

Education Division
Contact: Bridget Curran, 202/624-5386 or
bcurran@nga.org
July 21, 2004

Out-of-Field Teaching: The Great Obstacle to Meeting the “Highly Qualified” Teacher Challenge

By Richard M. Ingersoll and Bridget K. Curran*

Summary

The federal *No Child Left Behind* (NCLB) legislation, enacted in January 2002, sets an unprecedented goal—to ensure the nation’s elementary and secondary students are taught by “highly qualified teachers.” Although this goal is laudable, states, districts, and schools face serious obstacles in meeting it, primarily due to a misunderstanding of the sources of underqualified teachers. NCLB requires that all Title I teachers of core subjects hired after the first day of the 2002–03 school year be highly qualified and that teachers of core subjects in *all* schools be highly qualified by the end of the 2005–06 school year. To be considered highly qualified, a teacher must possess a bachelor’s degree, hold full state certification, and demonstrate competence in each subject area he or she teaches.

Data from the 1999–2000 Schools and Staffing Survey (SASS) show how each state stands, as of the 1999–2000 school year, relative to the new requirements. While the SASS data are now four-years-old and are based on a survey of teachers subject to a margin of error, they are the best data available for understanding where states stand. The data offer a snapshot of teacher qualifications relative to the NCLB requirements. The SASS data reveal that elementary and secondary classrooms are inadequately staffed for various reasons. Some of these reasons can be traced to how candidates are prepared and licensed prior to teaching and some to how teachers are assigned once on the job. Especially widespread is the practice of out-of-field teaching—school administrators assigning teachers to teach subjects that do not match their fields of preparation. This problem has been widely misunderstood, and this confusion has caused many state and local reform efforts to encounter difficulties. Contrary to conventional wisdom, out-of-field teaching is not simply a response to teacher shortages. It occurs in schools and subjects where there are plenty of teachers available. Out-of-field teaching is largely a function of school staffing choices.

To more effectively address the out-of-field teaching problem, state leaders need to better understand the issue and the challenges it poses. Initiatives that governors and state leaders could use to address gaps between the new requirements and the qualifications of their teachers include:

- creating or streamlining state data systems to include relevant data on teacher qualifications and

assignments and requiring schools and districts to report critical data, including data on out-of-field teaching;

- upgrading standards for teacher preparation, ensuring teachers acquire both subject-matter knowledge and teaching skills;
- developing strategies for recruiting *and* retaining effective teachers in areas where they are needed most;
- prohibiting out-of-field teaching, especially for new teachers;
- offering incentives for schools and districts to eliminate out-of-field teaching and imposing consequences for those that do not;
- helping hard-to-staff schools improve teacher retention rates;
- encouraging districts and schools to rethink how staffing decisions are made and use models of decisionmaking that give teachers input into what subjects and courses they are assigned to teach;
- encouraging flexible staffing models and creating incentives for schools and districts to generate creative solutions at the local level, including allowing schools to employ itinerant teachers and retired teachers and facilitating the use of distance learning technology to provide rural and hard-to-staff schools with access to qualified teachers who are competent in the subjects taught;
- offering scholarships or loan forgiveness to retrain or provide additional coursework for teachers who are assigned to teach subjects for which they are not qualified;
- establishing or expanding mentoring and induction programs to help out-of-field teachers work toward competency in additional fields by using expert veteran teachers in those fields;
- fostering partnerships among institutions of higher education, school districts, and state leaders for developing new strategies and solutions; and
- tapping federal resources, such as those offered in NCLB, to fund some of these initiatives.

Introduction

Few education problems have received more attention in recent times than the failure to ensure the nation's elementary and secondary classrooms are staffed with qualified teachers. During the past decade, dozens of studies, commissions, and national reports have targeted the qualifications and quality of teachers. This concern is neither unique nor surprising. Elementary schooling and secondary schooling are mandatory in the United States, and it is into the custody of teachers that children are legally placed for a significant portion of their lives. The quality of teachers and the quality of teaching are undoubtedly among the most important factors shaping the learning and growth of students. Moreover, the largest single component of the cost of education in any state is teacher compensation. As a result, numerous reform initiatives and programs to upgrade the quality of teaching and the qualifications of the teaching force have emerged.¹

The Teacher Quality Provisions of the *No Child Left Behind Act*

One of the most significant of these reform efforts is the *No Child Left Behind Act*—the Elementary and Secondary Education Act revised and reauthorized by Congress in 2002. This legislation sets a new, unprecedented and laudable goal—to ensure the nation's public elementary and secondary students are

taught by highly qualified teachers. According to this law, by the end of the 2005–06 school year, all schools will have to meet this goal.

In general, the new law defines a “highly qualified teacher” as someone who has a bachelor’s degree, holds a regular or full state-approved teaching certificate or license, and demonstrates competency in each of the academic subjects he or she teaches. Teachers can establish “competency” in a subject by holding an undergraduate or graduate degree or its equivalent in the subject, passing a test on the subject, holding an advanced teaching certificate in the subject, or meeting some other state-approved method of evaluation for the subject.² For example, Tennessee plans to allow teachers to demonstrate competency by showing improvement in student test scores through the Tennessee Value-Added Assessment System.

