis for policy assessment and development. Analysts have distinguished the following problems.

Features of the teacher labor market. One set of problems is related to the nature of teacher labor markets in America. Unlike other nations, whose central ministries of education direct national teacher labor markets, teacher labor markets in the United States are highly decentralized. Given pervasive patterns of school segregation by race and class

and unequal funding of schools, it is clear some schools have advantages over others in recruiting teachers. In general, schools serving white, middle class kids in affluent communities will have an advantage both in recruiting and retaining teachers. As well, research has demonstrated that teachers want to teach close to where they grew up and went to college. Communities that send a lot of students to nearby colleges will have a deeper talent pool to draw from than communities where fewer students attend college. Again, this gives affluent communities an advantage, while inner city and rurally isolated schools will have greater difficulty in getting good teachers.

Other problems associated with teacher labor markets also reveal the "systemic" nature of the difficulties. The sheer size of the labor market for teachers requires that teaching recruit a lot of college graduates each year (depending on changes in demand for teachers), many of whom have attractive opportunities in other fields. If teaching talent is defined in terms of the upper quarter or third of the academic ability distribution in college, how to recruit these most desirable college grads? Further, how to attract enough math and science teachers, teachers for English language learners and special education teachers? These are chronic shortage areas, in part because students with these backgrounds must forego considerable income in order to teach. In the past, many fields were closed to women and minority college grads, and this "blocked mobility" supplied a talent pool for teaching, where women and minorities were welcome **(note 7)**. Today, though, women and minority grads are able to make the same choices as their peers—business, medicine, engineering, IT and accounting, the law—to the disadvantage of recruitment to teaching. The earning power of teacher salaries has not improved much over the past 40 years, and teaching has actually lost ground in relation to the cost of living. Providing competitive salaries for a large public workforce is a continuing challenge.

One symptom of the teacher demand problem is that schools regularly assign teachers to classes for which they are unprepared. For example, a college physics major is assigned to teach 9th grade biology; or a history major must cover a geography class. Subject matter knowledge is universally regarded as important to good teaching, so the incidence of "out of field" teaching is problematic. Studies reveal high incidence of "out of field" teaching in priority fields like science and mathematics, and in the middle grades—the crucial transition years from elementary to high school. Resorting to "out of field" teaching tends to mask the true depth of the teacher recruitment problem and to undercut the quality of teaching in many classrooms across the country.

The mismatch between the increasing diversity of American students and the relatively homogenous teacher workforce is another problem. Many localities have overwhelmingly nonwhite student populations, while the teacher workforce remains largely white. There are various reasons to support recruiting for diversity, including preparation for teaching children with limited ability to speak English; children with a range of special needs; children in immigrant communities; and children from a variety of racial backgrounds. Increased student diversity calls for recruitment of teachers of diverse backgrounds, but the trend holds that teaching is white, middle class work. How to recruit for diversity then

is a major and distinctive recruitment problem for the teaching occupation, particularly in locales where student diversity is on the rise.

Age demographics are another factor in the labor market. As teachers from the baby boom generation begin to retire, demand for teachers over the next decade will steepen. The reserve pool, comprised of credentialed teachers not currently teaching for various personal and professional reasons, has always been an important source of supply, but there will still be a steady need for new teachers in the coming years.

The inequitable distribution of teachers. Using various measures of teacher quality, research reveals that qualified teachers are unevenly distributed across districts and schools in the U.S., mostly to the disadvantage of poor kids in poor schools. In order genuinely to pursue a policy goal like closing achievement gaps among groups of students, resources must be allocated fairly and targeted where needs are the greatest. Instead, poor students in poor schools are least likely to be taught by qualified teachers. Suburbs and small towns have had more success than inner cities at attracting and keeping teachers, but there are even differences among inner city schools. Recent studies, for example, reveal that some schools have much larger budgets than other schools in the same district when staff salaries are included—indicating that some schools have many experienced (and more costly) teachers, while others feature a revolving door of inexperienced teachers who transfer out as soon as possible.

What determines movement of teachers among schools and districts? One factor is personnel policy that favors seniority as the basis for teacher transfers. Seniority is a provision in many teacher contracts, and it has meant that teachers with the most experience quit the least desirable teaching positions, leaving difficult jobs for novice teachers who are typically the least well-prepared to manage the challenges of particular assignments. Another factor is the lack of support many new teachers receive in terms of their assignments, teaching schedules, and mentoring. Teacher preferences also play a role, and the research evidence suggests that teachers tend to leave schools with poor working conditions; schools that are poorly resourced and unattractive; schools filled with students who are not performing well; and, for white teachers, schools with minority children.

