

*Lessons for Policy Design and Implementation:
Examining State and Federal Efforts to
Improve Teacher Quality*

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Legislative and programmatic efforts to improve teacher quality have become a major focus of state policymaking in recent years. States have employed numerous strategies in response to concerns about the preparation, quantity, and capacity of the teacher workforce. Quite often, the resulting state programs have focused on one or more of the following areas: teacher recruitment, induction, retention, certification, and compensation. These policy initiatives take various forms across states, as each state responds in the context of its specific demographic and economic circumstances.

This intensified focus on teacher quality at the state level can be viewed as a predictable consequence of the standards-based reform initiatives that began in the 1980s. To date, the reform movement has progressed through three stages (Hirsch, Koppich, & Knapp, 1999). The first focused on the establishment of more rigorous learning standards for students. The second centered on improving structural features such as raising graduation requirements, increasing teacher salaries, and promoting site-based management at individual schools (Baker & Linn, 1997). The third and current stage focuses on the classroom teacher. The higher expectations for students, the statewide assessments, and the accountability programs that are part of virtually all state reform programs have prompted significant questions about whether or not teachers have the necessary knowledge, skills, and supports to accomplish the goals of education reform (Thompson & Zeuli, 1999).

At the federal level, Title II of the No Child Left Behind Act of 2001 (NCLB) requires each state to ensure that all of its teachers in core academic subjects are “highly qualified” by the end of the 2005-06

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school year. NCLB has also placed other new pressures on states, districts, and schools by mandating the immediate creation of state standards and the implementation of annual testing for third through eighth grades by the 2005-06 school year. States, districts, and schools will be expected to make "adequate yearly progress" (defined as improvement of test scores) in order to receive federal funding. For consistently failing schools with large numbers of high-poverty students, NCLB imposes strict accountability measures, thereby further increasing the pressures on schools and teachers to produce results.

Although research documenting the significance of teacher quality has informed these state and federal policies, there is limited agreement about what it means to be a "highly qualified teacher." However, many studies have examined the relationships between aspects of teacher quality and student achievement. For example, Ferguson's (1997) Texas study found that teachers' performance on the Texas Examination of Current Administrators and Teachers, a state licensing exam administered to all teachers in 1986, had a significant positive relationship with student achievement on the Iowa Test of Basic Skills. Goldhaber and Brewer (1997) documented a relationship between teachers' undergraduate degrees in mathematics and science and the achievement of tenth-grade students and concluded that teachers' subject-specific training had a significant impact on student performance.

In a recent review of numerous empirical studies, Rice (2003) examined the relationship between student performance and five teacher attributes: experience, preparation, certification, coursework, and performance on teacher tests. Rice's analysis of the literature revealed a positive relationship between experience and teacher performance that is more notable during the early years of teaching. For teacher preparation, she found that a master's degree in mathematics or science had a positive effect on student learning in high school math and science, with mixed results for the elementary school level. Rice reported a positive relationship between teacher certification in mathematics and high school students' mathematics achievement. Teachers' coursework in content areas taught combined with coursework in pedagogy were positively associated with student outcomes, with the effect of subject matter-specific coursework being more pronounced at the high school level and the effect of pedagogical coursework being more uniform across grade levels. And finally, she reported that teacher performance on tests of verbal and literary abilities showed a more consistent positive association with student performance than did teacher performance on tests of basic skills. Rice also noted, however, that the

empirical work to date does not examine the interactions among the many attributes and dimensions of teaching, leaving many important questions regarding the effect of teacher attributes on student learning unresolved.

These and other examinations of the influence of teacher quality typically focus on individual attributes of teachers and rely on a range of proxy variables (e.g., verbal ability, degrees earned, certification status, student test scores, years of experience). The result is that although these studies underscore the importance of paying attention to the teacher workforce in efforts to improve student achievement, they stop short of offering a full account of teachers' capacities and performance. As measures of teacher quality, these commonly used variables focus too much attention on what is easily counted, are only loosely connected to instructional quality, and, to a large extent, ignore how teachers apply their skills and knowledge in classrooms (Plecki, 2000). In other words, the extent to which these variables are valid and useful depends on how closely teachers' abilities, education, and training connect with the knowledge and skills that are needed and used in school and classroom contexts.

The Center for the Study of Teaching and Policy (CTP)¹ has advanced an approach to teacher workforce development that considers two aspects of teacher quality in addition to the individual attributes of teachers. According to the perspective that CTP has adopted, teacher workforce development policies need to address the quality of the teacher, the quality of teaching, and the quality of support for teachers' work simultaneously. In this approach, *quality of the teacher* refers to the individual attributes of a teacher, such as credentials, test scores, subject matter knowledge, pedagogical knowledge, and amount of experience in the profession. *Quality of teaching* refers to the quality of the individual teacher's classroom instruction and interaction with students and other features such as curriculum and instructional materials and policies regarding assessment and accountability. *Quality of support for teachers' work* refers to the quality of the variables that make up the teacher workplace such as student/teacher ratios, the assignment of students to individual classrooms, the levels and types of resources available to support instruction, the quality of school leadership, and the opportunities available for ongoing professional learning. As shown in Figure 1, these three aspects of teacher quality interact with one another, and together they are a key influence on student learning. Subsequent references to *teacher quality* in this chapter encompass all three aspects.

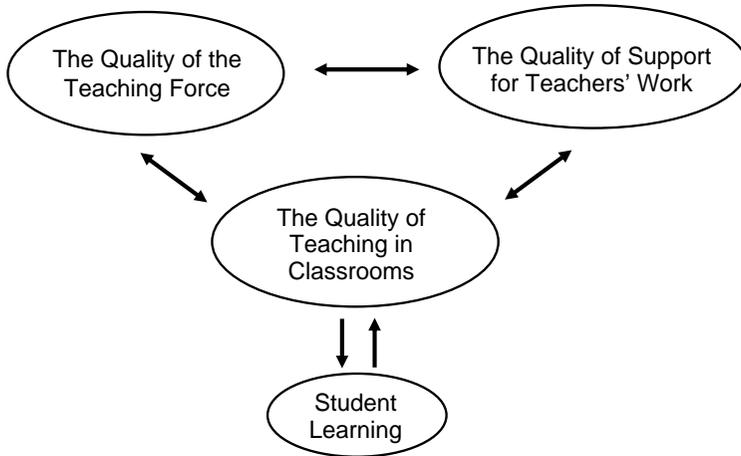


FIGURE 1

Three quality concerns confronting state policy and educational reform.
 Source: Center for the Study of Teaching and Policy, University of Washington.

In some respects, the evidence to date does not support a wholesale elimination of current regulations and requirements for entry into the profession, yet the same empirical work also presents reason to question whether current policies and practices are sufficient to effect and sustain high-quality teaching for all students. We argue that the quality of individual teachers, the quality of the teaching that is present at the classroom level, and the quality of support for teachers' work inside schools and classrooms are essential components of teacher workforce development and that state and federal policies that focus on all three are more likely to result in coherent and effective programs. Although we recognize that some elements of teacher workforce development policies pose more complex and problematic design challenges than others and that developing and implementing policies aimed at improving teacher quality require attention to matters of coherence, sustainability, flexibility, accountability, and equity, we assert that state and federal policies can and should promote each of these three aspects of teacher quality.

In an analysis of state policy efforts to date, however, we have found that most have focused only on the attributes of the individual teacher and tend to concentrate on teacher recruitment and induction without sufficient attention to professional growth throughout teachers' careers. We also found that state policy strategies have suffered from both a lack of sustained focus and inadequate financial investment.

Finally, we contend that current state policy strategies do not sufficiently address the equity issues that are intertwined with the provision and support of a high-quality teacher workforce.

As compared to state policy strategies, we found the recent federal approach to improving teacher quality to be even more narrowly construed, sending a message that the policy problem can be addressed by a process of testing and inspection that focuses almost exclusively on the individual attributes of teachers. Although the federal approach may call attention to the need for improved teacher quality, the narrow framework offered by the NCLB legislation is likely to create conditions that may pressure states to alter their policy strategies accordingly. Specifically, emerging evidence about both the teacher workforce and the federal mandates suggests that a number of states will either be unable to comply with Title II or be compelled to redirect their policy efforts in the area of teacher quality. Furthermore, the federal policy assumes nationwide agreement about the attributes of highly qualified teachers, but the policy logic of state reforms addressing teacher workforce development varies.

We argue that the most promising efforts in the design of teacher workforce development policies recognize the multiple levels of a nested system—from the vantage points of individual teachers, to networks of teachers, to schools, to school systems, to broader social and policy contexts. Furthermore, because improving teacher quality is not simply a matter of training individual teachers but also of developing groups of teachers, we acknowledge that there are limitations to what may be achieved through the mandate-oriented state and federal policies. More specifically, efforts to improve teacher quality are also shaped through small-scale networks supported through building- and district-level initiatives. In short, efforts to improve teacher quality are affected by the interactions between local, state, and federal policies. Consequently, state and federal policymakers need to consider strategies that recognize and address the variable capacities of local systems to support a quality teacher workforce.

To illustrate these points, we have divided this chapter into three parts. We first introduce conceptual frameworks for understanding state policies aimed at improving teacher quality and provide examples of the teaching policy environments in four states. In the second section, we provide an analysis of Title II of NCLB by exploring the recent history of federal teacher quality efforts and reviewing the 2002 Title II legislation and related documents. In the final section, we build on our analyses of state and federal efforts by discussing the

emerging critical issues in light of the pressures associated with the accountability measures posed by NCLB. We conclude the chapter with guidelines for enhancing the design of state and federal policies for improving teacher quality.

State-Level Policy Strategies to Improve Teacher Quality in an Era of Standards-Based Reform

How one views the development of policy strategies that can effectively improve teacher quality depends, to a large extent, on one's understanding of the nature of the endeavor. Part of the challenge policymakers face is ensuring that both the teacher and teaching are central to policy design. This requires some understanding of what "good teaching" is, how teachers learn to teach, and who should have voice in controlling the teaching profession (e.g., professional organizations or governmental bodies; state or local control). It also requires a recognition of the different kinds of teacher learning that need to be addressed throughout the different phases of a teacher's career (Feiman-Nemser, 2001). This extended and more complex view of teacher quality calls for differentiated but coherent responses and for an expansion of the means by which one evaluates the quality of teachers and teaching. In particular, measures in addition to traditional, input-oriented, labor-market variables such as years of experience, degrees, and clock hours spent in training (Plecki, 2000) are needed in order for policymakers to assess whether or not efforts aimed at improving teaching have been productive.

The flurry of activity at the state level calls for a careful analysis of the rapidly escalating teacher quality movement and its relation to standards-based reform. During the past decade, states not only have set more ambitious learning standards for students but also have enacted a variety of policies directed at improving the capacity of the teacher workforce to address those standards. Examples of common policy strategies employed by a number of states include upgrading teacher certification, establishing professional standards boards, intensifying recruitment and induction programs, requiring new types of teacher assessment, and approving alternative certification programs (Hirsch, Koppich, & Knapp, 1999).

