

STATE EDUCATIONAL GOVERNANCE THROUGH STANDARD-SETTING:
THE USE OF TEACHER COMPETENCY TESTING FOR TEACHER CERTIFICATION

RESEARCH OBJECTIVES

The proposed study will examine how state-mandated use of teacher competency tests for teacher certification affects the preparation, supply, and composition of the prospective teaching force. The research will seek to ascertain how the use of testing as a state certification requirement changes state and local actions regarding teacher selection and preparation. We expect to see changes in teacher selection and preparation decisions on the part of state and local education agencies, schools of education, accreditation agencies, and state standard-setting agencies.

By surveying schools of education and local school districts in five states that currently use the NTE or state-developed tests for teacher certification, we will seek to discover how this state mandate affects the characteristics of the prospective teaching force, the curriculum in schools of education, and the supply of candidates to individual school districts. Interviews with state-level policymakers, accreditation and certification agency officials, and deans of teacher education programs will investigate how a standard that is set by the state affects decision criteria and the balance of control among these institutions.

Statement of the Problem

Over the past decade, a variety of state initiatives have attempted to improve the quality of education which school districts deliver. These initiatives have ranged from school accountability legislation to minimal competency testing and, recently, increased course requirements for students. These state-level actions, however, have not confronted the central problem in the delivery of educational services--the quality of teaching in our schools and classrooms. One important aspect of this problem is the quality of teachers attracted and admitted to the occupation.

Teaching was once a relatively attractive occupation drawing to it white men who valued security, talented women who had few other career options, and professionally-oriented black men and women who were barred from other fields. While teaching may never have attracted the most academically able of young people, some recent studies have found that the academic ability of new entrants is declining (Weaver, 1979; Vance and Schlecty, 1982). There are many explanations for this trend. Declining school enrollments created a surplus of teachers, thus discouraging new entrants. New career opportunities began to open to all social groups. The low public image of teaching and declining teachers' salaries (in real terms) combined to discourage talented young people from considering teaching.

State governments have begun to be concerned about the ability of new entrants into teaching. The concern is a natural one, for states have a long-established role in controlling access to teaching since individual school districts have difficulty forcing change in teacher preparation practices.

In this area, as in most others, states can draw upon only a limited repertoire of policy tools to achieve their ends. Teacher preparation occurs in schools of education that are not directly under the control of state officials. Accrediting associations serve as generally weak controls over the content and quality of education offered in these schools. And hiring decisions are made by local boards of education. Thus, to affect the quality of new entrants to teaching, states must use tools that influence the decisions of schools of education, school systems, or individual teacher candidates. States may increase funds to school districts for upgrading salaries or funds to schools of education for improving teacher training. They may regulate school districts or schools of education by imposing program approval or certification standards. Each of these policy tools is intended to constrain or determine decisions by other educational organizations. Each is based upon a number of assumptions and theories about organizational and individual behavior and about the process of education.

Recently, a growing number of states have turned to tests as a means of selecting pre-service teacher candidates. In 1977, at least 23 states were using the National Teacher Examinations (NTE) for purposes ranging from obtaining statewide data to validating credits earned at non-accredited institutions. By 1980, at least seven states were using the NTE for certification purposes (Lewis, 1979; Vlaanderen, 1980). Some states have developed their own tests of teacher competency for certification, while others are currently considering licensing teachers based in part on statewide examinations prior to certification (Southern Regional Education Board, 1979; McNeil, 1981; Killian, Wood, and Bell, 1980).