Some analysts have argued that teaching suffers less from an inability to recruit teachers than to retain them in schools where they are needed most. Attrition from teaching is high in the early years, a problem that better training, mentoring, and early support might alleviate, but the main issue is retention in high-need schools. Studies using proxy measures for quality such as test scores and college selectivity find that teachers with higher qualifications are more likely to leave than teachers with lesser qualifications (e.g., Boyd et al., 2005). More recent research, however, has found that teachers with lower student achievement are more likely to leave high-need schools (Boyd et al., 2007, September; Goldhaber, Gross, & Player, 2007; Hanushek & Rivkin, 2008). A commentator notes that, “One can easily imagine that ineffective teachers become disillusioned most readily and leave to find a more rewarding position or career” (Boyd, Lankford, & Wyckoff, 2008b, p. 544). Still, teacher churning in high-need schools is a

significant problem as the combination of teacher and student mobility undercuts conditions for steady improvement in teaching and learning (see Guin, 2004).

Problems with preparation and teacher professional development. Teacher preparation is another issue that both presents problems and promises solutions. The nature of preparation has drawn criticisms around such shortcomings as a lack of: engagement with the subject matter of instruction; quality experiences in the schools, mediated by seasoned mentors; preparation in responding to diversity among students; training in proven methods of literacy instruction; standards-based instruction; attention to assessment of student learning; and mentoring and induction in the early years of teaching. Professional development for teachers includes other critiques around matters such as brief duration, lack of opportunity to practice and integrate new knowledge and skills, and insufficient attention to the content of instruction. In addition, traditional university programs have not produced enough teachers ready and willing to teach in high-need areas such as inner cities and rural schools, so locales may produce a surplus of teachers yet have shortages in high-need schools and districts. How to prepare teachers for the locales where they are needed most and support their continued learning on the job is an ongoing problem.

Incentives in teaching. Critics argue that the incentives in teaching are both a main problem and a potential solution. One issue is that the uniform salary schedule does not offer higher salaries to attract teachers to shortage fields and to high-need schools. Another issue is that salary is not used as an incentive to reward performance; all teachers receive the same pay regardless of their effectiveness. And yet another issue is that salary and benefits are concentrated on the end of the teaching career, when higher starting salaries are needed together with greater rewards for teachers in their most productive years.

Incentives are also a potential solution to some of the problems of teaching. They can assist in recruiting new teachers; alleviating shortages; attracting and retaining teachers in high need schools; and boosting student learning by rewarding the best teachers. Policymakers have a variety of incentives to use, including extra pay, signing bonuses, housing incentives, and tuition assistance among others. Non-monetary incentives are also a possibility, as these might include, for example, improvements in working conditions, reduced class sizes, increased time for planning, and better support for non-teaching duties in schools.

Accountability in teaching. Associated with incentives are problems of accountability in teaching. The original accountability movement sought to hold teachers, schools, and districts accountable for student learning in the aggregate and as disaggregated by various student sub-groups. A combination of state and federal policy now includes measurable outcomes, sanctions, and incentives organized around student learning. More recently, accountability criticisms have focused on an expanded set of problems, including district and school responsibility for providing highly qualified teachers for all students; district and school responsibility for weeding out poor teachers; and new requirements that teacher training programs produce qualified graduates and place them in high-needs

schools. This new accountability particularly aims to work on the problems of "out-of-field" teaching and the inequitable distribution of teachers by requiring districts, schools, and IHEs to address these problems.

But many observers claim that there are simply too many ineffective teachers in the schools with no reliable means to improve their performance, counsel them out, or dismiss them. Principals are not qualified to conduct meaningful evaluations of teachers; peer evaluation is restricted to a few districts; tenure periods are too short; and due process guarantees included in teacher contracts make dismissal proceedings too costly. Good principals can pressure ineffective teachers to leave their schools, but often those teachers transfer to other schools with no net benefit to student learning.

Accountability increasingly responds to perceived inadequacies of teacher education. While program standards might mandate features of programs, it is measurable outputs that matter. Colleges of education have not been held accountable for their graduates in such matters as pass rates on state licensure exams, nor have they been held to account in placing their graduates in high-need schools, in recruiting for shortage areas, or recruiting minority teachers. Greater accountability, it is argued, will place needed pressures on IHEs to be more responsive to these priorities in teaching.

Human resource management. Another problem concerns the ways that human resources may be mismanaged by schools and districts. Personnel functions such as recruiting, hiring, placing, mentoring, evaluating, and training teachers are poorly managed by many school bureaucracies, particularly in large urban districts that most require skillful management. Locating the problem with management shifts the focus from factors directly associated with teachers to what administration and management can do about teacher problems.