From the vantage point of state policymakers, the terrain to be understood is broad, involving the politics of educational improvement, the orchestration of resources, the presence or absence of connections among bureaucratically separated programs and units, and the response of professionals at the level of practice. We maintain that the central

question for policymakers is, What can and should the state be doing to improve the quality of teaching, the teaching force, and the support for teachers' work? A framework for examining how states might respond to these three components is shown in Figure 2.

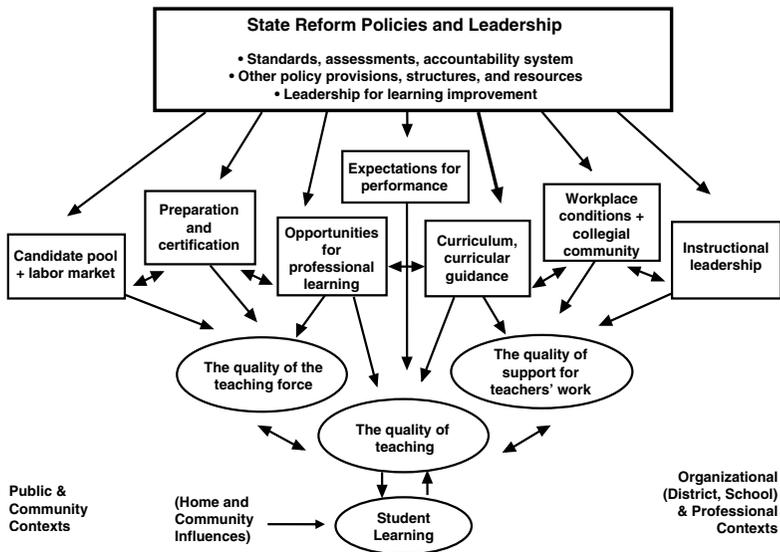


FIGURE 2

How state leadership and reform policies can affect teaching and learning.

Source: Center for the Study of Teaching and Policy, University of Washington.

Figure 2 indicates the various pathways by which states can develop and implement policies aimed at improving the teacher workforce. These policies can set in motion an array of activities—from influencing the pool of available teachers through recruitment, preparation, and certification policies to providing supports that enhance workplace conditions—that may assist in improving teacher quality. However, determining a course of action for state policy is more complicated than just selecting a set of policy strategies, developing a timeline for implementation, and setting the level of resources that will be focused on the chosen approach. A critical aspect of state policy design is coherence. Policymakers must ask: Does the approach have the effect of creating a set of mutually reinforcing conditions that together support a comprehensive strategy that addresses the full continuum of workforce development needs?

Another important challenge is to design policy strategies that recognize the value of both “top-down” and “bottom-up” perspectives on policy and that allow for adjustment based on a continuous feedback cycle. Improvement of any aspect of teacher quality requires a range of supports and an acknowledgment of the opportunities, limits, and realities at both the system and the classroom levels (Shields & Knapp, 1997). Prior research indicates that state policies are adjusted and adapted by local actors as policy is turned into practice (Elmore & McLaughlin, 1988; McLaughlin, 1976). Others have noted both the importance and the difficulty of building local capacity and flexibility through state policy mechanisms (Fisk, 1999; Spillane & Thompson, 1997; Timar, 1997). As observers of Connecticut’s teacher induction program note,

We need to study programs at their level of implementation because this is where programs turn policy into practice. We need to learn what is missing, where the loose connections lie and what beginning teachers are actually able to handle. (Feiman-Nemser et al., 2000, p. 60)

It is also important to note that any state action designed to improve teacher quality takes place within a variety of public, community, organizational, and professional contexts. These contexts include public controversy about the appropriate role of testing in public education; ideological tensions about how knowledge, skills, and concepts should be represented in standards; the extent to which there is a shortage of qualified teachers; and the relative influence of professional organizations, unions, and teacher voice in shaping policy. The ability of states to develop coherent policies regarding teacher workforce development may also be influenced by policymakers’ beliefs about whether supporting the ongoing work of teaching is best accomplished at the state or the local level. When states direct the majority of their efforts toward initial recruitment and certification, it reflects a belief that once teachers are certified, they are fully trained to effectively address the full range of challenges that are present inside schools and classrooms. However, ensuring that an adequate supply of highly qualified teachers enter the workforce is not synonymous with developing the profession, nor does it guarantee that teachers will be assigned to work in schools where access to highly qualified teachers is most needed.

As shown in Figure 2, we assert that states have a wide range of policy options to consider when designing strategies for improving teacher quality, and the choices that they make set the stage for the way that policies are formulated and enacted. Given the different contexts in

which states are situated, it is not surprising that they vary in their specific approaches to developing the teacher workforce. Some approaches embrace broader conceptions of teacher development, from initial recruitment, preparation, and induction to providing ongoing curricular and instructional guidance, and finally, to continuous improvement of workplace conditions and enhancement of instructional leadership. States also make decisions about how fiscal and human resources will be allocated to support policy decisions and whether or not policy strategies are aimed at improving the workforce in ways that reduce existing inequities within districts, schools, and classrooms. Although the focus of this chapter is on policy *actions*, these actions take place in a context of conditions that, together with those actions, constitute an important *environment* in which teacher workforce development policies are designed, enacted, and revised.

Differences of Environment: A Look at Policy Efforts in Four States

To compare how state workforce development policies have been crafted in distinctly different policy environments, we have examined policy efforts in four states: New York, California, North Carolina, and Washington. Each was part of a longitudinal study conducted by the Center for the Study of Teaching and Policy.² The primary selection criteria for inclusion in the study were the active pursuit of a reform agenda and an attempt to link workforce development policies with their overall education reform efforts. The states were also selected for their differences in size, student demographics, political culture, and governance structures. They represent a variety of regions across the country. And, although each state has developed specific approaches to improving teacher quality, they vary significantly in their methods of policy formulation, which aspects of workforce development they emphasize, and how they support policies over time. In this examination, we describe the conditions that helped to shape policies regarding the improvement of teacher quality in each of the four states. We illustrate that a state's context must be considered in the development of sound policies. This is because each state context presents unique tensions and challenges that require thoughtful consideration if a coherent set of strategies is to be created. The intent of this analysis is not to determine whether these four states have succeeded or failed in their efforts but rather to explore how state approaches to workforce development might be enhanced.

New York. New York is a state of sharp contrasts, chief among them being the heterogeneity of its student population and the diverse

political, cultural, and economic features across the different regions of the state. There is an asymmetrical distribution of students among the state's school districts, with five sizable urban districts (New York City, Rochester, Syracuse, Buffalo, and Yonkers) and more than 700 small districts in suburban and rural areas. Sharp disparities exist in the economic circumstances of the student population, especially in the state's urban areas. Additionally, there has been a traditional political, cultural, and economic divide that separates upstate New York from the virtual city-state of New York City.

New York has a longstanding tradition of an activist state presence in educational affairs. Perhaps more so than any other state, New York vests a great deal of authority in its Board of Regents, which governs public K-12 and postsecondary education systems. Educational lobbies are strong, and teacher associations exercise considerable influence in educational policy deliberations. A Professional Standards and Practices Board, first convened in January 1999, represents a newly created governance arrangement associated with the state's teacher quality initiatives.

Building on a period of standards development that occurred in the early 1990s, the state enacted a full set of new learning standards in 1996 and followed that with the rapid design and deployment of new assessments keyed to those standards, more detailed curricular guidance related to the standards, and a redefinition of the stakes attached to assessment performance. In short order, two years later, the state enacted a wide-ranging teacher quality initiative, as described in the 1998 report *New York's Commitment: Teaching to Higher Standards*. This initiative left few aspects of the teacher development continuum untouched. State-level activity addresses incentives for teacher recruitment and retention, promulgates high standards for teaching, reforms teacher preparation, requires professional development plans, and ties teacher recertification to additional professional development.

The process of implementing these reforms has been intentionally rapid and pushed from the top of the system. The state's policy strategy has relied on consistency of message, a massive and quick communication effort, and regulatory pressures on the state's educational institutions and localities. A prolonged budgetary process in 1999 resulted in the delay of some timelines associated with the implementation of these teacher quality policies. For example, New York's mentor teacher program has been in place since 1986 and is administered through a competitive grant process. Funding for the program fell by 50% between 1998 and 2001. New York State modestly subsidizes the

fees teachers incur as applicants for certification with the National Board for Professional Teaching Standards. The state administers the Candidate Fee Subsidy Program, which uses federal funds, and the Albert Shanker Grant Program, which is primarily funded by the legislature. The Shanker awards reimburse NBPTS applicants up to \$2,000 for their application fees and provides an additional \$500 to LEAs to assist in paying for substitute teachers, travel, materials, and supplies for the candidate.

Consistent with its strong regulatory tradition, New York has emphasized speed, comprehensiveness, and high-stakes accountability in its policy approach. Although an impressive number of workforce development elements are included in this approach, challenges exist with respect to both building local capacities to respond to state policy requirements and fashioning state strategies that effectively address the highly urbanized settings as well as the suburban and rural contexts in the state. New York faces an additional, significant dilemma as a result of the recent court decision that found the state of New York to be responsible for addressing the inadequate education provided to students in the New York City school system. One of the inequities cited in this decision was the lack of highly qualified teachers in New York City. In fact, the majority of the state's teachers who have temporary or emergency credentials are working in New York City.

California. As the most populous and most racially and ethnically diverse state in the nation, California presents a unique set of economic, regional, political, demographic, cultural, and linguistic conditions that affect the quality of education in the state. Once considered a leader in educational innovation, California experienced a significant decline in fiscal support for schools that has been attributed to the 1978 passage of a property tax limit (Proposition 13) and the 1979 passage of a limit on state revenue growth (the Gann limit). Increased state control in education can be traced to a landmark school finance court case that mandated state responsibility for equalizing school funding (*Serrano v. Priest*). This increased control was enhanced by a former State Superintendent's pursuit of an active systemic reform initiative that began in the mid-1980s and featured the development of curriculum frameworks, a statewide assessment program, and professional development networks.

The state's reform trajectory was virtually halted in the mid-1990s due to pronounced political dissatisfaction with a new statewide assessment system that was quickly abandoned. Since that time, California

has struggled to establish a coherent set of policies regarding assessment. This may be attributed to the often contentious political environment surrounding state education policies. In recent years, the state has experienced several high-profile policy debates, including those regarding affirmative action and bilingual education. Adding to the complexity is the multitude of state agencies and offices that reign over the state education system. For example, unlike New York State with its single Board of Regents, California has four separate governing boards, each having responsibility for an aspect of the state's K-12 and postsecondary education systems. Friction among the various players and the lack of structure to unify the many competing interests both contribute to a fragmented system of governance.

Among the four states, California has the most acute teacher shortage, and the problem is spread throughout the state. The number of teachers with emergency credentials doubled from 1995 to 1998, and approximately two thirds of California school districts employ teachers with emergency credentials. The state has responded to this condition through a host of policies including intensified recruitment efforts, additional alternative certification processes, expanded loan forgiveness programs, and new paraprofessional teacher training programs and university internship programs.