To assess how well states and school districts are doing relative to the new requirements and to hold them accountable if they do not meet them, the law requires public annual reports that include data on teacher

The No Child Left Behind Act of 2002

The *No Child Left Behind Act of 2002* reauthorized the Elementary and Secondary Education Act, first enacted in 1965. Title I of the act provides funds to schools to support the education of students from low-income families. NCLB amends the act to include more extensive testing and accountability provisions for schools, districts, and states. Title II provides funds for teacher training and development. NCLB adds new requirements for teachers to be “highly qualified,” provides a basic definition of this, and creates accountability and assistance measures for schools and districts not meeting the new requirements.

qualifications, the numbers of out-of-field assignments, and plans for improvement. In addition, Title I districts must inform parents if their child is taught an academic subject by a teacher who is not highly qualified in that subject, and at a parent’s request must disclose the professional qualifications of any teachers. States must assist Title I schools and districts that fail to reach the state’s goals for highly qualified teachers to ensure all students have a highly qualified teacher in their classroom by the end of the 2005–06 school year. Beyond that it is not entirely clear what consequences will apply to states and districts that do not meet the goal by the deadline, but the

consequences could include the withholding of federal funds.

What Are the Major Sources of Underqualified Teachers?

If NCLB is to succeed in solving the problem of underqualified teachers, it must address the major sources of the problem. Elementary and secondary classrooms are sometimes not staffed by qualified teachers for various reasons. Some of these reasons can be traced to how candidates are prepared and licensed prior to teaching and some to how teachers are utilized once on the job.

Inadequate Teacher Preparation

In some cases, teachers will not meet the new standards for a highly qualified teacher because of deficits in the preparation or education they bring to the job. Falling into this category are those teachers without a four-year college degree, those without any teaching certificate, and those who hold one of the many types of less-than-full teacher certificates issued by states, such as emergency, temporary, alternative, or provisional certificates. The latter are issued to those who need to complete additional coursework or student practice teaching to obtain a full certificate or to those who are participating in, but have not yet completed, an alternative training program. Some prospective teachers will meet the NCLB requirements if

they are making progress toward a full license and if the alternative route program is limited to no more than three years, provides them with sustained, intensive, classroom-focused professional development before and during teaching, and offers structured, ongoing supervision and mentoring.

In addition, there may be teachers who have completed an approved teacher training program but who nevertheless do not meet the new standards. The depth, breadth, and rigor of teacher preparation and certification have long been targets of criticism. For example, the much-heralded report *A Nation At Risk*, released in 1983 by the National Commission for Excellence in Education, highlighted deficits in teacher preparation and certification. More recently, Secretary of Education Rod Paige emphasized the same concerns in his annual report on teacher quality, *Meeting the Highly Qualified Teacher Challenge*. Critics argue, for example, that education degrees and teaching certificates have tended to emphasize preparation in pedagogy to the neglect of coursework in academic subjects.

Under the new federal law, certified teachers with education degrees who have not passed tests or do not have degrees in the subject-matter content of their teaching field may fail to meet the new standards. This could include, for example, special education teachers who teach multiple subjects and middle school teachers who have elementary education certificates. It could also include veteran secondary education teachers who earned their degrees and certificates under prior state requirements and have education degrees with insufficient subject-matter content in their specific field. The law gives states flexibility to develop criteria for measuring the subject-matter knowledge of veteran middle and high school teachers, but the implications of these criteria for many veteran teachers are still unclear.

In all of these cases, the source of the deficits lies in the breadth or depth of college or university teacher training programs or in the rigor of state certification and licensing standards. Consequently, remedies to fix these deficits must focus on changing state licensing requirements and preparation programs. For veteran teachers, states should consider professional development and course taking in the relevant content area(s) and/or alternative measures of subject-matter competence, including passage of subject-matter tests.

Out-of-Field Teaching

A second, and far less understood, source of underqualified teaching is the problem of out-of-field teaching—teachers assigned to teach subjects that do not match their fields of preparation. This is a crucial factor because highly qualified teachers may become highly unqualified if they are assigned to teach subjects that do not match their backgrounds. Teachers trained, for example, in social studies are unlikely to have a solid understanding of math or how to teach it.

In these cases, teachers will not meet the new standards for a highly qualified teacher because of how they are utilized once they are on the job. Remedies to fix these mismatches must look to reform the way teachers are managed and assigned in schools. This may require a joint state and local effort.

One of the most important aspects of the new legislation is its recognition of the out-of-field teaching problem. Indeed, one of the objectives of NCLB is to eliminate out-of-field teaching. This is reflected in the requirement that teachers be highly qualified *in each of the subjects they are assigned to teach*.

This problem can be especially acute in middle schools. Some states require middle school teachers to hold an elementary-school-type certificate that emphasizes a broad background and does not require substantial specialization in any one academic subject. This may be adequate preparation for those teaching in elementary self-contained classes, such as a typical first-grade class where the teacher teaches multiple subjects to the same class of students all or most of the day. However, in some middle schools, such teachers may be assigned to teach a single subject to multiple classes of different students all or most of the

day, as if they are departmentalized secondary-school-level teachers. Under the new standards, subject-matter teachers in the middle grades, just as those in the secondary grades, must be competent in each of the individual subjects they are assigned to teach.

How Do States Currently Stand?

The U.S. Department of Education's Schools and Staffing Survey provides the best available data for understanding how states currently stand relative to the new federal requirements for highly qualified teachers. The most recent SASS data are from the 1999–2000 school year, providing an assessment of teachers' qualifications just prior to the enactment of NCLB. SASS provides state-level survey data about the numbers, types, and fields of teachers' degrees and certificates along with the fields they are assigned to teach.

Teacher Preparation

Table 1 in the appendix shows data for two basic measures of teacher qualifications: the percentage of teachers in each state according to their highest college degree earned and the percentage of teachers in each state according to their type of teaching certificate.

The data suggest that most teachers in most states meet at least two of the requirements of the new legislation—a bachelor's degree and full state certification. Almost all public elementary and secondary school teachers have completed a four-year college education; 99 percent hold at least a bachelor's degree and almost 50 percent hold at least a master's degree. Moreover, about 92 percent of public school teachers hold a regular or full teaching certificate. Another 4 percent hold only a temporary, emergency, or provisional certificate. Finally, about 4 percent of public school teachers hold no teaching certificate of any type.