Teacher quality: a cross-cutting issue. Policy could work more effectively on these problems if there were valid and reliable methods for identifying teacher quality together with the means to produce it. But decades of research have not uncovered what makes teachers effective nor how to prepare teachers effectively. Research has demonstrated that some teachers are more effective than others at producing growth in student learning, but such teachers cannot be readily identified ahead of time on the basis of indicators such as the colleges they attended; their grade point averages or test scores; the courses they took in college; whether they have passed state licensure examinations or possess Master's degrees **(note 8)**. Teacher experience does matter, as teachers tend to increase in effectiveness over the early years and then reach a plateau thereafter. Some evidence also indicates that training and requirements matter in mathematics. Other evidence suggests that "bundles" of characteristics might matter—for example, a National Board Certified Teacher who majored in her subject field, with five years of experience, who has high test scores. But that leaves most of the field open to questions about preparation and qualifications. Furthermore, qualities of schools also determine teacher quality: observe the same teacher in a high- vs. low-performing school, teaching in or out of her field, and her "quality" is likely to be different. The idea of "teacher quality" is complicated by a variety of factors.

Teacher quality concerns cut across nearly all teacher policy areas, and will continue to emerge as a prime policy target for the current administration. It is clear that several questions persist: What should schools and districts recruit for; on what measures should teachers be screened for licensure; what distinguishes high and low quality preparation; on what basis should teachers be evaluated and rewarded; what's the best way to judge whether students have qualified teachers; on what basis should training institutions be held accountable; and how can the worth of teacher professional development be determined?

Appendix II. The Teacher Policy Divide

It is important to note that a fundamental disagreement—two sharply diverging viewpoints about the future of teaching in America—has emerged among policy analysts and advocates today. One perspective values reform aimed at building professionalism in the field of teaching. "Professionalizers" tend to align themselves with extended courses of training in universities coupled with well supervised "practice teaching" in the schools; a curriculum of teacher training grounded in research-based "best practices;" high-quality mentor and induction programs in the first years of teaching; rigorous licensure requirements that include but go beyond paper and pencil tests to performance assessment in the early years; competitive starting salaries for teachers; advanced certification for master teachers, based on the National Board for Professional Teaching Standards (NBPTS); high-quality professional development; teacher leadership positions in schools and districts; and career-long commitments to teaching. Undergirding this model is the assumption that teaching is complex work whose accomplishment requires a high degree of knowledge and skill cultivated through years of training and experience. In this view, the profession should exercise a substantial role in policymaking, particularly around standard-setting, and teachers should have influence over many matters in their schools. Policymaking at state and federal levels often supports professionalism and its aspirations.

Over the years, critics have mounted challenges to these ideas by questioning if much "pedagogical" knowledge is needed to teach well or if university coursework usefully prepares teachers. In turn, doubts about whether elaborate, complex licensure requirements bear much relationship to good teaching begin to challenge contemporary notions of teaching as a profession at all. More recently these criticisms have been joined to a set of policy prescriptions that now contend for influence. What has been termed the "deregulationist" or market-oriented approach (Cohen-Vogel & Hunt, 2007) advocates policy that: opens up entry to applicants who demonstrate solid subject matter knowledge and good general intelligence; develops many pathways into teaching that extend beyond the traditional universities to recruit nontraditional applicants; reduces licensure requirements; reengineers incentives to reward actual performance and to meet longstanding teaching shortages; replaces teacher tenure with merit-based evaluation systems; emphasizes content knowledge in teacher training and ongoing professional development; visits greater outcomes-based accountability on teacher training programs; promotes short stays in teaching to attract highly qualified college grads; allows school

principals to select teachers from expanded pools of applicants; and hooks all of these changes to the promise of charter schools and of school choice in general. This model assumes that good teaching relies primarily on a solid academic background, good knowledge of the subjects taught, and a small amount of knowledge about teaching itself that can be acquired quickly through experience on the job. In this view, schools should have the freedom to select teachers once applicant pools have been expanded and will make good choices if given the opportunity.

These two camps also differ around the question of how to judge good teaching. The availability of data, high-speed computing, and new statistical models have opened the possibility of evaluating teaching on the basis of growth in learning of individual students over the course of a year in a teacher's classroom. Though this development creates the prospect that such information may provide a reasonable basis for judgments about teaching, no reasonably complex work may be evaluated strictly on the basis of outcomes alone. Rather, competence on the job is determined by a combination of judgments about the practice itself together with measures of important outcomes. "Professionalizers" make the case for such a combination, while "deregulationists" prefer to rely on these "value-added models" of student learning as a way out of the problems of teacher evaluation. This issue is likely to remain critical to the development of future teacher policy, because it affects so many issues, including pay for performance, evaluation for tenure, teacher assignments, program accountability, professional development, and others.