Since 1992, the state has invested in support for the mentoring of beginning teachers through the Beginning Teacher Support and Assistance Program (BTSA). State officials estimated that BTSA was serving more than 20,000 beginning teachers in approximately 90% of the districts in the state in 1999-2000. Given the ever-growing number of first- and second-year teachers, however, the BTSA program has proven to be of insufficient scale to meet the needs of all of California's beginning teachers.

The California Mentor Teacher Program was established in 1983 and continued through the 1998-99 school year. It was replaced with the Peer Assistance Review Program, which assists teachers who are struggling with aspects of their performance evaluations through the provision of "consulting teachers." Districts are directed to set up a teacher-administrator peer review panel to select consulting teachers, review reports, and make recommendations to the school board about participants.

To date, California has focused more of its efforts on accountability provisions than on the development of comprehensive or coherent strategies. The state implemented an Academic Performance Index that provided a basis for evaluating individual school performances on

state tests relative to “comparable” schools and included provisions for performance-based rewards and sanctions. The shift toward accountability-focused policy initiatives has been accompanied by a diminished state-level focus on professional development. The state’s current efforts through reading and math professional development institutes are highly prescriptive and narrowly focused, aimed at imparting the same specific teaching skills to all participants.

California’s substantial 1996 initiative to reduce class size statewide significantly increased the need for qualified teachers, further exacerbating the state’s teacher supply problem. The class-size reduction program was implemented quickly and broadly, affecting kindergarten through third-grade classrooms throughout the state. In 1999-2000 alone, class-size reduction for K-3 was funded at \$1.5 billion. Although this significant investment in class-size reduction might be viewed as a form of support for enhancing workplace conditions, the speed with which this policy was implemented, combined with the uniform nature of the implementation across all schools, created additional equity concerns. A recent analysis of California’s class-size reduction initiative revealed that the increased demand for teachers that this wholesale class-size reduction created further exacerbated the inequities that already existed in the distribution of qualified teachers in high-poverty, high-need schools as compared to more affluent schools (Imazeki, 2003). Finally, the significant downturn in California’s economy in 2003 has raised concerns about whether or not the state will be able to sustain its current financial investment in teacher quality policies.

Washington. Washington State is smaller and more homogenous than California or New York. Washington residents are primarily white and middle class, though pockets of poverty and racial and ethnic diversity are rapidly growing. A cleavage between the heavily populated portions of the state in the greater Puget Sound area west of the Cascade Mountains and the primarily agricultural areas to the east of this natural land barrier also provides for a sharp intrastate contrast. The great majority of school districts are suburban or rural, leaving the urban school systems relatively isolated and poorly understood in public policy debates. Characterized by a longstanding political tradition of populism, the state has treated education as largely a local matter, and the state legislature and educational governance arrangements leave much to local discretion. However, one prominent exception to this tradition of local control can be found in the state’s aggressive attempts to equalize school financing beginning in the 1970s, resulting in the

state's assumption of full responsibility for funding basic education. In another departure from its decentralized tradition, Washington approved two voter initiatives in November 2000 that mandated state-wide education spending provisions for specified purposes such as class-size reduction and automatic cost-of-living increases for educators.

The state initiated its standards-based reform in 1993 with legislation supported by an alliance of business interests, the state teacher's union, the governor's office, and key legislative members. The reform called for the creation of ambitious student learning standards. Assessments tied to these new standards were then developed in a slow and deliberate way, with a gradual implementation schedule and multiple opportunities for teacher and community input into the development process. The focus of reform has been relatively narrow, however, and the state has been remarkably silent about how to teach to meet the new standards. Further evidence of this gradual implementation schedule can be found in the state's prolonged deliberations about the form of its accountability system, intended to provide rewards, supports, and sanctions for schools and school districts that are tied to their performance.

Washington is slowly implementing other reforms specific to teacher policy that are conceptually linked to the performance-based student standards system. Examples of these reforms include the establishment of a two-tiered teacher certification process and the development of new program standards for teacher preparation institutions. Additionally, in 1999 Washington initiated state support for teachers pursuing NBPTS certification. The 1999 session allocated \$327,000 for 15% salary increases for NBPTS-certified teachers for two years. But the limited funding allotment made it necessary for the state department to develop a competitive process to determine eligibility. Starting in 2000-2001, the bonus for teachers achieving NBPTS certification was set at a flat \$3,500 per year for two years. Since 1998, teacher policy initiatives have centered around raising teacher salaries, using the traditional teacher compensation structure based on levels of education and years of experience. A Professional Standards Board, consisting primarily of teachers, was created in 2000 and aims to focus increased state policy attention on matters of teacher quality. The board's first task was to recommend a set of alternative routes to teacher certification, including a program that is focused on attracting those who are considering teaching as a mid-life career switch.

Washington has viewed teacher recruitment as largely a local matter, with no funded state programs that address the need to attract

teachers to work in rural or urban areas. Some state support has been provided for mentoring new teachers through the Teacher Assistance Program (TAP), but funding for TAP has been insufficient. Approximately 20% of new teachers are not served by the program, and there is great variability in what is provided from district to district.

Compared to efforts in both New York and California, Washington's approach has been intentionally slower in pace. Strategies at the state level take local contexts into account to a much greater extent than in New York or California. However, Washington's approach is also characterized by a lack of state supports and guidance about how to align curriculum and instructional practice with learning standards and by an underdeveloped accountability system.

North Carolina. Historically a rural state, North Carolina has recently experienced rapid economic growth and diversification. The relative affluence of the resulting urban areas, including the high-tech Research Triangle, and the increasingly popular tourist economies of the mountains and coast contrast sharply with the abject poverty and significant isolation of the remaining rural pockets. The shift in the state's economy from agriculture to manufacturing and, most recently, high technology has prompted a cultural change in the state, with rising expectations for schools and pressures from business interests. Former governor Jim Hunt played a longstanding and highly visible role in the state's education reform efforts, enjoying substantial support for his initiatives from a variety of influential policy players in the state. Students in North Carolina showed marked improvements on the National Assessment of Education Progress throughout the 1990s.

As in each of the other three sample states, North Carolina's reform efforts are rooted in the development of a strong system of student standards and assessments. New curriculum standards were implemented beginning in the early 1990s. Prior to the 1990s, however, state policies had also focused on matters related to teacher quality. Starting in 1985, a Task Force on the Preparation of Teachers began examining ways to improve teacher education, and by 1990 NCATE certification was required for all teacher education programs in the state. More recently, the University-School Teacher Education Partnership (USTEP) was funded to provide more intensive clinical experiences for preservice teachers and to improve teacher education curricula. The state has also mandated tests of teachers' basic skills, subject matter knowledge, and pedagogy for more than a decade. The 1997 adoption of the state's Excellent Schools Act was accompanied by

hundreds of millions of dollars in state funding for education reform, with the bulk of the money earmarked for improving both teacher education and mentoring and for increasing teacher salaries. Teacher testing and evaluation has been characterized by state-mandated basic skills, subject area, and pedagogy tests and locally developed performance-based portfolio evaluations for new teachers.

North Carolina has taken significant and highly visible steps to provide teachers with incentives and rewards for obtaining National Board certification. As a result, the state has the largest number of NBPTS-certified teachers in the nation. North Carolina also outspends most states in its support of NBPTS teachers. The state pays for the NBPTS application fees as well as for three days paid leave for application preparation, spending \$2.9 million on application fees and \$300,000 dollars on paid leave for preparation in 2000-2001. This is equivalent to \$2.55 per pupil, up from \$1.51 per pupil in 1998-99. Reaching beyond the fee subsidies, North Carolina has also distinguished itself by adjusting the state salary schedule to reward teachers for their achievement of NBPTS certification. As the population of NBPTS-certified teachers has increased, the additional salary credits have grown substantially, from \$6 million in 1998-99 to \$17.6 million in 2000-2001. In terms of per-pupil spending, the salary credits rose from \$4.97 in 1998-99 to \$14.04 in 2000-2001.

An interesting feature of North Carolina's workforce policy agenda is the provision of monetary rewards to teachers and teaching assistants based on schools' meeting or exceeding expected school performance gains. Teachers in schools that meet expected gains receive a \$750 bonus, while teaching assistants receive \$375; teachers and assistants in schools that exceed their expected growth by more than 10% receive \$1,500 and \$500 bonuses, respectively.

North Carolina's strategies have been focused on long-term goals, but short-term gains have been a more prominent component of policy action than in the other three cases in our sample. North Carolina's system for rewarding success includes attention to equity issues, by providing bonuses based on meeting or exceeding "expected growth" goals, and to accountability issues, by providing additional bonuses for meeting "exemplary growth" standards.

State Approaches to Policy Design and Implementation

The policy efforts in these four states share explicit state-level commitments to higher standards of teaching and learning. In each state, the pressure to seek solutions to the challenge of improving teacher

quality statewide has typically resulted in the establishment of new standards, guidelines, requirements, or opportunities that have sometimes been accompanied by the infusion of some new fiscal resources.

Developing a broader and more detailed understanding about teacher workforce development, however, has been a challenge for all four states. North Carolina has the longest history of attempting to fashion more comprehensive approaches to workforce development that seek to support teachers throughout their careers. New York has put ambitious standards into its policy language but struggles to create approaches that meet the state's diverse needs, including the unique needs of New York City. California's conflicts with governance arrangements and teacher shortages of crisis proportions, combined with its current fiscal dilemma, present significant obstacles for the development of workforce policies that address the full continuum of teaching. Washington's efforts to influence broader conceptions of workforce development are the newest and least developed of the four states. But Washington's slow and deliberate approach to reform, combined with its relatively stable balance of teacher supply and demand, might facilitate a more comprehensive approach to workforce development in the future.

All four states have struggled with designing effective policy strategies that provide sufficient support for the ongoing professional development needs of teachers. Traditionally, each of these states has viewed professional development as largely a local matter, and this stance has contributed to state policy approaches that are more focused on the needs of beginning teachers than on those of the entire workforce. But teachers at all levels of experience are encountering new challenges in helping an increasingly racially and ethnically diverse student population meet more ambitious standards for student performance, and state approaches to date have fallen short of the investment levels needed to provide the necessary ongoing support. An analysis of national data confirms that average state and district spending on teacher professional development increased only slightly overall during the 1990s, with 17 states actually reporting a decrease from the prior decade's spending (Killeen, Monk, & Plecki, 2002). This lack of increased resources to support professional development occurred during a period (1992-98) when most states experienced an economic surge and also strengthened their focus on matters relating to improving teaching and learning.

An important component of policy design involves the extent to which fiscal resources are designated to sustain or expand existing programs and services or to promote new initiatives. In each of these four

states, policy initiatives were funded by a combination of direct support to local school districts or regional agencies, competitive grant processes, and specific incentives to individual teachers. The decidedly political context in which decisions about resource allocation occur, combined with ever-changing economic conditions within states, affect how funds are directed, resulting in funding policy strategies that change with each new legislative session. This in turn results in a lack of sustained focus on programs that are aligned with state workforce development goals. State leadership for workforce development policies in these four states has been dispersed, sometimes intentionally distributed but often haphazardly assumed by various individuals or organizations involved with teacher development. An examination of the types and amounts of resources designated for new teacher quality initiatives revealed that state leaders in these four cases typically experienced more difficulty garnering new resources to support the ongoing professional development of teachers than for other policy strategies such as recruitment, teacher testing, mentoring of beginning teachers, and teacher salaries.