Schools and Staffing Survey

SASS is a national survey of teachers, principals, schools, and districts conducted by the Census Bureau on behalf of the National Center for Education Statistics, which is the statistical arm of the U.S. Department of Education. To date, this survey has been undertaken four times: during the 1987–88, 1990–91, 1993–94, and 1999–2000 school years. Data from a fifth survey—undertaken during the 2003–04 school year—will probably be available by 2005. SASS is a large survey of about 5,000 school districts, 11,000 schools, and 55,000 teachers. It provides accurate survey data for all fifty states and all types of schools. Because the data are based on a random sample and are self-reported, they are subject to a margin of error. Even so, they can be used to provide a snapshot of existing levels of teacher qualifications in each state.

These data appear to conflict with conventional wisdom. In recent years, much attention has been focused on school districts—especially those serving low-income, urban communities—that have been forced to hire significant numbers of uncertified teachers to fill their teaching vacancies. The national data suggest, however, that overall the number of teachers without a full certificate comprises only a small proportion of the K–12 public teaching force. In a workforce of almost 3 million teachers, about 125,000 teachers have a less-than-full certificate and about 126,000 teachers have no certificate at all. Nevertheless, significant problems remain in individual schools and districts, particularly in urban areas and in schools with high concentrations of poor and minority students. Many of the teachers lacking full certification are concentrated in these schools and districts.

It is also important to recognize that these data reveal little about the quality of teacher qualifications. The kinds of certification provided, the rigor of teacher certification requirements, and the quality of teacher training programs vary widely among states. Moreover, many veteran teachers have education, not academic, degrees. As noted, critics have long questioned the rigor and content of education degrees. For precisely this reason, during the past two decades, many states have upgraded teacher education by, for example, requiring secondary education majors to complete substantial coursework in an academic discipline.

Recent data from SASS show that very few secondary teachers have only a “generic” major or minor in education, such as in secondary education or curriculum.³ Most have subject-area education majors, such as in math education or English education, and these often include substantial academic preparation. For instance, in many teacher-training institutions, a degree in math education requires as much coursework in the math department as does a degree in math.⁴ Moreover, many states now require secondary teachers to acquire an academic major or the equivalent in the field of their certification, and many are creating similar requirements for middle school teachers. Many states also require teachers to pass tests of both teaching skill and subject-matter knowledge. However, cut scores for passing these tests vary widely, and in some states the cut scores are set low.

Out-of-Field Teaching Assignments

Table 2 in the appendix provides a very different picture than Table 1. Table 2 presents data on the percentage of teachers assigned to teach in particular fields who do not have a full teaching certificate in the field taught. The data show that many teachers at both the elementary-school and secondary-school levels are assigned to teach in subjects that do not match their educational backgrounds.

At the elementary school level, about 7 percent of those who teach regular kindergarten or elementary classes across the nation do not have a full certificate in kindergarten or elementary education. At the secondary school level, just less than one third of those who teach one or more math classes in grades seven to twelve do not have a teaching certificate in math. Just more than one quarter of seventh- to twelfth-grade English teachers do not have a full certificate in English. Just more than one fifth of all science teachers in grades seven through twelve do not have a certificate in any of the sciences. Finally, more than one quarter of social studies teachers in grades seven through twelve are without a certificate in social studies or in a social science, including history.

Background data show that those teaching out of field are typically fully certified veterans with an average of 14 years teaching experience. Further, about 45 percent of out-of-field teachers hold graduate degrees, but in disciplines other than those they have been assigned to teach. At the secondary level, these misassignments typically involve one or two classes out of a normal daily schedule of five classes. Hence, out-of-field teachers are typically experienced and qualified individuals who have been assigned to teach part of their day in fields that do not match their training or education.

The data also show that some kinds of schools have more out-of-field teaching than others. For instance, classes in high-poverty schools are 77 percent more likely to be assigned to an out-of-field teacher than classes in low-poverty schools. Classes in majority non-white schools are over 40 percent more likely to be assigned to an out-of-field teacher than those in mostly-white schools.⁵ States need targeted policy strategies to address the distribution of teachers as well as their qualifications and assignment.

SASS data also reveal that out-of-field teaching is a practice that varies dramatically across the nation. In Michigan 17 percent of regular kindergarten and elementary teachers are not certified in kindergarten or

elementary education. In Arkansas, Kansas, Nebraska, New Hampshire, Oregon, Vermont, and West Virginia, of the kindergarten and elementary teachers sampled in the survey, all had a full certificate in kindergarten or elementary education. In Maryland 30 percent of those teaching one or more seventh- to twelfth-grade science classes did not have a full certificate in a science; in South Dakota, the proportion was 7 percent. In California 41 percent of those teaching math did not have a full certificate in math; in Wisconsin the proportion was 11 percent.

Together the two tables show that while most teachers appear to meet the requirements to be considered highly qualified, there are nevertheless large numbers of classrooms staffed by teachers who are not highly qualified in the particular subject taught.