Notes

1. This paper cites three recent studies using randomized clinical trials to explore effects, respectively, of comprehensive induction programs, alternate teacher preparation programs, and an early literacy professional development program. While all three studies found few significant differences between the treatment and control groups, caution is warranted in interpreting the results. As some analysts have noted, the studies sampled schools with concentrations of poor and minority students, where the overall achievement across groups was low, indicating that powerful interventions have yet to be tried. Further, questions have also been raised about the actual differences among teachers in the groups that were compared. For a review of these issues, see Viadero, 2009, April.

2. As Goldhaber (2008, November) indicates, "pipeline" approaches that generate and prepare new recruits for hard-to-staff schools may be preferable to plans that pay teachers for such assignments. Using financial inducements creates a range of problems, and the history of such efforts is not promising.

3. Some analysts (e.g., Peterson & Nadler, 2008) distinguish "genuine" from "symbolic" alternative certification to indicate requirements that bypass traditional university programs to facilitate eased entry into teaching. We reject this position because it is unlikely to meet the standard of safe practice. We favor responsible innovation in teacher preparation, and that means prudent standards for preparation.

4. Rotherham (2008) recently has drawn attention to the lack of accountability, focus, and results in the use of these funds by districts and states, and has advocated a greater set-aside of Title II monies for competitive grants around a more tightly specified set of activities that includes, for example, incentives to teach in hard-to-staff schools, alternative teacher pay plans, and better teacher evaluation systems. His analysis regards the professional development activities currently funded by Title II as "low leverage" in comparison to his preferred alternatives, but there is little evidence to distinguish high- from low-leverage activities associated with human capital development.

5. The Education Trust's (2007) recommendations favor better targeting and more stringent federal oversight. They want to see further regulation of teacher quality and better reporting from districts and states to ensure that the intent of NCLB is being realized. In this view, NCLB provides a useful and necessary regulatory framework. An alternative view has been advanced by Petrilli (2009) who argues that NCLB has proven to be a massive federal overreach, not least around the HQT provisions. Rather than increasing detailed regulations, the federal role should concentrate on equalizing funding to schools so that poor schools are actually receiving their fair share, something that current fiscal policy at federal, state, and local levels does not provide. Local decisions should drive school staffing, but within a broad framework that ensures poor schools are fully funded.

6. Some analysts have proposed the use of experimental and quasi-experimental designs to pin down incentive effects (see Glazerman & Mathematica Study Group, 2006), and such work should continue in the next administration. Pay-for-performance plans are one among a number of compensation alternatives that should be developed and studied. Other options orient additional pay around advanced positions, skills development, and advanced certification (see Prince, 2003 for review of compensation strategies). Districts are launching a variety of experiments with federal and other funds, and these should be studied carefully for their effects on a range of outcomes.

7. One recent study (Gitomer, 2007) has found that in some measures of academic ability, entering teachers (2002-05) are stronger than in years past. One possible policy effect is the requirement that middle grades teachers be qualified in their subject areas to meet HQT requirements. In this sample, scores on PRAXIS II (tests of professional knowledge) declined, but the demands of testing requirements increased over these years. The author concludes that, "Taken together, the study's findings suggest that recent policy initiatives have helped improve the quality of the teacher pool as measured by SAT scores and college grades" (p. 3).

8. Research has found no relationship between MA degrees and student outcomes, calling into question the investment in such degrees that is built into teacher salary schedules. But since MA degrees include a wide

range of programs, many unrelated to teaching, this is not surprising. One policy option then would be to establish state requirements for MA degrees that concentrate coursework on improvements to teaching.

References

Abelman, C., & Elmore, R., with Even, J., Kenyon, S., & Marshall, J. (1999). *When accountability knocks, will anyone answer?* CPRE Research Report Series RR-42. Philadelphia, PA: The Consortium for Policy Research in Education, University of Pennsylvania.

Achilles, C. (1999). *Let's put kids first, finally: Getting class size right.* Thousand Oaks, CA: Corwin Press.

American Federation of Teachers. (2006). *Building minds, minding buildings: Turning crumbling schools into environments for learning* Washington, DC: Author.

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

Arfin, D. (1986). The use of financial aid to attract talented students to teaching: Lessons from other fields. *Elementary School Journal, 86*(4), 405-424.