An examination of teacher quality efforts in these four states also revealed a lack of specific state policies aimed at addressing the equity issues that are embedded in the challenge of improving access to high-quality teachers and teaching. Although there is evidence that teacher retention rates are variable, with greater teacher turnover often occurring in high-poverty schools (Boyd, Lankford, Loeb, & Wyckoff, 2003; Ingersoll, 2001), policy attention in the four states did not focus specifically on incentives or other strategies to address the inequitable distribution of qualified teachers. North Carolina and California have made attempts to gather data about the distribution of qualified teachers across districts, but neither state has enacted specific policies that pay special attention to the equity of access all students have to qualified teachers. California recently initiated a policy that provided incentives for teachers to work in low-performing schools, but only for NBPTS-certified teachers.

Many states, including these four, focused resources on improving teacher salary levels, hoping to positively affect teacher recruitment and retention, with special attention paid to entry-level salaries. A few states, including North Carolina and California, have also provided salary bonuses for teachers and staff working in schools that meet specified targets for improved student learning. Pay linked in some way to performance is the exception rather than the rule in most states, and the issue of performance-based compensation is hotly debated at both

the state and the local levels. Policy strategies regarding ways in which teacher compensation structures might be altered to focus more on knowledge production and skills development are in the very early stages of development and debate (Koppich, 2003; Odden, 2003).

The focus on improving teaching and learning affords an opportunity for states to exercise proactive leadership. Realistically speaking, however, there are limits to what can be accomplished through the vehicles of state policy action. Establishing and sustaining teacher quality is equally dependent on the capacity of school districts, regional agencies, and other local organizations and networks to productively engage in improvement efforts that are realized in the classroom (Shields & Knapp, 1997). Consequently, some state efforts focused on achieving higher levels of teaching and learning have implemented a combination of decentralization and state-level accountability standards. Under this design, the attempt is to clarify expectations while simultaneously giving schools the flexibility to meet those expectations in a manner that makes sense at the level of practice. Certainly, accountability systems can help direct the allocation of new and existing resources, but focusing on statewide accountability is not synonymous with increasing productivity because accountability alone provides only partial insight into how to best design and implement improvement efforts. Nonetheless, accountability is a major focus of recent federal policy efforts and is particularly evident in a number of features of NCLB. In the next section, we examine the federal government's role in education reform and teacher quality improvement and consider the possible effects that NCLB may have on states' efforts to impact the full range of teacher workforce development issues that must be addressed in order to sustain coherent policy approaches.

Recent Federal Efforts in Education Reform and the Improvement of Teacher Quality

Both the recent history of the federal role in educational reform and studies of federal efforts to improve teacher quality provide a context for understanding Title II of NCLB. In 1965, the Elementary and Secondary Education Act initiated a comprehensive set of programs, including the Title I program of federal aid to low-income children, to address the problems of economically disadvantaged urban and rural areas. The federal government has become increasingly involved in teacher quality since the mid-1980s. Federal reform efforts in the 1990s generally sought to build the capacity of teachers at selected

sites. Title II of NCLB, however, calls for an expanded federal role in the operations of all schools throughout the United States. Research evaluating reform efforts during the 1990s yields important lessons about the challenges of this phase of systemic reform. It also helps us understand the emerging discussion of Title II and the related concerns about this federal move from building capacity to seeking compliance. To illustrate this shift toward greater federal involvement, we provide a brief overview of three significant 1990s efforts to improve teacher quality—the Eisenhower program, the National Science Foundation programs, and the Goals 2000: Educate America Act. We then discuss the reforms launched by NCLB.

Recent Measures Addressing Teacher Quality

The end of George H. W. Bush's presidency and both terms of the Clinton administration featured strong interest in public education. The first President Bush and the U.S. governors agreed on and established the first national goals for education (Jennings, 1998). Building on the work of his predecessor, President Clinton signed the Goals 2000: Educate America Act into law in 1994. Goals 2000 included a grant program to support the creation of assessment systems tied to state content standards. The 1994 reauthorization of the Elementary and Secondary Education Act (ESEA) included a revised focus for Title I. Instead of funding remediation activities, these new investments were designated to support high academic standards for all children. This new version of Title I continued to give priority to the needs of low-income students, but it also was intended to encourage systemic reform through the development of state standards and assessments and the lessening of regulations for school-level projects. These changes were made in response to public concern about U.S. students' comparatively poor achievement on the Third International Mathematics and Science Study (TIMSS). Although states expressed reluctance to implement these changes, 48 eventually accepted the funding and launched efforts to develop standards-based reform (Jennings, 2003).³ The 1994 ESEA reauthorization also included the redesign of the Eisenhower program, which was an attempt to help students achieve high standards of learning by improving teacher quality. Although the Eisenhower, National Science Foundation, and Goals 2000 programs sought to encourage systemic instructional reforms, each fell short of expectations. Recurrent themes have emerged in both evaluations of and research on these efforts: inadequate capacity and communication at every level of the educational system. The specific

ways in which each of these three federal efforts addressed the improvement of teacher quality are briefly outlined below.

Eisenhower Program. Established in 1984, the Eisenhower Professional Development Program sought to support professional development experiences for teachers, primarily in mathematics and science and to a lesser degree in other content areas. Reports on the impact of this program following the 1994 reauthorization of ESEA (Porter et al., 1999; Porter, Garet, Desimone, Yoon, & Birman, 2000) centered on its mixed effectiveness.⁴ Most of the Eisenhower-assisted activities were traditional in form, utilizing workshops, courses, or conferences. Relatively few assisted activities were study groups, networks, mentoring relationships, or the like.

An analysis of survey data designed to ascertain whether participation in the Eisenhower program was a catalyst for instructional change found little reported overall change in instructional practice from 1996 to 1999 (Porter et al., 2000). Teachers participated in ongoing learning that varied in quality from one year to the next, and teachers in the same school typically had different professional development experiences. However, professional learning that introduced specific, higher-order teaching strategies increased the use of those techniques in the classroom. This effect was even stronger when the format of the professional development activity was reform-oriented (e.g., a teacher network or study group) rather than traditional (e.g., a workshop or conference).

National Science Foundation Programs. During the 1990s, the National Science Foundation (NSF) invested in the development of 13 comprehensive curriculum programs (Reys, Robinson, Sconiers, & Mark, 1999). In 1991, the agency launched the Elementary and Secondary Statewide Systemic Initiatives (ESSSI). These initiatives, which from 1991 to 1993 allocated funds to 26 states, were “created on the premise that positive reform in K-12 science and mathematics education will effectively be achieved if pursued by means of a systemic effort, coordinated nationwide on the state level rather than piecemeal” (Directorate for Education and Human Resources Division of Research, Evaluation, and Communication, 1996, p. 3).⁵ National and state mathematics reforms during this period called for significant instructional change, requiring teachers to emphasize deep conceptual understandings of the subject matter rather than basic skills and operations (Spillane & Zeuli, 1999).

Both the ESSSI Evaluation (Directorate for Education and Human Resources Division of Research, Evaluation, and Communication,

1996) and Spillane and Zeuli (1999) detail the impact of the NSF programs, highlighting challenges to the implementation of reform-oriented science and math instruction. The main findings of the ESSSI Evaluation were that the states spent the largest portion of their NSF dollars on professional development and served approximately 8% of teachers in participating states. The evaluation report named five significant issues that explain the difficulties encountered in program implementation. First, although states were able to build the capacity of practicing teachers to improve mathematics and science instruction, the improvement was often insufficient to meet the objectives of the reform. Second, some state policies were not aligned with the reform goals. Third, the NSF-funded states gave only modest attention to local educational policy systems. Fourth, the states did not attend to the preparation of the "next generation" of teachers. Fifth, the mathematics, science, and education communities had limited capacity to promote reform agendas in the broader community.

Goals 2000. Like the Eisenhower and NSF programs, Goals 2000 emphasized high standards of achievement for all students. Teacher quality was addressed in its fourth goal statement: "Teachers will have access to training programs to improve their skills" (Cookson, 1995, p. 406). According to Cookson, the legislation reflected President Clinton's belief in systemic reform. According to Hannaway and Kimball (2001), the progress of the standards-based reform efforts initiated by Goals 2000 was more pronounced at the school level than at the district level. However, Hannaway and Kimball found that higher poverty districts were less likely than their affluent counterparts to establish standards, align curricula to standards, and build community partnerships.

Other scholars raised concerns about states' capacity to carry out the ambitious reforms of Goals 2000. Cohen (1995) pointed out that few educational agencies in the United States were capable of creating plans for school improvement in accordance with Goals 2000. He also noted a dilemma for this early phase of standards-based reform: "Standards set high enough to exemplify truly outstanding work could be irrelevant because they would be so far from current practice as to alienate or mystify most potential learners. But standards set close enough to current practice to be more easily understood and attained could fail to stimulate much improvement" (p. 754). Research on standards-based reform confirmed these concerns. In a nine-state study conducted by Massell, Kirst, and Hoppe (1997), teachers commonly complained of a lack of support available to carry out standards that were often broad and general in nature.

Scholarship and commentary about federal teacher quality reforms in the 1990s underscore the importance of coherence, comprehensiveness, and capacity for the improvement of teacher quality. In each of the three federal initiatives discussed above, there was a recognition of the importance of teaching but no understanding or theory of what is required to adequately support instructional improvement. The Eisenhower program evaluation suggests the value of consistency in both district- and school-level teacher-learning initiatives. Although Goals 2000 paid limited attention to teaching, Cookson (1995) and Cohen (1995) note the importance of instruction in carrying out this policy agenda. Research on the impact of the standards-based reforms initiated by Goals 2000 raises the significance of building school, district, and state capacity so that standards may be reached. The limited implementation of these three reform efforts raises the question of whether the federal outlays were sufficient given their ambitious goals. It remains to be seen how the more recent reform efforts in response to Title II of NCLB will affect state progress toward teacher quality improvement, but in the following description and analysis, we find that the federal government is taking a much more active role.

NCLB and Teacher Quality

Federal investments in teaching during the 1990s emphasized the importance of math and science instruction, but Title II of NCLB focuses more broadly on instructional improvement. Title II of the Higher Education Reauthorization Act of 1998 laid the groundwork for some of the accountability measures of Title II of NCLB. That earlier legislation implemented reporting requirements for states and teacher education programs and limited access to federal financial aid when students performed poorly on state teacher tests (Melnick & Pullin, 2000). It also called for reforms of teacher certification and licensure, including the creation of alternatives to traditional teacher preparation and certification. The federal government's position piece *A Quality Teacher in Every Classroom* (n.d.) names three objectives in improving teacher quality through NCLB: appropriations will provide assistance to states as they 1) work to enhance teacher quality, 2) elevate the teaching profession and work environment, and 3) provide new tools for teachers in specific areas of instruction. Both the legislation and the supporting documents communicate messages about teacher quality, define the vehicles for the improvement of teaching, and name eligible sites for the training and development of teachers.