Teacher competency testing is one outcome of a growing frustration with efforts to change the character of teacher education. As a senior member of the education establishment recently proclaimed on the cover of Phi Delta Kappan magazine,

Let's face it: Colleges of pedagogy will in all probability never overhaul their programs if each college is to do it alone. There are too many hurdles, too much disparity among institutions, too much institutional jealousy, too much divisiveness and lethargy among faculties, too much fear, and too much ineptness in the leadership. It is likely, of course, that one or two institutions will blaze a new path. But will others follow? Well, maybe. We won't know until some college really does it. It is more probable, however, that only forces broader and more powerful than those of a single college can ever break through these barriers and

restraints to bring about a new day in pedagogical education. These forces will be political as well as professional, external to colleges and universities, and guided by a new coalition of professional and lay organizations and their leaders. (Smith, 1980)

State-level policymakers, concerned with what they regard as inadequate teacher preparation, have begun to impose the NTE and other tests as a condition of teacher certification. At least two states (Florida and Alabama) have made the continued approval of a school of education contingent upon the percentage of the school's graduates passing the statewide test.

These policymakers have apparently despaired of improving the quality of schools of education through traditional means. They do not trust schools of education to graduate only those teacher candidates who are fit to teach. They do not trust the national accreditation process to upgrade the quality of teacher education nor do they trust their own program approval processes. They view teacher competency testing as an instrument to prevent those unfit to teach from teaching. At the same time, it is a mechanism for exerting pressure on schools of education. The idea of making teachers pass a test has popular appeal. After all, no lawyer, doctor, or accountant can become a member of the profession without passing an examination. Indeed, 85 percent of citizens answering the Gallup Poll in 1979 agreed that teachers should be required to pass a state board examination and then tested periodically to keep up to date with their field (Cronin, 1983).

The idea of a test, in general, and the NTE, in particular, has substantial appeal:

1. It is objective, thus removing discretionary decisions from both the state bureaucracy and the education establishment, particularly the providers of teacher training.
2. It is clear-cut. Unlike the standards involved in accreditation, which are vague, and unlike competency-based teacher certification, which is cumbersome, it yields a score.
3. It is not costly, at least not costly to the state. No infusions of capital into teacher training are required. The minor costs (test fees) are borne by the teacher candidates as well as the major costs (the cancellation of one's career plans after four years of college).
4. It is symbolically important. In a tangible way, it demonstrates that the state is attending to the problem of low teacher quality.

5. It is measurable. It permits the state to assess and describe the performance of schools of education and classes of teacher candidates.
6. It can be said to be unintrusive. The state can claim that it is not prescribing the behavior of schools of education, school districts, or teacher candidates. More direct regulatory moves might be resisted on the grounds of "academic freedom," "local control," or "institutional autonomy."
7. The requirement has face validity and surface plausibility. Few will object to teachers being required to demonstrate what they are expected to know. The idea that such knowledge is "necessary if not sufficient" is very persuasive.
8. Finally, in the case of the NTE, the test has been sanctioned both by the most prestigious testing organization in the nation and by a board of experts who advise that organization on the NTE.

The choice of this policy tool by state governments is important for several reasons. First, the decision to use a statewide test with a standardized cutoff score for certification affects teacher supply across the state. This policy may support or complicate a local district's hiring task by helping to screen potential applicants, on the one hand, or by preventing access to the profession for some potential teachers whom districts might want to hire, on the other.

Tighter state standards for certification shifts procedural control over teacher selection away from local school districts and, perhaps, away from school of education accreditation agencies as well. This governance change may standardize teacher preparation and selection practices (for better or worse) or it may have little immediate effect on these practices. In either case, there are likely to be a number of second-order consequences. State standard-setting alters the distribution of power and responsibility over decisionmaking by applying a new criterion that constrains or determines the actions of lower-level policymakers. The new patterns of influence that emerge from such a policy generally affect other policy decisions as well by strengthening the capacities of some institutions while weakening those of others.

Finally, the use of teacher competency tests for certification means that substantive control of entry into the teaching profession is, in a sense, removed from members of the profession, schools of education, school districts, and state governments alike. Although state officials may confer with teacher representatives or school of education heads to set cutoff scores, the knowledge expected of teacher candidates is determined by the Educational Testing Service (in the case of the NTE) or other test developers. The assumptions underlying the test-making process about educational theory, practice, and the relation between theory and practice become standards for entry. These

standards, unlike those of other professions, are not set by practitioners. They may or may not be consistent with other standards set by state policymakers through the program approval or certification processes.