Ballou, D. (April 22-24, 2008). Test scaling and value-added measurement. Paper presented at the National Conference on Value-Added Modeling, Madison, WI.

Becker, B., Kennedy, M., & Hundersmarck, S. (2003). Communities of scholars, research, and debates about teacher quality. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

Berry, B., Montgomery, D., Curtis, R., Hernandez, M., Wurtzel, J., & Snyder, J. (2008, August). Creating and sustaining urban teacher residencies: A new way to recruit, prepare, and retain effective teachers in high-needs districts. Aspen Institute and Center for Teaching Quality. Retrieved September 1, 2008 from http://www.teachingquality.org.

Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). Explaining the short careers of high-achieving teachers in schools with low-performing students. *American Economic Association Proceedings, 95*(2), 166-171.

Boyd, D., Grossman, P., Lankford, H., & Wyckoff, J. 2007, September. Who leaves? Teacher attrition and student achievement. Retrieved March 23, 2009 from http://www.teacherpolicyresearch.org

Boyd, D., Lankford, H., Loeb, S., Rockoff, J., & Wyckoff, J. (2008a). The narrowing gap in New York City teacher qualifications and its implications for student achievement in high-poverty schools. *Journal of Policy Analysis and Management 27*(4), 793–818.

Boyd, D., Lankford, H., & Wyckoff, J. (2008b). Increasing the effectiveness of teachers in low-performing schools. In H. Ladd & E. Fiske (Eds). *Handbook of Research in Education Finance and Policy* (pp. 535-550). New York: Routledge.

Bruno, J. (1986). Teacher compensation and incentive programs for large urban districts. *Elementary School Journal, 86*(4), 425-448.

Bruno, J., & Negrete, E. (1983). Teacher wage incentive programs. *Urban Review, 5,* 139-149.

Cantrell, S., Fullerton, J., Kane, T., & Staiger, O. (2008, June). *National Board Certification and Teacher Effectiveness: Evidence from a Random Assignment Experiment.* Washington, DC: National Board for Professional Teaching Standards.

Center on Education Policy. (2007, August). *Implementing the No Child Left Behind teacher requirements.* Washington, DC: Author.

Cohen-Vogel, L. (2005). Federal role in teacher quality: "Redefinition" or "policy alignment?" *Educational Policy, 19*(1), 18-43.

Cohen-Vogel, L., & Hunt, H. (2007, November). Governing quality in teacher education: Deconstructing federal text and talk. *American Journal of Education, 114*, 137-162.

Cohen-Vogel, L. & Smith, T. (2007). Qualifications and assignments of alternatively certified teachers: Testing core assumptions. *American Educational Research Journal, 44*(3), 732-753.

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.

Corwin, R. (1973). *Reform and organizational survival. The Teacher Corps as an instrument of educational change.* New York: John Wiley & Sons.

Desimone, L, Porter, A., Garet, M., Yoon, K., Birman, B. (2002). Does professional development change teachers' instruction? Results from a three-year study. *Educational Evaluation and Policy Analysis, 24*(2), 81-112.

Desimone, L., Smith, T., & Frisvold, D. (2007). Has NCLB improved teacher and teaching quality for disadvantaged students? In A. Gamoran (Ed.), *Standards-based reform and the poverty gap. Lessons for No Child Left Behind* (pp. 89-119). Washington, DC: Brookings Press.

Earley, P., & Schneider, E. (1996). Federal policy and teacher education. In J. Sikula, T. Buttery, & E. Guyton (Eds.). *Handbook of research on teacher education (2nd Edition).* (pp. 306-319). New York: Simon & Schuster.

Education Trust. (2007, April). *Education Trust recommendations for No Child Left Behind reauthorization.* Retrieved December 10, 2008 at http://www2.edtrust.org/NR/rdonlyres/5A150FED-85FD-4535-8DF6-737A536EB0FB/0/EdTrustNCLBRecommendations41607.pdf.

Education Trust with R. Ingersoll. (2008, November). Core problems. Out-of-field teaching persists in key academic areas and high-poverty high schools. Washington, DC: Education Trust.

Special Issue: Class Size: Issues and New Findings. (1999). *Educational Evaluation and Policy Analysis, 21*(2).

Fenstermacher, G., & Richardson, V. (2005). On making determinations of quality in teaching. *Teachers College Record, 107*(1), 186-213.

Figlio, D., & Kenny, L. (2006, October). *Individual teacher incentives and student performance.* Washington, DC: National Center for Analysis of Longitudinal Data in Education Research, The Urban Institute.

Finn, C. (2008). Quality control in a dynamic sector. In F. M. Hess (Ed.). *The future of educational entrepreneurship* (pp. 161-180). Cambridge, MA: Harvard Education Press.