The Center on Educational Policy (2003) provides an overview of the changes brought about by Title II. The center's report maintains that the Title II mandates "represent a major expansion of the federal role concerning teacher quality" (p. 76). This is the first time the federal government has created minimum qualifications for *all* teachers of core subjects. Although states will still craft teacher preparation, testing, and certification requirements, these efforts will now have to comply with federal law. In addition, programs seeking federal funding will need to document their efficacy using evidence obtained from "scientifically based research" (*A Quality Teacher in Every Classroom*, n.d., p. 7). In the following section, we first briefly describe key aspects of the NCLB legislation and its supporting documents.⁶ We then present the emerging research and commentary on NCLB and its approach to teacher quality, which suggest that the emerging federal policy may narrow or restrict established state efforts to improve teacher quality.

The Highly Qualified Teacher

First disseminated in June 2002 and revised in December 2002, *Improving Teacher Quality State Grants* provides both general and specific definitions of a "highly qualified teacher." Individuals in this category either have earned full state certification as a teacher, or they have both passed the state teacher licensing examination and obtained a state teaching license. In addition, these individuals have not had certification or licensure requirements waived on an emergency, temporary, or provisional basis. Highly qualified teachers possess at least a B.A. or B.S. and have proven competence in subject area knowledge as determined by the state or in accordance with Section 9101(23) of ESEA.⁷ The *Draft Guidance* presents details about the differences in these criteria among elementary, secondary, new, and experienced teachers. Although new elementary school teachers are required to pass a state test, new middle or high school teachers in this category must demonstrate "a high level of competency" (*Improving Teacher Quality State Grants*, p. 85) in their academic subject.⁸ This competency may be demonstrated by passing a state academic subject test or by the successful completion of an academic major, an advanced degree, or coursework equivalent to an undergraduate major or advanced certification. The legislation provides different guidelines for charter school teachers and teachers who have earned certification through alternative routes. Individuals who teach core academic subjects in charter schools must comply with their state's charter school law regarding certification or licensure requirements and thus might not have to be licensed

or certified. Charter school teachers must, however, hold a four-year degree and show competency in their subject area. In this new context, teachers who have earned certification through alternative routes must make satisfactory progress toward permanent licensure.

Vehicles and Sites for Training and Development

Title IX of NCLB includes information about the types of professional learning activities that Title II supports. These activities are designed to advance teacher understanding of instructional strategies that have been proven effective in scientifically based studies. They include learning that aims to improve student achievement or increase the skills and knowledge of teachers. Fifteen of the types of activities that Title IX describes are associated with the improvement of teaching. Among these are classroom management, instructional approaches to serving English Language Learners, effective use of technology, strategies for working with special needs children, using data and assessment to inform classroom practice, and collaboration with parents and caregivers.

Title IX also discusses the relationship of professional development to state standards and the specific types of activities and learning that are eligible for funding. The activities are described in relation to state content requirements, student academic standards, or existing curricula and programs tied to these benchmarks. The legislation privileges longer-term learning experiences that are “high quality, sustained, intensive, and classroom-focused in order to have a positive and lasting impact on classroom instruction and the teacher’s performance in the classroom” (Title IX, para. 34). The legislation specifies that the eligibility of an activity for funding will be evaluated based on its impact on teacher effectiveness and student achievement. Title II includes provisions for private school teachers to participate in federally funded activities.

The Role of Scientifically Based Research

Because NCLB requires evidence from existing, scientifically based research to justify spending both in Title I schools and federally funded programs aimed at improving teaching, it is important to define “scientifically based research” and discuss its role in federal educational reform efforts. Specifically, this term refers to “research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs” (Title IX, para. 37). The legislation describes six types of qualifying inquiry that draw primarily from hypothesis-driven experimental research design. It calls for transparency in methodology to

allow for replication of the research or, at a minimum, the chance to build systematically on the study's findings. Scholarship fitting this definition either has been accepted by a peer-reviewed journal or has been validated by a panel of experts through an equally rigorous and objective review.⁹

The appearance of the phrase "scientifically based research" 111 times in NCLB (Feuer, Towne, & Shavelson, 2002) is evidence of its dominant role in this legislation. The U.S. Department of Education's *Strategic Plan 2002–2007* discusses this role and provides criteria that will influence Title II funding decisions. The strategic plan's fourth goal, to "transform Education into an evidence-based field" (DOE, 2002b, p. 53), names two objectives. First, the DOE seeks to elevate the quality of research that it supports or conducts. Second, the agency aims to increase the relevance of that research to better serve its customers. One performance target specifies that a minimum 75% of the new research and evaluation projects funded by the DOE between 2004 and 2007 will address causal questions and utilize randomized experimental designs. A related goal in the plan ties federal education funding to accountability for results. According to this plan, programs that do not result in student outcome improvements will be reformed or eliminated.

The Department of Education's annual reports on teacher quality for 2002 and 2003 (Paige, Stroup, & Andrade, 2002, 2003) discuss the research used to develop Title II and call for changes to state systems. The 2002 report names verbal ability and content knowledge as the only scientifically validated characteristics of highly qualified teachers. The department's negative stance on teacher preservice education programs is evidenced by the citation of an Abell Foundation report (Walsh, 2001) that claims that the research linking teacher certification and student achievement lacks scientific rigor.¹⁰ The 2003 annual report provides more qualified claims about teacher quality, perhaps in response to scholarly critiques cited in the next section of this chapter. The authors of the 2003 report maintain that, although there is considerable evidence that teachers contribute to student achievement, there are gaps in knowledge about how individuals become effective teachers. They are, however, willing to accept the premise offered by Grover Whitehurst, director of the Institute of Educational Sciences. In his concluding remarks at the Whitehouse Conference on Preparing Tomorrow's Teachers, Whitehurst pointed out the flawed nature of an analytical focus on differences in teachers' attributes and the value of experimental research:

As we build a solid research base on this topic, one that is more specific and experimental than we have currently, we should be much better able to provide instruction for all children. . . . Individual differences in teachers will never go away, but powerful instructional systems and new, effective forms of professional development should reduce those differences to the point that every teacher should be good enough so that no child is left behind. (p. 51)

Both annual reports make recommendations about systemic changes. In the 2002 report, Paige, Stroup, and Andrade specify changes to state certification systems as a solution:

To meet the “highly qualified teachers” challenge, then, states will need to streamline their certification system to focus on the few things that really matter: verbal ability, content knowledge, and, as a safety precaution, a background check of new teachers. States need to tap into the vast pool of potential teachers who today are discouraged by the bureaucratic hoops and hurdles but tomorrow might be willing to fill their classrooms. (p. 40)

The 2003 report frames these recommendations in terms of “raising academic standards for teachers and lowering barriers that are keeping many talented people out of the teaching profession” (p. 3). It includes a section entitled “Promising Innovations to Meet the Highly Qualified Teachers Challenge” (pp. 21-31), which describes three traditional teacher preparation and six alternative certification programs.

In summary, Title II of NCLB, according to its authors, uses measures of teacher performance on state tests and certification status to determine whether a teacher is highly qualified. In the case of secondary schools, teachers may not need certification if they have demonstrated competency in their subject area by completing an academic major or additional coursework. In order to qualify for federal funding, professional learning activities must demonstrate that their strategies have been proven effective by scientifically based research. These elements imply state discretion in the implementation of teacher quality accountability measures. In this context, states define the tests, the required levels of subject matter competence, and the evaluation measures that serve as milestones for career entry and advancement. And because Title II does not include recommendations or priorities beyond the accountability requirements, states must also specify acceptable vehicles and sites for professional learning. Federal position documents that accompany the legislation offer clear definitions of teacher quality and summarize studies that claim to support these conceptions. The Department of Education’s annual reports on teacher

quality also recommend steps for states to raise professional standards and to decrease the obstacles to entry into teaching. In the next section, we present the emerging response to NCLB.

Responses to Title II of NCLB

Because NCLB was recently enacted, the evidence of its impact is emergent and predictive in nature. Much of the scholarly conversation about NCLB addresses its feasibility and fairness rather than its effects. To synthesize this discussion, we first present researchers' concerns about the legislation's assessment and accountability measures and about its efforts to improve teaching quality. We then consider these concerns in light of critiques of the DOE's conceptualization of the role of scientifically based research. Read together, these analyses suggest both a basis in faulty logic and an uncertain feasibility for NCLB. Unlike the four diverse state cases we presented, NCLB focuses more narrowly on the characteristics of individual teachers and on pathways into teaching. Viewed through the framework presented in Figure 2, it becomes clear that Title II includes few, if any, measures that directly address the quality of teaching and the quality of support for teachers' work. Further, these analyses reveal that Title II neglects the importance of coherence, comprehensiveness, and variable capacity in the improvement of teacher quality, themes that dominated discussions of the instructional reforms of the 1990s. As a result, some states' efforts aimed at improving teacher quality may be compromised in the near future.

Linn, Baker, and Betebenner (2002) discuss the technical problems of the assessment and accountability system mandated by NCLB. They caution that the goal of all students achieving proficiency by 2014 is unrealistic, and argue that NCLB does not recognize the volatility of school-level test results, citing problems of reliability and validity in collecting building-level data. A related concern is whether states and districts will be able to carry out the NCLB requirements by the 2005-06 deadline. Jennings (2003) notes that in the spring of 2002, only 17 states had standards and assessment systems that were considered to be in compliance with the 1994 reauthorization of ESEA. In addition, state departments of education frequently do not have staff members who possess expertise in either assessment or providing technical assistance to schools that are failing (Jennings, 2003). The Harvard Civil Rights Project's six-state analysis of the policy indicates that states are progressing at varying rates toward the 2014 goal of student proficiency (Sunderman & Kim, 2004). The authors of the project report

argue that NCLB creates incentives for states to lower standards of proficiency and to deliver the largest achievement gains at the end of the timeline. Linn et al. (2002) summarize the conceptual problems with the legislation:

One can agree that schools should improve and that holding schools accountable will contribute to improvement but still conclude that the goal of having 100% of students reaching the proficient level or higher . . . is so high that it is completely out of reach. Furthermore, having a goal that is unobtainable no matter how hard teachers try can do more to demoralize than to motivate greater effort. (p. 12)

Taken together, this scholarship reveals that NCLB is built on two problematic assumptions. First, the federal policy's logic is that these ambitious student achievement goals will serve as a motivator for school staff members to alter their performance. Second, the law implies that states have well-designed, standards-based assessment and accountability systems for tracking student performance in a reliable, valid, and fair manner.