Defining and Measuring Out-of-Field Teaching

The extent of out-of-field teaching can be measured differently, and how it is measured can produce different results.⁶ For the data analyses presented in Table 2, teachers are considered to be teaching in-field if they are certified in each of the subjects they teach. Depending on state certification requirements, these teachers may or may not have majors or minors in those subjects. One issue is that of multidisciplinary fields, such as science and social studies, which can be defined broadly or narrowly. Table 2 adopts the former approach; those teaching any science course are deemed highly qualified if they have a certificate in any science discipline or in general science. Likewise, those teaching any social studies course are deemed highly qualified if they have a certificate in any social science discipline or in general social studies. Although this approach is consistent with the way many states define these fields, it can lead one to underestimate the amount of underqualified teaching within these broad fields. Teachers in these amalgam fields may be required to teach any of a wide array of disciplines within the broad field or department. However, having a certificate in a certain field may not mean that those teachers are qualified to teach all of the disciplines within the field. For example, a teacher with a college degree in biology and a teaching certificate in science may not be qualified to teach physics. If we define these fields more narrowly, according to subfields or according to each of the separate disciplines in each broad field, the amount of out-of-field teaching increases dramatically. For example, more than half of those teaching physical science classes (chemistry, physics, earth science, or space science) are without at least a college minor in any of the physical sciences. Likewise, more than half of all those teaching history are without at least a minor in history.⁷

Shortages Do Not Fully Explain the Prevalence of Out-of-Field Teaching

Research during the past decade has shown that the problem of teacher out-of-field teaching is chronic, widespread, and serious.⁸ Although there has been increasing attention paid to this issue, the reasons behind its prevalence are not well understood.

Most observers and commentators have assumed that out-of-field teaching is a result of teacher shortages. This view holds that shortfalls in the number of available qualified teachers—primarily because of increasing student enrollment and an aging teaching workforce—have forced many school systems to lower standards to fill teaching openings, the net effect of which is high levels of out-of-field teaching. This view seems to make sense, but it does not fully explain the of the out-of-field teaching problem.

The demand for teachers has increased in recent years. Since the mid-1980s, student enrollments have increased, most schools have had job openings for teachers, and the size of the teacher workforce has increased. Most important, a substantial number of schools report difficulties in finding qualified

candidates to fill their teaching openings. These staffing difficulties are a factor that contributes to out-of-field teaching.

Yet the existence of teacher shortages cannot fully explain the prevalence of out-of-field teaching. First, shortages cannot explain the high levels of out-of-field teaching that exist in English and social studies, fields that have long been known to have teacher surpluses. Second, even when the rates of student enrollment increases were at their peak in the mid-1990s, not all schools experienced recruitment problems. Further, the data indicate that about half of the teachers in any given year assigned to teach out of field were employed in schools that reported no difficulties whatsoever finding qualified candidates for their job openings that year. In any given year, out-of-field teaching takes place in schools that did not have any vacancies or openings for teachers at all that year.⁹

The data indicate the ways schools are organized and teachers are managed account for as much of the problem of out-of-field teaching as do inadequacies in the supply of teachers. Some out-of-field teaching is no doubt unavoidable. However, the data also show that, like states, schools vary dramatically in how much out-of-field teaching they have. Some of these differences can be traced to factors such as the quality of principal leadership, the way the school is administered, the oversight the district provides each school, and the strategies the school uses for teacher recruitment and hiring. The data also show the problem tends to be worse in schools with higher concentrations of poor and minority students.¹⁰

SASS data reveal that decisions about the selection and allocation of teachers to courses and programs are primarily the responsibility and prerogative of principals and other building-level school administrators. These administrators are charged with the often difficult task of providing a broad array of courses and programs with limited resources, limited time, a limited budget, and a limited teaching staff—problems that exist in all schools but may be magnified in those with more poor and minority students.

School principals not only have the responsibility for deciding who teaches which courses and programs, but they also have an unusual degree of discretion in these decisions. Although teachers are subject to elaborate state certification requirements to ensure their basic preparation and competence, there has been little regulation of how teachers are employed and utilized once they are on the job. Teacher employment regulations are weak or rarely enforced, and most states routinely allow local school administrators to bypass even the limited requirements.¹¹ In this context, assigning teachers to teach out of their fields is a useful and acceptable administrative practice.

Consider the following.

- Rather than trying to find and hire a new science teacher to teach a newly mandated but underfunded science curriculum, a school principal may find it more convenient and cost-effective to assign a few English and social studies teachers to each “cover” a section or two in science.
- If a teacher suddenly leaves in the middle of a semester, a principal may opt to hire a readily available but not fully qualified and less expensive, substitute teacher rather than initiate a formal search for a new, fully qualified teacher.
- If a full-time music teacher is under contract, but student enrollment is sufficient to fill only a half day of music classes, the principal may find it cost-effective to assign the music teacher to teach some classes in another field, such as English, to employ him or her for a regular full-time workload.
- When faced with a tough choice between hiring an unqualified candidate for a science teacher position or doubling the class size of one of the fully qualified science teachers in the school, a principal might opt for the former. The result is a smaller class but one taught by a teacher who is less qualified.

All of these managerial choices to assign teachers to teach out of field may save time and money for the school, and ultimately for the taxpayer, but they are not without cost. Moreover, with the advent of the *No Child Left Behind Act*, such assignments are already prohibited in Title I schools and soon will be prohibited in all schools.

According to Education Week's *Quality Counts 2003* report, at least 11 states have banned or placed restrictions on out-of-field teaching. Kentucky is the only state to ban the practice outright. Nebraska has limited the number of teachers per school who can be teaching out of field. South Carolina has set a limit on the amount of instructional time any one teacher can spend out of field each day. Texas has limited to one year the amount of time a teacher can teach a subject for which he or she is not certified.¹² The SASS data in Table 2 indicate significant levels of out-of-field teaching in these states, at least as of 1999–2000 and according to the definition used for the analyses here.

What Are the Solutions to the Problem of Underqualified Teachers?

Understanding the reasons behind out-of-field teaching assignments is important because of their implications for solving the problem. Meeting the new standards of the *No Child Left Behind Act* will require states and school districts to address both sources of underqualified teaching—how teachers are prepared prior to teaching and how teachers are utilized once on the job.