Garet, M., Porter, A., Desimone, L., Birman, B, and Yoon, K. (2002). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal* 38(3), 915–45.

Garet, M., Cronen, S., Eaton, M., Kurki, A., Ludwig, M., Jones, W., Uekawa, K., Falk, A., Bloom, H., Doolittle, F., Zhu, P., & Szternberg, L. (2008, September). 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.

Gitomer, D. (2007, December). *Teacher quality in a changing policy landscape: Improvements in the teacher pool*. Princeton, NJ: Educational Testing Service.

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.

Glazerman, S. & Mathematica Study Group. (2006). *Options for studying teacher pay reform using natural experiments*. Washington, DC: Mathematica Policy Research, Inc.

Glazerman, S, Dolfin, S., Bleeker, M., Johnson, A., Isenberg, E., Lugo-Gil, J., Grider, M., & Britton, E. (2008). *Impacts of comprehensive teacher induction: Results from the first year of a randomized controlled study* (NCEE 2009-4034). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Glazerman, S., Seif, E., & Baxter, G. (2008). *Passport to Teaching: Career choices and experiences of American board certified Teachers* (MPR Reference No.: 6215-030). Washington, DC: Mathematica Policy Research.

Goldhaber, D., Gross, B., & Player, D. (2007, September). *Are public schools really losing their "best?" Assessing the career transitions of teachers and their implications for the quality of the teacher workforce.* Seattle, WA: Center on Reinventing Public Education, University of Washington.

Goldhaber, D. (2008, November). *Addressing the teacher qualification gap. Exploring the use and efficacy of incentives to reward teachers for tough assignments.* Washington, DC: Center for American Progress.

Government Accounting Office. (1972). *Assessment of the Teacher Corps program* Washington D.C.: Author.

Government Accounting Office. (1992). *The Eisenhower math and science state grant Program.* Washington, DC: Author.

Government Accounting Office. (2002). *Activities underway to improve teacher training, but reporting on these activities could be enhanced.* Washington DC: Author.

Government Accounting Office. (2007). *Teacher quality: Approaches, implementation and evaluation of key federal efforts.* Washington D.C.: Author.

Grissom, H. (2008). But do they stay? Addressing issues of retention through alternative certification. In P. Grossman and S. Loeb (Eds.). *Alternative routes to teaching. Mapping the new landscape of teacher education* (pp. 129-158). Cambridge, MA: Harvard Education Press.

Grossman, P., & Loeb, S. (Eds.). (2008). *Alternative routes to teaching. Mapping the new landscape of teacher education.* Cambridge, MA: Harvard Education Press.

Guin, K. (2004). Chronic teacher turnover in urban elementary schools. *Education Policy Analysis Archives* 12 (42). Retrieved November 11, 2008 11 25 08 http://epaa.asu.edu/epaa/v13n18/.

Hammerness, K., & Reininger, M. (2008). Who goes into early entry programs? In P. Grossman and S. Loeb (Eds.). *Alternative routes to teaching. Mapping the new landscape of teacher education* (pp. 31-64). Cambridge, MA: Harvard Education Press.

Hanushek, E. A., & Jorgenson, D. W. (1996). *Improving America's school. The role of incentives.* Washington, D.C.: National Academy Press.

Hanushek, E., & Rivkin. (2008, November). *Do disadvantaged urban schools lose their most effective teachers?* Washington, DC: National Center for Analysis of Longitudinal Data in Education Research, The Urban Institute.

Hassel, B., & Sherburne, M. (2007). Cultivating success through multiple providers: A new state strategy for improving the quality of teacher preparation. In F. M. Hess, A. Rotherham, & K. Walsh (Eds.). *A qualified teacher in every classroom? Appraising old answers and new ideas* (pp. 201-222). Cambridge, MA: Harvard Education Press.

Humphrey, D., Koppich, J., & Hough, H. (2005). Sharing the wealth: National board certified teachers and the students who need them most. *Education Policy Analysis Archives, 13(18).* Retrieved November 25, 2008 from http://epaa.asu.edu/epaa/v13n18/.

Humphrey, D., & Wechsler, M. (2007). Insights into alternative certification: Initial findings from a national study. *Teachers College Record, 109*(3), 483-530.

Humphrey, D., Wechsler, M. & Hough, H. (2007). Characteristics of effective alternative certification programs. *Teachers College Record, 110*(1), 1-63.

Imig, D., & Imig, S. (2008). From traditional certification to competitive certification: A twenty-five year retrospective. In M. Cochran-Smith, S. Feiman-Nemser, & J. McIntyre, with K. Demers (Eds.). *Handbook of research on teacher education (3rd Edition).* (pp. 886-907). New York: Routledge/Taylor Francis Group.