Recent research on workforce trends and federal and state funding indicates that the goals of Title II are also out of reach. Illinois, Maryland, and Pennsylvania each employ large numbers of teachers who currently do not fulfill the criteria for being highly qualified (Center on Educational Policy, 2003).¹¹ A large percentage of teachers in California lack certification, with the greatest concentration employed in the state's high-poverty schools (Jennings, 2003). Research reported in the DOE's annual report on teacher quality for 2003 (Paige, Stroup, & Andrade, 2003) underscores these issues. In 2001-02, 6% of the U.S. teaching force lacked complete certification, with more than 10% of teachers on waivers. In addition, high-poverty school districts had a greater likelihood of employing teachers on waivers than affluent districts, averaging 8% and 5%, respectively. The authors of the annual report cite an analysis of a Schools and Staffing Survey that found that only 54% of secondary school teachers in the United States were highly qualified in the 1999-2000 school year. Given the mandate of ensuring that there is a highly qualified teacher in every classroom by the 2005-06 school year, teacher testing may become a favored state policy tool to address this gap. Lewis (2003) points out that administering subject-area tests will be the most inexpensive way for states to comply with most of Title II's accountability provisions.

A number of states may not have the resources to make new investments in education. Although President Bush advocated a significant

increase in appropriations for the first year of NCLB as part of a political concession to enact the measure, the federal budget for the second year included a much smaller increase (Center on Educational Policy, 2003). Furthermore, in a recent General Accounting Office (GAO, 2003a) analysis, officials from seven of eight states surveyed reported that they did not have the technology in place to adequately track teacher qualifications (2003b).

Mathis (2003) reviewed 10 state cost studies on bringing the states' students up to a single academic standard. First, he claims that a "standards-based NCLB education" (p. 682) for all children necessitates significant new investments in education spending, with 7 of the 10 studies predicting greater than 24% increases in base costs. In addition, although the federal government expresses confidence that it is fully funding Title I, the New Hampshire study indicated that federal appropriations will be insufficient to cover such Title II costs as additional bureaucracy, teacher and paraprofessional testing, and qualified teachers. Moreover, the National Governors Association estimates that states are dealing with a total fiscal-year deficit of \$58 billion. Lastly, states with "high standards" (p. 68), such as New York, Michigan, and Vermont, will have the highest remedial needs and costs, while those with low standards will have the smallest costs.

While some scholars focus on the human and financial resources that meeting the NCLB mandates will require, others critique the ways that teaching quality is represented in Title II's position pieces and legislation. Kaplan and Owings (2003) and Darling-Hammond and Youngs (2002) take issue with the interpretations of the teacher quality research that influenced Title II of NCLB. These authors critique the DOE's 2002 annual report on teacher quality for the ways in which the document "misleadingly presented data" (Kaplan & Owings, p. 691).¹² Kaplan and Owings respond to Title II's removal of teacher preparation as a hiring requirement for secondary school teachers. Their analysis discusses the ways in which educators and policymakers understand subject matter knowledge, verbal skills, and the quality of teacher education programs, three factors explored in studies of teacher quality. The authors argue that, although these are necessary criteria for teaching quality, there is no evidence that they are sufficient. They also point out that, because college majors vary in their rigor, a prospective teacher's university transcript may not actually confirm requisite subject matter knowledge. Darling-Hammond and Youngs concur and provide detailed descriptions of the studies that informed the claims in the 2002 annual report, only one of which appeared in a

peer-reviewed journal. Darling-Hammond and Youngs also claim that the report misrepresented Murnane's (1983) and Hanushek's (1996) conclusions about teacher characteristics (by omitting any reference to the passages from Murnane and Hanushek describing the limitations of their studies) and misinterpreted Goldhaber and Brewer (1999).

Kaplan and Owings (2003) also reason that research on credentialing is problematic. First, teacher preparation programs vary widely in quality. Second, states have the flexibility to impose their own criteria for both the performance of teacher education institutions and licensure exams. After their analysis, however, they conclude that the research "nevertheless suggests that teacher candidates from accredited, respected teacher preparation programs probably have an edge—although by no means a guarantee—in terms of potential teaching effectiveness" (p. 692). Darling-Hammond and Youngs (2002) revisited a number of studies of teacher credentialing and education and also found evidence of the positive relationship between this training and student achievement.

Initial responses to the 2003 annual report put forth similar criticisms about the federal government's potential for providing leadership in teacher quality efforts. The Education Trust (2003) expressed concerns about the accuracy and consistency of the information in the report. For example, when comparing the 2002 and 2003 reports, Education Trust observed that Utah's total number of teachers dropped by one third while Alabama's teaching force increased by 24%. This raises important questions about federal capacity to track state progress in their efforts to ensure whether students have highly qualified teachers. The Association for Supervision and Curriculum Development's (2003) critique of the annual report focuses on the federal government's approach to credentialing. They question the strategies named in the report, which advocate lowering barriers to teaching while raising professional standards:

The moves to increase accountability for teacher preparation, while also removing barriers to entering the profession, are creating a mixed policy picture. The use of tests by policymakers as a key quality gauge and the emphasis on subject-matter at the expense of teaching knowledge could have significant long-term effects on teaching and student learning. (paragraph 11)

Because states are free to choose assessments and assign cut scores, it is problematic to generalize about quality as measured by teacher exams (Hirsh, Koppich, & Knapp, 2001). Recent scholarship further

warrants Lewis's (2003) concerns about dependence on teacher testing. Ludlow (2001) documented psychometric flaws in the 1999 Massachusetts Educator Certification Test that resembled the defects named in an Alabama class-action lawsuit about teacher certification. He calls for the creation of an organization that could provide oversight around technical issues associated with teacher testing. Mitchell and Barth (1999), after a content analysis of teacher tests, conclude that the exams are not able to certify whether teachers have the requisite knowledge to teach all students to high standards.

An important thread through the response to Title II is that teaching and instructional improvement are conceptually complex—indeed, more complex than the conclusions about teaching quality articulated in federal policy documents. Because we maintain that the design of workforce development policies in teaching occurs across levels of a nested system, an important question is, what aspects of our knowledge of teaching quality can be addressed within the federal definitions of scientifically based research? Among these concerns are the types of activities that are considered research and the federal government's control of research activities. Slavin (2002) and Gardner (2002) provide alternately optimistic and doubtful perspectives on these points.¹³ Eisenhart and Towne (2003) name two additional issues. First, some scholars are troubled that, in the current political climate, certain ways of knowing (e.g., philosophical, historical, cultural, or practice-oriented families of inquiry) that may be relevant to effective teaching will be ignored in the efforts to pursue scientifically based research. Second, others question whether the federal perception of the "sorry state of education research" (Eisenhart & Towne, p. 31) is more a function of money and politics than of science.

The early responses to Title II of NCLB suggest that the legislation's proxies for teacher quality are necessary but grossly insufficient. Although Title II documents explain that the legislation offers flexibility to states and districts, the legislation lacks provisions that would enable the federal government to take diverse state contexts into consideration. Furthermore, this conversation provides considerable evidence of limited federal and state capacity to carry out the legislation's assessment, accountability, and teacher quality mandates.

A critical question for the next phase of research on the effects of federal policy on teacher quality is how Title II influences states' ability to foster coherence, comprehensiveness, and capacity at different levels in their efforts to improve instruction. An important lesson of the teaching reforms of the 1990s was that programs such as teacher

networks and study groups show the potential to foster high-quality instruction (Porter et al., 2000). The challenge will be to discern the impact of these and other more grassroots investments on instruction and student learning from the effects of NCLB reform efforts.

In our conclusion, we reflect on the scholarship and commentary about state and federal policies addressing teacher quality. We focus on the ways this evidence speaks to four policy and design principles targeted at improving teaching.

Designing Policy Strategies Aimed at Improving Teacher Quality

As we noted early in this chapter, the quality of the teacher, the quality of teaching, and the quality of support for teachers' work are all essential aspects of what is typically referred to as "teacher quality." State teacher workforce development policies can and should address each of these aspects, and there are numerous sets of policy strategies that can be forged to do so. Our examination of state efforts to date suggests, however, that policy actions designed to improve teacher quality have been directed primarily at improving the attributes of the individual teacher, and they also tend to be concentrated on teachers' entrance into the profession. Consequently, policy strategies to date are insufficient to effectively address the full range of teachers' needs. For example, most states struggle to obtain and sustain support for the ongoing professional development of experienced teachers, even though it is this type of support for teachers' work that is essential to realizing the ambitious expectations states hold for student learning. These are critical shortcomings, given that we now know that lack of retention is a greater contributor to "teacher shortages" than inability to recruit (Ingersoll, 2001, 2003). States are also likely to face pressures to limit the range of their strategies aimed at improving teaching quality as they respond to the requirements of recent federal legislation.

To address these issues, we suggest four guiding principles that can inform the design of more comprehensive, coherent, and equitable state and federal policies for the improvement of teacher quality:

1. Policies should be informed by broader conceptions of teacher development.
2. Human and financial resource investments should be aligned with policy aims.
3. Longstanding equity concerns should be fully addressed.
4. The limitations of state and federal policy efforts should be recognized.

Clearly, these principles are ambitious and present significant challenges for policymaking. These principles do not assume that all strategies must emanate from state or federal mandates. Rather, the most successful policy strategies are likely to develop in collaboration with and in support of local efforts and initiatives aimed at common purposes because these policies will result in the capacity building necessary for comprehensive and coherent approaches. We conclude by synthesizing what we have observed about state and federal workforce development policies with respect to each of the four guiding principles.

Broader Conceptions of Teacher Development

State and federal policies addressing teacher quality can signal either a narrow or a broad understanding of how teachers develop their practice throughout their careers. There are examples of current state policy action with a broad understanding of teacher development, including North Carolina's effort to support teachers seeking certification from the National Board of Professional Teaching Standards and New York's effort to include the full continuum of teacher development in its plan for improving teacher quality.

With respect to federal policies, however, the NCLB definition of a highly qualified teacher, in its current form, suggests a narrow set of beliefs about the qualities that are necessary for excellence in teaching. Given the significant attention being paid to meeting the accountability demands of NCLB, states will be facing pressures to design teacher quality initiatives that first meet the three specific quality measures as defined in the federal policy. It is possible, especially given the fiscal stress that exists in many states, that the Title II accountability requirements may encourage a triage approach as states scramble to meet minimum requirements. In other words, NCLB may inhibit more coherent and comprehensive approaches that encompass the complexity of teaching. States can resist the pressure to adopt narrow conceptions of teaching by investing in capacity-building strategies that will result in such long-term, sustainable benefits as a more stable workforce and improved student learning. Examples of such capacity-building strategies include subject matter teacher networks, peer observations of teaching practice, more meaningful teacher evaluation systems, and a continuum of sustained support for mentor teachers as well as for those who are mentored.

Human and Financial Resource Investments

One of the most important policy mechanisms can be found in the power of the purse. Policymakers have the ability to provide new

resources for particular initiatives, to reallocate existing resources away from policies that are no longer deemed viable or desirable, and to withhold resources for failure to enact established policies or meet determined outcomes. The allocation of resources can effectively focus attention on desired changes. During times of fiscal retrenchment, however, the tensions and challenges faced by states that are trying to positively affect teaching quality become intensified. The examples provided earlier in this chapter illustrate that states are currently struggling to provide adequate resources for their teaching policy initiatives. Given this period of decreases in state resources for public education, Lewis's (2003) concern about the potential dominance of teacher testing as a cost-effective measure of teachers' abilities appears warranted. States' decreased fiscal capacities combine with other concerns about the underfunding of NCLB.