The lack of involvement in substantive standard-setting of these actors may, on the one hand, depoliticize the teacher selection process and thereby add credibility to the outcomes of the process. On the other hand, it may produce outcomes that are at variance with other state or local goals for education or for the composition of the teaching force.

Contribution of the Research

This study will add to our understanding of the effects on educational institutions (schools of education and school districts) of state-level standard-setting in the area of teacher certification. It will examine how teacher competency tests for certification influence teacher preparation in schools of education, selection of teacher candidates by schools of education and school districts, and the supply of teachers to school districts. The study will also explore the interactions between certification standards and other state policies governing teacher preparation and selection (e.g., state approval of teacher education programs and state requirements affecting the training and composition of the teaching force, such as school district course offerings which teachers must be prepared to teach).

Despite the potentially dramatic effects of teacher competency testing on teacher supply and on the quality and composition of the teaching force, no study of this kind has yet been undertaken. Most of the reporting on this topic has appeared in the popular press. Individual states have conducted validation studies for some of the tests, and tabulations of pass/fail rates have been prepared. The Southern Regional Education Board is currently preparing a report on teacher competency testing (to be completed in June 1983) that will discuss failure rates and validity questions; however, a systematic investigation of effects on schools of education and school districts is beyond the scope of their report.[1] Our study will fill a gap in the current knowledge base concerning the intended and unintended effects of this state policy tool for upgrading teacher quality. The study is especially important and timely as increasing numbers of states are considering the introduction of teacher competency testing.

[1] Also, William Harris of the Educational Testing Service, who is responsible for administration of the NTE, reported in a recent telephone conversation that he knew of no major studies of the effects of the NTE currently being conducted.

Research Questions

The study will be guided by two main research questions:

1. How has teacher competency testing affected teacher preparation?
2. How has teacher competency testing affected the supply of teachers to school districts?

The answer to each of these questions requires two levels of evidence: evidence of changes in preparation or supply and evidence that illuminates the reasons or mediating factors for these outcomes.

With respect to teacher preparation, we will examine changes in admission standards, curriculum, counselling, retention and graduation standards. We will ascertain whether school of education decisionmakers attribute these changes to teacher competency testing or to other factors, and whether the changes have resulted from internal or external evaluation of the programs. We will examine how teacher competency test results are used by school of education deans and officials of accrediting or approval agencies to make decisions about program content, standards, or requirements.

Our investigation of teacher supply to school districts will include evidence about the supply of different types of teachers (by subject matter certification, educational background, race, etc.) to school districts with different supply and demand characteristics (e.g., location, size of district, labor market characteristics, enrollment trends). We will ascertain whether school district decisionmakers attribute supply effects and perceptions of applicant quality to the existence of the competency tests or to other factors, and whether perceived effects have triggered other changes in their selection processes.

In the next sections of this proposal, we present our conceptual framework for examining these questions and a discussion of our proposed methodology.

CONCEPTUAL FRAMEWORK

Our goal is to examine the effects of state-mandated use of teacher competency tests for teacher certification on teacher preparation and supply. The effects on teacher preparation and supply are mediated, of course, by schools of education and they are manifest in school districts. In order to understand these effects, we must take into account the broader context in which the tests operate. This context, the specifics of which will vary from state to state, are described with reference to Figure 1.

The process begins with the college and career planning of an age cohort of young people intending to attend college. They move through a stream of personal decisions and institutional selection decisions which