Jepsen, C. & Rivkin, S. (In press). Class size reduction and student achievement: The potential trade-off between teacher quality and class size. *Journal of Human Resources*.

Johnson, S. (1986). Incentives for teachers: What motivates, what matters. *Educational Administration Quarterly 22*, 54–79.

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

King, J. R., & Roelke, C. (2009). Struggling to improve teacher quality in difficult-to-staff schools. NCLB and teacher policy. In J. R. King & Roelke, C. (Eds.). *High stakes accountability. Implications for resources and capacity* (pp. 141-171). Charlotte, NC: Information Age Publishing.

Kolbe, T., & King, J. R. (2009). Are we there yet? The distribution of highly-qualified teachers post-NCLB. In J. R. King & C. Roelke (Eds.). *High stakes accountability. Implications for resources and capacity* (pp. 93-116). Charlotte, NC: Information Age Publishing.

Kuenzi, J. (2008, January). *A highly qualified teacher in every classroom: Implementation of the No Child Left Behind Act* (RL33333). Washington, DC: Congressional Research Service.

Kuenzi, J. (2008a, March). *K-12 teacher quality: Issues and legislative action* (RL30834). Washington, DC: Congressional Research Service.

Kuenzi, J. (2008b, March). *Teacher quality enhancement grants (Title II Part A of the Higher Education Act): Overview and reauthorization issues* (RL31882). Washington, DC: Congressional Research Service.

Loeb, S., & Miller, L. (2006). *A review of state teacher policies: What they are, what are their effects, and what are their implications for school finance.* Stanford, CA: Institute for Research on Education Policy and Practice, School of Education, Stanford University.

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

McCallion, G. (2005, February). *Student loan forgiveness programs* (RL32516). Washington, DC: Congressional Research Service.

Murnane, R., & Cohen, D. (1986). Merit pay and the evaluation problem: Why most merit pay plans fail and a few survive. *Harvard Educational Review 56,* 1–17.

National Research Council. (2008). *Assessing accomplished teaching: Advanced-level certification programs.* Committee on evaluation of teacher certification of the National Board for Professional Teaching Standards. Hakel, M., Koenig, J., & Elliott, S. (Eds.). Washington, DC: National Academies Press.

O'Day, J. (2002). Complexity, accountability, and school improvement. *Harvard Educational Review, 72(*3), 293-329.

Odden, A., & Kelly, J. (2008, June). *Strategic management of human capital in education.* Madison: Center for Policy Research in Education, Wisconsin Center for Education Research, University of Wisconsin.

Peterson, P., & Nadler, D. (2008). What happens when states have genuine alternative certification? *Education Next*, *9*(1), 70-74.

Petrilli, M. (2009, January). Leaving my lapel pin behind. Is No Child Left Behind's birthday worth celebrating? *National Review Online*. Retrieved January 13, 2009from http://article.nationalreview.com/?q=ZGNiNTJhZjM5NmE5MDQ1NmViMjNjN2MxYWU5MzAyNjg

Pianta, R., & Hamre, B. (2009). Conceptualization, measurement, and improvement of classroom processes: Standardized observation can leverage capacity. *Educational Researcher 38*(2), 109-19.

Prince, C. (2003). *Higher pay in hard-to-staff schools. The case for financial incentives.* Lanham, MD: Scarecrow Press.

Provus, M. (1975). *The grand experiment. The life and death of the TTT program as seen through the eyes of its evaluators.* Berkeley, CA: McCutchan Publ.

Quartz, K. H., Thomas, A., Anderson, L., Masyn, K., Lyons, K. B., & Olsen, B. (2008). Careers in motion: A longitudinal retention study of role-changing among urban school educators. *Teachers College Record, 110*(1), 218-250.

Ramirez, H. (2004). The shift from hands-off: The federal role in supporting and defining teacher quality. In Hess, R., Rotherham, A., & Walsh, K. (Eds.). *A qualified teacher in every classroom? Appraising old answers and new ideas* (pp. 49-80). Cambridge: Harvard Education Press.

Rotherham, A. (2008, November). *Title 2.0: Revamping the federal role in education human capital.* Washington, DC: Education Sector.

Rothstein, J. (2008). *Student sorting and bias in value added estimation: Selection on observables and unobservables*. Cambridge, MA: National Bureau of Economic Research.

Rothstein, R., Jacobsen, R., & Wilder, T. (2008). *Grading education. Getting accountability right.* New York: Teachers College Press.