Define the Problem with Better State Data

Although federal SASS data are useful for big-picture analyses across states, the data tables presented offer only a snapshot of the problems and issues in the states prior to the enactment of NCLB. Each state needs its own, more current data that can fully define the problems and issues based on its own requirements for teacher qualifications and assignments and its implementation of the federal requirements. In any given state, the problems or issues may be more pronounced or completely different in certain districts or schools, particularly those in extreme rural or urban areas or in low-performing schools with high concentrations of poor and minority students. Without a more complex understanding of the specific nature of the problem in different types of schools, districts, and subject areas within the state, policy solutions may not adequately address the issues. Few states have a comprehensive system of teacher data that can inform the decisions policymakers need to address most. Baseline data on highly qualified teachers reported by states to the U.S. Department of Education in 2003 underscore the need for better state data systems on teachers, their qualifications, and their assignments.¹³

Especially thorny is the issue of providing accurate assessments of out-of-field teaching. For instance, traditionally some states only considered a teacher out of field if he or she was misassigned for the entire school day. Since most out-of-field assignments usually entail one to three classes out of a normal five-class load per day, this effectively defined the problem out of existence. NCLB requires all classes in the core academic subjects to be taught by teachers who are highly qualified in the subject taught, intentionally disallowing part-time misassignment.

Upgrade Teacher Qualifications and Increase Available Supply

Most recent federal, state, and local teacher policies and initiatives have focused on two general approaches to ensuring all classrooms are staffed with qualified teachers, which **governors and other state policymakers can consider as part of a comprehensive strategy to ensure highly qualified teachers for all classrooms:**

- upgrading the qualifications of teachers; and
- increasing the available supply of teachers.

To address the first issue, many states have pushed for more rigorous preparation and certification standards. Increasingly, states are upgrading the academic coursework requirements for both elementary and secondary school teachers. As of 2002, at least 34 states required secondary teachers to major or minor in the academic area of certification and at least eight others specify hours in the content area.¹⁴ For elementary school teachers, states increasingly require an academic major but not necessarily in any or all of the subjects elementary school teachers must teach.¹⁵

Requirements for middle school teachers often have been lumped with elementary school teachers. Some states are eliminating broad or elementary school certification for middle school teachers and requiring middle school teachers, like secondary school teachers, to choose one or two fields of concentration from among the four core academic fields (i.e., English, science, mathematics, and social studies) and confine their certification to that field or those fields of concentration. As of 2002, at least 20 states required middle school teachers to major or minor in their subject(s), though a few of them require it only for certain subjects or require a major only for some subjects and a minor for others. South Carolina passed a new regulation requiring middle school teachers to obtain subject-area concentrations; the new requirement takes effect for all college graduates on September 1, 2005.¹⁶

No Child Left Behind forces states to address this issue by requiring middle and secondary school teachers to demonstrate competence in each of the subjects they teach by acquiring a major or the equivalent of a major, passing a rigorous subject-matter test, or meeting some other equivalent standard. States are still working to develop specific definitions for meeting these requirements, particularly among veteran middle school teachers.

In response to the second issue, numerous programs and policies aim to increase the supply of available teachers by recruiting new candidates into teaching, especially in schools serving disadvantaged students and in fields such as math, science, and special education. Among these initiatives are:¹⁷

- alternative preparation or certification programs designed to ease entry into teaching;
- mid-career change programs, such as Troops-to-Teachers, designed to entice professionals into teaching by offering an expedited process;
- Peace Corps-like programs, such as Teach for America, designed to lure the “best and brightest” college graduates into teaching; and
- financial incentives, such as scholarships, signing bonuses, housing assistance, student loan forgiveness, or differential pay arrangements, designed to make teaching more financially viable or attractive.

Initiatives to increase teacher quality and quantity are also emphasized in the *No Child Left Behind Act*. Title II, for example, lists these same kinds of activities as approved for federal funding.

Underlying these initiatives is an assumption that the primary reason for underqualified teachers in schools is deficits in teachers themselves, such as their numbers, preparation, knowledge, ability, and licensing. Remedies for these deficits focus on how teachers are selected, prepared, and certified *prior to teaching*.

Upgrading teacher recruitment, preparation, and certification practices and requirements can be useful first steps. However, these strategies alone will not solve the problem of underqualified teachers because they do not address all the key causes.

Reduce and Eliminate Out-of-Field Teaching

Focusing exclusively on how teachers are selected, prepared, and certified ignores how schools contribute to the problem of underqualified teachers. The data indicate that solutions to the problem must also consider how schools are managed and how teachers are used *once on the job*. In short, recruiting thousands of new candidates and providing them with rigorous preparation will not solve the problem if large numbers of such teachers continue to be assigned to teach subjects other than those for which they were prepared.

The *No Child Left Behind Act* aims to improve the quality of teaching. However, this goal, one shared by governors and other state leaders, cannot be accomplished if building administrators continue to assign teachers to courses that they are not qualified to teach. Teachers may end up bearing the brunt of the legislation's consequences and may decide the job is not worth the additional burdens, exacerbating problems of teacher recruitment, retention, distribution, and hiring.

If assigning teachers to teach out of field has been a prevalent administrative practice for decades because it is more efficient and less expensive than the alternatives, then its elimination will not be easy. To meet the new legislation's goal of ensuring all students are provided with qualified teachers, states will need to help districts and schools rethink how they manage their human resources.

The data show that teacher staffing decisions have traditionally followed a top-down command model; school principals make such decisions and teachers typically have little say over which courses they are assigned to teach. As the earlier examples illustrate, these staffing decisions often involve difficult trade-offs and often lead to out-of-field teaching.