Recently, Darling-Hammond and Sykes (2003) called for a greatly expanded federal role in the development of a national teacher supply policy as a way of improving teacher quality. They advocate an approach to increasing the teacher labor pool that requires additional federal resources and more coordination across states. Specifically, they offer steps to increase the supply of qualified teachers to the sites and the fields where there is greatest need; to improve teacher retention rates with a focus on hard-to-staff schools; and to create a national teacher labor market. This approach provides one example of how we might work to better align the aims of policy with the investment strategies that are most likely to support policy goals.

Equity Concerns

As Darling-Hammond and Sykes (2003) assert, "the hiring of unqualified teachers is generally a result of distributional inequities, rather than overall shortages of qualified individuals"(p. 3). Deep concerns about the equity of access to a high-quality education across the United States have prompted policymakers to think about the connections between student performance and access to high-quality teaching. States have yet to build sustainable systems that fully address inequities in the distribution of well-qualified teachers across schools and classrooms. Neither most state policies nor Title II of NCLB chart a specific course for how to provide a well-qualified teacher for every student. There are only a few examples of states offering incentives for well-qualified teachers to work in hard-to-staff or low-performing schools.

Many states are attempting to address inequities through accountability mechanisms that pay particular attention to differences in student

learning by poverty level, race, and ethnicity of students. These attempts are most visible in state policies regarding the disaggregation and public reporting of student assessment data. Although accountability systems shed light on equity concerns that need to be addressed, most states have yet to fashion an educational policy agenda that connects accountability for student learning with specific teacher quality improvement strategies, particularly with respect to policies that support teachers' ongoing work and professional growth. Policy efforts aimed at eliminating distributional inequities are the least mature of all policy strategies designed to improve teaching and learning. Additional work needs to be undertaken to better understand the barriers that are limiting successful implementation of coherent policies focused on equity concerns.

Limitations of State and Federal Policy Efforts

A central theme in this chapter has been that state and federal policies can and should address the tensions and challenges that are part of improving teacher quality. We have noted that state and federal policy attention to issues of teacher quality have greatly increased in recent years. We also suggest, however, that there are limitations to policies crafted and implemented at state and federal levels. Successful design and implementation of federal and state teaching policies are dependent on and interact with local capacities at district and school levels and, even more importantly, at the teacher level. Capacity-building strategies focus on the solutions that districts, schools, and teachers need to create in order to respond to the specific contexts encountered at the local level. State and federal policies cannot realistically incorporate all the possible variables that might be affecting local practices, but they can assume that differences will exist and that flexibility is needed to respond to local conditions.

Federal and state policies must result in increased capacity that enables teachers to deliver powerful, standards-based instruction. Increasing capacity is not typically accomplished through state, federal, or district policy mandates imposed on individual schools or teachers. But there are other state and federal policy options for building local capacity that can and should be considered, including those strategies that provide supportive workplace conditions, address the inequitable distribution of teaching talent, and involve the teaching profession in shaping policy. Capacity-building strategies are by nature harder for policy-makers to adopt, however, because they challenge the dominant view of the role and purpose of state policy. As Cohen and Barnes (1993) note:

Policymakers have told teachers to do many different, hugely important things in a short time. And in each case, policymakers have acted as though their assignment was to dispense answers, not to provoke thought, ask questions, or generate discussion. . . . Nor have policymakers cast policy as something that might be revised in light of what they learned from teachers' experience. (pp. 226-227)

These four guidelines highlight challenges for educational policymaking regarding teacher workforce development. Evidence from research about the complexity of improving teaching suggests the promise of recasting the definition of "highly qualified teacher" in broader terms. To this end, policy strategies not only need to consider the key supports in developing individual teachers' capabilities but also need to direct financial and human resources to the schools that are most in need. Both NCLB and the Department of Education's conceptualization of scientifically based research conflicts with this broader view because it emphasizes the use of limited proxy variables to measure teacher quality. The next wave of scholarship addressing policy efforts to improve teacher quality will need to consider state and district responses to NCLB while also assessing teacher improvement efforts that are not directly touched by the policy. Ideally, the lessons learned in this inquiry will inform policymaking and program development that approach teacher quality as a critical and complex endeavor.

NOTES

1. The Center for the Study of Teaching and Policy, a consortium of several major universities, focuses on the system-wide improvement of learning and teaching and the development of a highly capable, committed teaching force.

2. Other CTP researchers contributing to the longitudinal study include Michael S. Knapp, Barnett Berry, James Meadows, and Dylan Johnson.

3. Jennings provides a detailed discussion of the changing federal role in educational reform in his chapter in the *102nd Yearbook of the National Society for the Study of Education*, "From the White House to the Schoolhouse: Greater Demands and New Roles."

4. The titles of the reports are *Designing Effective Professional Development: Lessons from the Eisenhower Program* and *Does Professional Development Change Teaching Practice? Results from a Three-Year Study*. A third AIS report, *The Eisenhower Professional Development Program: Emerging Themes from Six Districts* (Birman, Reeve, & Sattler, 1998), documented the incipient themes about the program in exploratory cases involving six school districts.

5. During 1991-1996, the ESSSI program allocated up to \$2 million annually to individual states providing substantive plans for systemic reform.

6. These documents include NCLB legislation, the NCLB Web site (<http://www.ed.gov/nclb/>), and such supporting documents as *A Quality Teacher in Every Classroom: Improving Teacher Quality and Enhancing the Profession* (n.d.), *Improving Teacher Quality State Grants* (U.S. Department of Education, 2002, December), *Meeting the*

Highly Qualified Teachers Challenge: The Secretary's Annual Report on Teacher Quality (Paige, Stroup, & Andrade, 2002, 2003), and the *U.S. Department of Education Strategic Plan, 2002-2007* (DOE, 2002a).

7. Section 9101(23) of ESEA provides general provisions of the legislation, providing definitions of such terms as "highly qualified teacher," "professional development," "scientifically based research," etc.

8. "Core academic subjects" as defined by NCLB are "English, reading or language arts, mathematics, science, foreign languages, civics and government, economics, arts, history, and geography" (*Improving Teacher Quality State Grants*, p. 86).

9. Eisenhart and Towne (2003) explain that definitions of scientifically based research vary in different policy documents. Definitions of scientifically based research are somewhat broader in the Education Sciences Reform Act (ESRA) of 2002, which reauthorized funding for the Office of Educational Research and Improvement (renamed the Institute of Education Sciences following passage of the Act). For example, ESRA does not have different standards for quantitative and qualitative research. It also does not require the inclusion of mandated hypothesis testing for funded research activities.

10. Darling-Hammond (2000) provides a much broader picture of the impact of teacher preservice education, reviewing studies with conflicting findings about the relationship between this training and student achievement.

11. "Illinois had estimated that about 25,000 out of 130,000 teachers in the state are teaching without full credentials or in subjects for which they are not certified" (Sack, 2002). A report of the Maryland Department of Education estimated that 10% of newly hired teachers, or more than 5,300 teachers, were hired with provisional certificates, meaning they had not yet passed the necessary state exams or coursework (Labbé, 2002). "In Philadelphia, by one report, more than half of the 600 new teachers hired this year were not fully certified" (Mezzacappa, 2002).

12. They explain that although the annual report discussed the experiences of new teachers, the NCES study it cited was actually from a survey of practicing classroom teachers, most of whom were not new to the profession.

13. Slavin welcomes the federal mandates in the hope that increased research investments will lead to improved student outcomes, but Gardner is more skeptical. Slavin claims that the greatest breakthroughs in medicine, agricultural science, and other fields have come through evidence-based scholarship, but he recognizes the value of correlational and descriptive inquiry because these strategies are critical in exploring variables that extend beyond program effects. In contrast, Gardner notes that research in schools is not conducted under the ideal conditions for randomized studies.

REFERENCES

- ASCD (Association for Supervision and Curriculum Development). (2003, July). ESEA/NCLB Analysis. Retrieved November 2003 from <http://www.ascd.org/cms/index.cfm?TheViewID=2038>
- Baker, E.L., & Linn, R.L. (1997). *Emerging educational standards of performance in the United States*. Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing.
- Birman, B., Reeve, A., & Sattler, C. (1998). *The Eisenhower professional development program: Emerging themes from six districts*. Washington, DC: American Institutes for Research in the Behavioral Sciences.
- Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2003). Understanding teacher labor markets: Implications for educational equity. In M.L. Plecki & D.H. Monk (Eds.), *School finance and teacher quality: Exploring the connections. The 2003 yearbook of the American Education Finance Association* (pp. 55-83). Larchmont, NJ: Eye on Education.
- Center on Educational Policy. (2003, January). *From the capital to the classroom: State and federal efforts to implement the No Child Left Behind Act*. Washington, DC: Center on Educational Policy.
- Cohen, D.K. (1995). What standards for national standards? *Phi Delta Kappan*, 76(10), 751-757.
- Cohen, D.K., & Barnes, C.A. (1993). Pedagogy and policy. In D.K. Cohen, M.W. McLaughlin, & J. Talbert (Eds.), *Teaching for understanding: Challenges for policy and practice* (pp. 207-239). San Francisco, CA: Jossey-Bass.
- Cookson, P.W., Jr. (1995). Goals 2000: Framework for the new educational federalism. *Teachers College Record*, 96(3), 404-417.
- Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Educational Policy Analysis Archives*, 8(1). Retrieved December 12, 2002, from <http://epaa.asu.edu/epaa/v8n1/>
- Darling-Hammond, L., & Sykes, G. (2003). Wanted: A national teacher supply policy for education: The right way to meet the "highly qualified" challenge. *Educational Policy Analysis Archives*, 11(3). Retrieved September 16, 2003, from <http://epaa.asu.edu/epaa/v11n33>
- Darling-Hammond, L., & Youngs, P. (2002). Defining "highly qualified teachers": What does "scientifically-based research" actually tell us? *Educational Researcher*, 31(9), 13-25.
- Directorate for Education and Human Resources Division of Research, Evaluation and Communication (1996, August). *NSF evaluation highlights: A report on the National Science Foundation's efforts to assess the effectiveness of its education programs*. Washington, DC: National Science Foundation. Retrieved June 2003 from <http://www.nsf.gov/pubs/1996/nsf96140/nsf96140.pdf>
- DOE (Department of Education). (n.d.). The facts about good teachers. Retrieved May 2003 from <http://www.nclb.gov/start/facts/teachers.html>
- DOE (Department of Education). (n.d.) The federal role in education. Washington, DC: Author. Retrieved May 2003 from <http://www.ed.gov/offices/OUS/fedrole.html>
- DOE (Department of Education). (n.d.). Overview of No Child Left Behind. Retrieved May 2003 from <http://www.nochildleftbehind.gov/next/overview/index.html>
- DOE (Department of Education). (2001). No Child Left Behind Act of 2001. Title IX. Retrieved May 2003 from <http://www.ed.gov/legislation/ESEA02/pg107.html>
- DOE (Department of Education). (2001). No Child Left Behind Act of 2001. Amended in 2002. Retrieved May 2003 from <http://www.ed.gov/legislation/ESEA02/>
- DOE (Department of Education). (2002a, December). Improving teacher quality state grants Title II, Part A: Non-Regulatory Guidance. Retrieved April 2003 from <http://www.ed.gov/offices/OESE/SIP/TitleIIGuidance2002.doc>
- DOE (Department of Education). (2002b). U.S. Department of Education strategic plan, 2002-2007. Retrieved May 2003 from <http://www.ed.gov/pubs/stratplan2002-07/stratplan2002-07.doc>