Rowan, B., & Correnti, R. 2009. Studying reading instruction with teacher logs: Lessons from the study of instructional improvement. *Educational Researcher 38*(2), 120-31.

Sanders, W. L., Saxton, A. M., & Horn, S. P. (1997). The Tennessee value-added accountability system: A quantitative, outcomes-based approach to educational assessment. In J. Millman (Ed.), *Grading teachers, grading schools: Is student achievement a valid evaluation measure?* (pp. 137–162). Thousand Oaks, CA: Corwin Press.

Sawchuk, S. (2008, September 17). New TEACH grants may come at a price for many recipients. *Education Week 28* (4), pp.18-19.

Silva, E. (2008). The Benwood plan: A lesson in comprehensive teacher reform. *Phi Delta Kappan 92(*2), 127-136.

Smith, T. M. (2007). How do state-level induction and standards-based reform policies affect induction experiences and turnover among new teachers? *American Journal of Education, 113*, (February), 273-309.

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

Steffensen, J., Fox, T., Bush, R., & Joyce, B. (1978). *Teacher Corps evaluation.* Omaha, NE: Center for Urban Education, The University of Nebraska at Omaha.

Strong, M. (2009). *Effective teacher induction and mentoring. Assessing the evidence.* New York: Teachers College Press.

Tekwe, C. D., Carter, R. L., Ma, C., Algina, J., Lucas, M. E., Roth, J. et al. (2004). An empirical comparison of statistical models for value-added assessment of school performance. *Journal of Educational and Behavioral Statistics, 29*(1), 11–36.

Tyack, D., & Cuban, L. (1995). *Tinkering toward utopia*. Cambridge, MA: Harvard University Press.

U.S. Department of Education. Undated. *Improving teacher quality in U.S. school districts. Districts' use of Title II, Part A funds in 2002-2003* (Policy and Program Brief). Washington, DC: Author.

U.S. Department of Education, Office of the Under Secretary, Planning and Evaluation Service. 1999. *Designing effective professional development: Lessons from the Eisenhower program*. Washington, DC: Author.

U.S. Department of Education, Office of the Deputy Secretary, Policy and Program Studies Service. (2004a). *A descriptive evaluation of the federal class-size reduction program: Final report*. Washington, DC: Author.

U.S. Department of Education, Office of the Under Secretary. (2004b). *Partnerships for reform: Changing teacher preparation through the Title II HEA Partnership Program. interim report executive summary* (document #2003-8). Washington, DC: Author.

U.S. Department of Education, Office of Communications and Outreach. (2007a). *Guide to U.S. Department of Education Programs.* Washington, D.C.: Author.

U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service. (2007b). *State and local implementation of the* No Child Left Behind Act*, Volume II—Teacher Quality Under* NCLB*: Interim report.* Washington, DC: Author.

U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service. (2007c). *Transition to teaching program evaluation: An interim report on the FY 2002 grantees*. Washington, DC: Author.

Viadero, D. (2009, April 1). 'No effects' studies raising eyebrows. *Education Week 28*(27), pp. 1, 14-15.

Vigdor, J. (2008). Scrap the sacrosanct salary schedule. *Education Next,* Fall, 36-42.

Walsh, K. (2007, April). *Steps that Congress can take to improve teacher quality—without overstepping its bounds.* Washington, DC: National Council on Teacher Quality.

Wayne, A., Yoon, K. S., Zhu, P., Cronen, S., & Garet, M. (2008). Experimenting with teacher professional development: Motives and methods. *Educational Researcher, 37*(8), 469-479.

Wilson, S., & Youngs, P. (2005). Research on accountability processes in teacher education. In K. Zeichner & M. Cochran-Smith (Eds.). *Studying teacher education. The report of the AERA panel on research and teacher education* (pp. 591-643). Mahwah, NJ: Lawrence Erlbaum Assoc.

Xu, Z., Hannaway, J., & Taylor, C. (2008, March). *Making a difference?: The effects of Teach for America in high school*. Washington, DC: National Center for Analysis of Longitudinal Data in Education Research, The Urban Institute.

Yoon, K., Duncan, T., Lee, S., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues and answers report, REL 2007—No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Educational Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.

Zabalza, H., Turnbull, W., & Williams, C. (1979). *The economics of teacher supply*. Cambridge, England: Cambridge University Press.

Zeichner, K., & Hutchinson, E. (2008). The development of alternative route certification policies and programs in the United States. In P. Grossman & S. Loeb (Eds.). *Alternative routes to teaching. Mapping the new landscape of teacher education* (pp. 15-30). Cambridge, MA: Harvard Education Press.