Meeting the new standards for highly qualified teachers will be more difficult in some settings than in others. For example, schools with high rates of teacher turnover tend to have more out-of-field teaching. In addition, rural school districts tend to have smaller secondary schools with a smaller faculty, and as a result, teachers in these schools are more often required to teach multiple subjects regardless of their backgrounds.

SASS data indicate that beginning teachers are more likely than veteran teachers to be given out-of-field assignments. Disproportionately burdening newcomers can contribute to the problem of high levels of beginning teacher attrition. Moreover, the data suggest that when teachers are assigned inappropriately, they are largely left to their own devices and their students suffer.

Governors and other state policymakers could consider:

- prohibiting out-of-field assignments for new teachers;
- offering incentives for districts and schools to eliminate out-of-field teaching and imposing consequences for those that do not;
- helping hard-to-staff schools improve teacher retention rates;
- encouraging districts and schools to rethink how staffing decisions are made and use models of decisionmaking that give teachers input into what subjects and courses they are assigned to teach;

- encouraging flexible staffing models and creating incentives for schools and districts to generate creative solutions at the local level, such as:
 - allowing schools to employ itinerant teachers with preparation in a specialty not needed full time in any one school, which could include the employment of retired teachers; or
 - facilitating the development and use of distance learning technology to provide rural and hard-to-staff schools with access to teachers with preparation in a specialty area but based in another geographical area;
- offering scholarships or loan forgiveness to retrain or provide additional coursework for teachers who are assigned to teach subjects for which they are not qualified;
- establishing or expanding mentoring and induction programs to help out-of-field teachers work toward competency in additional fields by using expert veteran teachers in those fields;
- fostering partnerships among institutions of higher education, school districts, and state leaders for developing new strategies and solutions; and
- tapping federal resources, such as those offered in NCLB, to fund some of these initiatives.

Conclusion

Research has shown that teacher knowledge, skill, and ability matter for student achievement. Existing state data systems are rarely able to provide policymakers with the data that illuminate and define policy problems and enable them to craft effective solutions. Problems are often defined by anecdotal evidence and personal experience. As a result, few states have been able to create comprehensive teacher quality policies that address specific, well-defined problems in a targeted and systematic manner. Governors and other state policymakers first need to insist on better and more user-friendly data systems that help answer critical policy questions.

Further, governors can take the lead on insisting on high standards for entering the profession, on eliminating out-of-field teaching, and on recognizing, supporting, and rewarding quality teaching. The issues related to out-of-field teaching are not easily addressed. They go to the root of how schools are organized and staffing decisions are made. Gubernatorial leadership is needed to bring attention to the problem, devise creative solutions, provide incentives for schools and districts to act, and impose consequences for those that do not take action. The *No Child Left Behind Act* provides the impetus and opportunity for addressing the issue of out-of-field teaching, and governors could take the lead in crafting effective policy strategies to meet the goals of the federal legislation and, and more importantly, improve the quality of teaching in the state's classrooms.

*Richard M. Ingersoll is an associate professor of education and sociology at the University of Pennsylvania. Bridget K. Curran is a senior policy analyst in the National Governors Association Center for Best Practices.

Endnotes

¹ Teaching quality and teacher qualifications are not synonymous. The ultimate goal of NCLB is to improve the former, but its provisions mostly focus on improving the latter. Yet although the qualifications of teachers, such as their education, training, and experience, are only indirect measures of the quality of teachers and teaching, most analysts agree they provide useful information on this important educational resource. Teaching, unlike many other

occupations, has an extensive body of empirical research documenting that a teacher's qualifications are an important predictor of a teacher's performance.

² Public charter schools are not bound by all of the testing and certification requirements of the act but by state public charter school laws. NCLB does require teachers in these schools to have four-year degrees and demonstrate subject-matter competence, but it does not require that they have full state certification.

³ Richard M. Ingersoll, "The Problem of Underqualified Teachers in American Secondary Schools, *Educational Researcher* 28, no. 2 (March 1999): 26–37, at <http://www.aera.net/pubs/er/arts/28-02/ingersoll01.htm>.

⁴ For details on teacher certification requirements, see National Association of State Directors of Teacher Education and Certification, *The NASDTEC Manual on the Preparation and Certification of Educational Personnel in the United States and Canada 2003* (Mashpee, Mass.: National Association of State Directors of Teacher Education and Certification, 2003).

⁵ Craig D. Jerald and Richard M. Ingersoll, *All Talk, No Action: Putting an End to Out-of-Field Teaching* (Washington, D.C.: The Education Trust, 2002), at <http://www2.edtrust.org/NR/rdonlyres/8DE64524-592E-4C83-A13A-6B1DF1CF8D3E/0/AllTalk.pdf>.

⁶ For a detailed comparison of different types of measures of out-of-field teaching, see Ingersoll, "The Problem of Underqualified Teachers"; and Richard M. Ingersoll, "Measuring Out-of-Field Teaching" (unpublished manuscript available from author).

⁷ For data on the amount of out-of-field teaching in subfields, such as history, life science, and physical science, see Ingersoll, "The Problem of Underqualified Teachers."

⁸ For examples of reports on out-of-field teaching, see Sharon A. Bobbitt and Marilyn M. McMillen, *Qualifications of the Public School Teacher Workforce: 1988 and 1991* (Washington, D.C.: National Center for Education Statistics, 1994), at <http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=95665>; Education Week, *Quality Counts 2000: Who Should Teach?* (Bethesda, Md.: Editorial Projects in Education, 2000); Education Week, *Quality Counts 2003: If I Can't Learn From You . . . Ensuring a Highly Qualified Teacher in Every Classroom* (Bethesda, Md.: Editorial Projects in Education, 2003); Jerald and Ingersoll; and Marilyn McMillen Seastrom et al., *Qualifications of the Public School Teacher Workforce: Prevalence of Out-of-Field Teaching 1987–88 to 1999–2000* (Washington, D.C.: National Center for Education Statistics, 2002), at <http://www.nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002603>. For a summary of research and data on out-of-field teaching, see Ingersoll, "The Problem of Underqualified Teachers."