- Eisenhart, M., & Towne, L. (2003). Contestation and change in national policy on "scientifically based" education research. *Educational Researcher*, 32(7), 31-38.
- Elmore, R.F., & McLaughlin, M.W. (1988). *Steady work: Policy, practice, and the reform of American education*. Santa Monica, CA: RAND.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record*, 103(6), 1013-1055.
- Feiman-Nemser, S., Carver, C., Katz, D., Schwille, S., Smith, E., & Yusko, B. (2000). Beginning teacher induction: A study of three promising programs. Final report for the National Partnership for Excellence and Accountability (NPEAT). East Lansing: Michigan State University, College of Education.
- Ferguson, R.F. (1997). Evidence that schools can narrow the Black-White test score gap. *Working Paper, #H-97-04*. Cambridge, MA: Malcolm Wiener Center for Social Policy, John F. Kennedy School of Government.
- Feuer, M.J., Towne, L., & Shavelson, R.J. (2002). Scientific culture and educational research. *Educational Researcher*, 31(8), 4-14.
- Gardner, H. (2002, September 4). The quality and qualities of educational research. *Education Week*, 22(1), 72, 49.
- General Accounting Office. (2003a, May). *Title I characteristics of tests will influence expenses; Information sharing may help state realize efficiencies*. GAO-03-389, a report to Congressional Requesters. Washington, DC: Author.
- General Accounting Office (2003b, July). *No Child Left Behind Act: More information would help states determine which teachers are highly qualified*. GAO-03-631, a report to Congressional Requesters. Washington, DC: Author.
- Goldhaber, D., & Brewer, D. (1997). Evaluating the effect of teacher degree level on educational performance. In W. Fowler (Ed.), *Developments in school finance, 1996* (pp. 197-210). Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved August 2003 from <http://nces.ed.gov/pubs97/975351.pdf>
- Goldhaber, D., & Brewer, D. (1999). Teacher licensing and student achievement. In M. Kanstroroom & C.E. Finn, Jr. (Eds.), *Better teachers, better schools* (pp. 83-102). Washington, DC: Thomas B. Fordham Foundation.
- Hannaway, J., & Kimball, K. (2001). Big isn't always bad: School district size, poverty, and standards-based reform. In S.H. Fuhrman (Ed.), *From the capital to the classroom: Standards-based reform in the states. The one-hundredth yearbook of the National Society for the Study of Education, Part II* (pp. 99-123). Chicago, IL: National Society for the Study of Education.
- Hanushek, E.A. (1996). *School resources and achievement in Maryland*. Baltimore: Maryland State Department of Education.
- Hirsh, E., Koppich, J.E., & Knapp, M. (1999, December). *State action to improve teaching*. Seattle, WA: Center for the Study of Teaching and Policy.
- Hirsh, E., Koppich, J.E., & Knapp, M. (2001, February). *Revisiting what states are doing to improve the quality of teaching: An update of patterns and trends*. A working paper prepared in collaboration with the National Conference of State Legislatures. Seattle, WA: Center for the Study of Teaching and Policy.
- Imazeki, J. (2003). Class size reduction and teacher quality: Evidence from California. In M.L. Plecki & D.H. Monk (Eds.), *School finance and teacher quality: Exploring the connections. The 2003 yearbook of the American Education Finance Association* (pp. 159-178). Larchmont, NJ: Eye on Education.
- Ingersoll, R. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499-534.
- Ingersoll, R. (2003). *Is there really a teacher shortage?* Center for the Study of Teaching and Policy, University of Washington. Available at <http://ctpweb.org>
- Jennings, J. (1998). *Why national standards and tests? Politics and the quest for better schools*. Thousand Oaks, CA: Sage.

- Jennings, J. (2003). From the White House to the schoolhouse: Greater demands and new roles. In W.L. Boyd & D. Miretzky (Eds.), *American educational governance on trial: Change and challenges. The 102nd yearbook of the National Society for the Study of Education*, Part I (pp. 291-309). Chicago, IL: National Society for the Study of Education.
- Kaplan, L.S., & Owings, W.A. (2003, May). The politics of teacher quality. *Phi Delta Kappan*, 84(6), 687-692.
- Killeen, K., Monk, D., & Plecki, M. (2002). School district spending on professional development: Insights available from national data (1992-1998). *Journal of Education Finance*, 28(1), 25-49.
- Koppich, J. (2003). Distributing the pie: Allocating resources through labor-management agreements. In M.L. Plecki & D.H. Monk (Eds.), *School finance and teacher quality: Exploring the connections. The 2003 yearbook of the American Education Finance Association* (pp. 229-246). Larchmont, NJ: Eye on Education.
- Labbé, T. (2002, August 28). More new Md. teachers not fully certified. *Washington Post*, b05.
- Lewis, A. (2003, February). Washington Commentary: Title II and teacher testing. *Phi Delta Kappan*; 84(6), 420-421.
- Linn, R.L., Baker, E.L., & Betebenner, D.W. (2002). Accountability systems: Implications of requirements of the No Child Left Behind Act of 2001. *Educational Researcher*, 31(6), 3-16.
- Ludlow, L.H. (2001). Teacher test accountability: From Alabama to Massachusetts. *Education Policy Analysis Archives*, 9(6). Retrieved August 2003 from <http://epaa.asu.edu/epaa/v9n6.html>
- Massell, D., Kirst, M., & Hoppe, M. (1997). Persistence and change: Standards-based systemic reform in nine states. Philadelphia: University of Pennsylvania Consortium for Policy Research in Education (CPRE), RB-21. Retrieved November 2002 from <http://www.cpre.org/Publications/rb21.pdf>
- Mathis, W.J. (2003, May). No Child Left Behind: Costs and benefits. *Phi Delta Kappan*, 84(6), 679-686.
- McLaughlin, M.W. (1976). Implementation as mutual adaptation: Change in classroom organization. *Teachers College Record*, 77, 339-351.
- Melnick, S.L., & Pullin, D. (2000). Can you take dictation? Prescribing teacher quality through testing. *Journal of Teacher Education*, 51(4), 262-275.
- Mezzacappa, D. (2002, November 15). Pa. moves to raise teacher standard. *Philadelphia Inquirer*, 1.
- Mitchell, R., & Barth, P. (1999, Spring). Not good enough: A content analysis of teacher licensing examinations. *Thinking K-16: A publication of the Education Trust*, 3(1). Retrieved August 2003 from http://www2.edtrust.org/NR/rdonlyres/5F7B8FCA-2400-47DE-9C40-AC948D934836/0/k16_spring99.pdf
- Murname, R.J. (1983). Understanding the sources of teaching competence: Choices, skills, and the limits of training. *Teachers College Record*, 84(3), 564-589.
- Odden, A.R. (2003). An early assessment of comprehensive teacher compensation change plans. In M.L. Plecki & D.H. Monk (Eds.), *School finance and teacher quality: Exploring the connections. The 2003 yearbook of the American Education Finance Association* (pp. 209-228). Larchmont, NJ: Eye on Education.
- Paige, R., Stroup, S., & Andrade, J.R. (2002). *Meeting the highly qualified teachers challenge: The Secretary's annual report on teacher quality*. Washington, DC: U.S. Department of Education Office of Postsecondary Education. Retrieved June 2003 from <http://www.title2.org/ADATitleIIReport2002.pdf>
- Paige, R., Stroup, S., & Andrade, J.R. (2003). *Meeting the highly qualified teachers challenge: The Secretary's annual report on teacher quality*. Washington, DC: U.S. Department of Education Office of Postsecondary Education. Retrieved November 2003 from <http://www.title2.org/TitleIIReport03.pdf>

- Plecki, M.L. (2000). Economic perspectives on investments in teacher quality: Lessons learned from research on productivity and human resource development. *Education Policy Analysis Archives*, 8(33). Retrieved November 2003 from <http://epaa.asu.edu/epaa/v8n33.html>
- Porter, A.C., Garet, M.S., Desimone, L., Yoon, K.S., & Birman, B.F. (2000). *Does professional development change teaching practice? Results from a three-year study*. Washington, DC: American Institutes for Research in the Behavioral Sciences.
- Porter, A.C., Garet, M.S., Desimone, L., Yoon, K.S., & Herman, R. (1999). *Designing effective development: Lessons from the Eisenhower program*. Washington, DC: American Institutes for Research in the Behavioral Sciences.
- A quality teacher in every classroom: Improving teacher quality and enhancing the profession*. (n.d.) Retrieved May 2003 from <http://whitehouse.gov/infocus/education/teachers/>
- Reys, B., Robinson, E., Sconiers, S., & Mark, J. (1999). Mathematics curricula based on rigorous national standards: What, why, and how? *Pbi Delta Kappan*, 80(6), 454-456.
- Rice, J.K. (2003). *Teacher quality: Understanding the effectiveness of teacher attributes*. Washington, DC: Economic Policy Institute.
- Sack, J. (2002, October 2). Illinois board adjusts teacher certification to meet federal rules. *Education Week*, 22(5), 20.
- Shields, P., & Knapp, M. (1997, December). The promise and limits of school-based reform: A national snapshot. *Pbi Delta Kappan*, 78(4), 288-294.
- Slavin, R.E. (2002). Evidence-based education policies: Transforming educational research and practice. *Education Researcher*, 31(7), 15-21.
- Spillane, J.P., & Thompson, C.L. (1997). Reconstructing conceptions of local capacity: The local education agency's capacity for ambitious instructional reform. *Educational Evaluation and Policy Analysis*, 19, 185-203.
- Spillane, J.P., & Zeuli, J.S. (1999). Reform and teaching: Exploring patterns of practice in the context of national and state mathematics reforms. *Educational Evaluation and Policy Analysis*, 21(1), 1-28.
- Sunderman, G., & Kim, J. (2004). *Inspiring vision, disappointing results: Four studies on implementing the No Child Left Behind Act*. Cambridge, MA: Harvard Civil Rights Project. Retrieved March 2004 from http://www.civilrightsproject.harvard.edu/research/esea/call_nclb.php?Page=2
- Thompson, C.L., & Zeuli, J.S. (1999). The frame and the tapestry: Standards-based reform and professional development. In Darling-Hammond, L., & Sykes, G. (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 341-375). San Francisco: Jossey-Bass.
- Timar, T. (1997). The institutional role of state education departments: A historical perspective. *American Journal of Education*, 105, 231-260.
- Walsh, K. (2001). *Teacher certification reconsidered: Stumbling for quality*. Baltimore, MD: Abell Foundation. Retrieved March 2004 from http://www.abell.org/pubsitems/ed_cert_1101.pdf