⁹ Richard M. Ingersoll, "Why Some Schools Have More Underqualified Teachers than Others," *Brookings Papers on Education Policy*, edited by Diane Ravitch (Washington, D.C.: Brookings Institution, 2004), 45–71.

¹⁰ Jerald and Ingersoll.

¹¹ See Education Week, *Quality Counts 2000*; Education Week, *Quality Counts 2003*; and Virginia Robinson, *Making Do in the Classroom: A Report on the Misassignment of Teachers* (Washington, D.C.: Council for Basic Education and American Federation of Teachers, 1985) for discussions of state legislation and regulations concerning out-of-field teaching.

¹² Education Week, *Quality Counts 2003*, 58 and 64.

¹³ The Education Trust, *Telling the Whole Truth (or Not) About Highly Qualified Teachers* (Washington, D.C.: The Education Trust, 2003), at <http://www2.edtrust.org/NR/rdonlyres/C638111D-04E3-4C0D-9F68-20E7009498A6/0/tellingthetruthteachers.pdf>.

¹⁴ Education Week, *Quality Counts 2003*, 91; and Council of Chief State School Officers, *Key State Education Policies on PK–12 Education: 2002* (Washington, D.C.: Council of Chief State School Officers, 2002), 30–32.

¹⁵ Council of Chief State School Officers, 30.

¹⁶ Education Week, *Quality Counts 2003*, 91; and Council of Chief State School Officers, *Key State Education Policies*, 31–32.

¹⁷ See Eric Hirsch, Julia E. Koppich, and Michael S. Knapp, *Revisiting What States Are Doing to Improve the Quality of Teaching: An Update on Patterns and Trends* (Seattle, Wash.: Center for the Study of Teaching and Policy, University of Washington, 2001), at <http://depts.washington.edu/ctpmail/Working.html#Revisiting>, for a review of teacher policies and reforms across states.

Appendix

Table 1. Percentage of Public School Teachers, By Highest Degree Earned and Highest Type of Certification Held, By State (1999–2000)

	Less than Bachelor's Degree	Bachelor's Degree	Master's Degree or Higher	No Certification	Less-than-Full Certification	Full Certification
United States	0.67	52.40	46.90	4.21	4.17	91.62
Alabama	0.70	41.34	57.96	2.87	1.36	95.77
Alaska	0.72	59.23	40.05	4.74	3.12	92.14
Arizona	0.62	51.17	48.21	5.86	3.80	90.33
Arkansas	0.74	67.56	31.71	2.03	0.42	97.55
California	0.57	62.78	36.65	5.49	7.16	87.35
Colorado	0.47	45.8	53.72	6.39	3.72	89.89
Connecticut	1.16	17.38	81.46	4.00	5.13	90.87
Delaware	2.26	49.10	48.64	5.93	3.73	90.33
Florida	1.17	61.24	37.59	6.09	3.29	90.62
Georgia	1.10	50.19	48.72	4.61	2.97	92.42
Hawaii	0.81	50.76	48.43	13.04	0.74	86.23
Idaho	0.55	70.45	29.00	2.49	0.94	96.57
Illinois	0.14	47.16	52.71	3.45	1.32	95.23
Indiana	0.21	32.02	67.78	3.11	1.03	95.86
Iowa	0.09	66.18	33.74	2.49	4.30	93.21
Kansas	0.40	61.62	38.34	3.26	1.24	95.5
Kentucky	0.43	28.10	71.48	3.53	6.02	90.45
Louisiana	0.43	64.18	35.38	11.07	1.96	86.97
Maine	1.52	66.67	31.81	3.32	4.21	92.47
Maryland	0.79	46.72	52.49	5.00	3.44	91.56
Massachusetts	1.52	38.67	59.81	2.74	5.44	91.82
Michigan	0.22	42.8	56.98	3.48	9.89	86.62
Minnesota	0.16	55.14	44.70	2.18	0.92	96.91
Mississippi	0.62	58.41	40.96	5.65	3.24	91.11
Missouri	1.25	49.23	49.52	3.73	3.43	92.83
Montana	0.54	70.91	28.56	2.74	1.40	95.86
Nebraska	0.22	59.45	40.33	2.17	1.61	96.21
Nevada	0.82	53.26	45.93	2.94	2.82	94.24
New Hampshire	0.55	52.15	47.30	5.73	1.09	93.18
New Jersey	0.28	59.99	39.73	1.18	1.58	97.24
New Mexico	1.07	56.13	42.79	5.11	2.17	92.72
New York	0.03	22.20	77.77	1.89	9.05	89.06
North Carolina	1.58	67.59	30.83	7.44	5.29	87.26
North Dakota	0.59	77.95	21.46	1.56	1.41	97.03
Ohio	1.19	50.51	48.30	2.28	10.67	87.05
Oklahoma	0.14	63.77	36.09	1.86	1.41	96.73
Oregon	0.20	50.16	49.64	2.86	1.06	96.08
Pennsylvania	0.87	50.03	49.09	3.39	2.65	93.97
Rhode Island	0.00	44.08	55.92	1.28	4.74	93.98
South Carolina	1.41	48.14	50.45	6.83	1.53	91.64

South Dakota	0.86	75.55	23.59	1.78	0.60	97.62
Tennessee	0.85	50.92	48.23	4.14	1.48	94.38
Texas	0.67	69.87	29.46	6.44	3.21	90.35
Utah	1.98	71.17	26.85	4.91	1.29	93.80
Vermont	0.00	49.77	50.23	2.02	0.00	97.98
Virginia	0.99	55.53	43.47	5.38	5.95	88.67
Washington	0.51	46.56	52.93	2.66	1.23	96.10
West Virginia	1.12	37.56	61.32	2.16	0.87	96.96
Wisconsin	0.17	57.23	42.60	2.37	1.39	96.25
Wyoming	0.07	69.83	30.10	1.68	0.78	97.54

Notes: “Less-than-full certification” includes those with emergency, temporary, alternative, or provisional certification. “Full certification” includes those with probationary, regular, standard, full, or advanced certification. “Probationary” refers to an initial certificate issued after satisfying all requirements, except completion of probationary period. Teachers completing alternative route programs are classified based on the type of certificate held at the time of the survey, but once an alternative route program is completed and a teacher earns a full or standard certificate, he or she would be classified as fully certified.

Source: *1999–2000 Schools and Staffing Survey*, National Center for Education Statistics, U.S. Department of Education.

Table 2. Percentage of Public School Teachers Without a Full Certificate in the Field Taught, in Selected Fields, By State (1999–2000)

	Elementary	Secondary			
		English	Math	Science	Social Studies
United States	6.56	26.71	28.62	23.99	27.99
Alabama	0.10	32.11	23.84	21.57	15.64
Alaska	6.07	41.29	54.08	27.24	36.26
Arizona	6.85	25.97	37.54	32.26	28.86
Arkansas	0.00	22.74	15.06	16.41	21.34
California	13.14	33.91	41.53	32.77	35.52
Colorado	5.03	33.10	44.93	28.22	35.30
Connecticut	1.74	24.67	18.34	19.41	27.04
Delaware	12.66	37.02	40.93	34.15	49.91
DC	20.49	28.73	32.35	27.26	69.63
Florida	4.25	31.48	40.43	24.49	37.67
Georgia	6.36	33.64	20.30	23.74	27.23
Hawaii	5.05	41.90	56.28	34.56	34.54
Idaho	1.49	16.74	23.43	11.11	19.77
Illinois	2.93	18.04	21.31	17.65	26.48
Indiana	1.38	14.25	20.76	19.71	14.14
Iowa	7.05	20.12	24.00	15.11	20.81
Kansas	0.00	24.94	22.97	21.19	27.66
Kentucky	9.88	27.97	26.39	27.21	19.35
Louisiana	6.83	34.49	33.91	34.91	35.87
Maine	2.59	27.42	28.29	12.97	23.61
Maryland	6.32	30.05	20.89	30.8	28.36
Massachusetts	5.11	21.81	23.73	25.28	19.75

Michigan	16.49	32.83	38.81	27.18	42.99
Minnesota	1.37	11.83	19.05	21.58	16.18
Mississippi	3.97	40.15	33.37	21.16	13.68
Missouri	6.28	28.13	25.40	26.38	26.09
Montana	0.87	24.45	21.74	23.98	22.66
Nebraska	0.00	25.75	24.33	19.54	28.01
Nevada	4.98	26.37	19.31	23.76	15.80
New Hampshire	0.00	22.65	33.24	32.82	29.00
New Jersey	1.14	24.85	17.17	22.60	32.43
New Mexico	2.61	28.84	33.49	27.53	38.05
New York	10.88	32.82	33.66	26.62	30.03
North Carolina	3.06	24.51	28.57	31.48	19.80
North Dakota	1.58	12.28	26.85	16.49	13.63
Ohio	14.57	25.60	22.36	21.43	18.27
Oklahoma	0.96	26.47	25.22	15.60	20.43
Oregon	0.00	26.00	28.95	20.01	29.55
Pennsylvania	1.99	31.15	26.52	21.17	31.26
Rhode Island	6.13	26.89	14.11	23.10	22.13
South Carolina	3.20	16.19	13.55	23.18	10.29
South Dakota	1.34	15.63	11.81	7.63	20.85
Tennessee	5.56	23.27	24.07	24.77	24.71
Texas	8.18	21.02	36.14	24.39	31.83
Utah	1.47	28.42	23.12	16.04	21.01
Vermont	0.00	10.37	20.21	4.35	14.25
Virginia	8.97	20.43	26.29	23.49	33.05
Washington	2.29	28.97	23.32	15.68	40.08
West Virginia	0.00	27.66	19.94	12.53	24.94
Wisconsin	2.41	15.44	10.74	11.78	14.69
Wyoming	0.84	13.19	16.92	13.26	27.65

Notes: “Less-than-full certification” includes those with emergency, temporary, alternative, or provisional certification. “Full certification” includes those with probationary, regular, standard, full, or advanced certification. “Probationary” refers to an initial certificate issued after satisfying all requirements, except completion of probationary period. Teachers completing alternative route programs are classified based on the type of certificate held at the time of the survey, but once an alternative route program is completed and a teacher earns a full or standard certificate, he or she would be classified as fully certified.

“Elementary” includes those teaching kindergarten or grades one to eight. It only includes those teaching in self-contained classes, i.e. where the teacher teaches multiple subjects to the same class of students all or most of the day. It includes K–8 teachers employed in middle schools. It excludes departmentalized teachers who teach subject-matter courses to several classes of different students all or most of the day.

“Secondary” includes those teaching grades seven to twelve in the fields of English, math, science, and social studies. It only includes those teaching in departmentalized classes, i.e. where the teacher teaches the same subject to different classes of students all or most of the day. It includes seventh and eighth grade, departmentalized teachers who are employed in middle schools.

Source: *1999–2000 Schools and Staffing Survey*, National Center for Education Statistics, U.S. Department of Education.