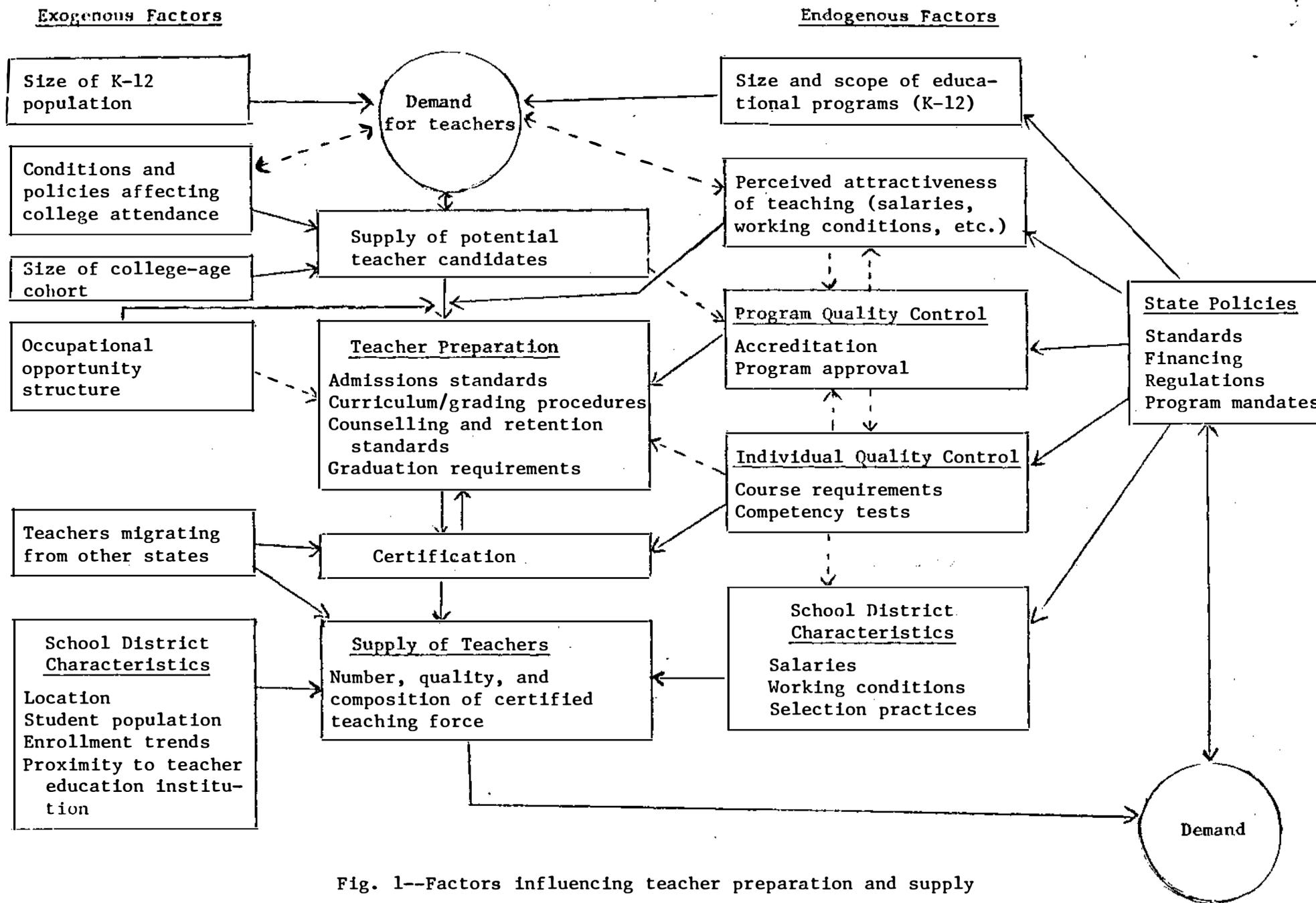


Fig. 1--Factors influencing teacher preparation and supply

result in some of them becoming teachers. These personal and institutional decisions are affected by a set of exogenous factors and endogenous factors. The exogenous factors are those over which state educational policymakers have no control. The endogenous factors are those which are or could be affected by state-level policymakers.

The first determinant of the supply of teacher candidates is the size of an age cohort potentially available to become teachers. Nationwide the size of the pool of 18 to 21 year olds has ranged from 14.7 million in 1970 to 17.1 million in 1980 to a projected 14.6 million in 1989. Consequently, we can anticipate some decline in supply due to a shrinking supply of eligibles. The size of the potential pool is further determined by the percentage of the cohort attending college.

The second determinant of the supply of teacher candidates is the anticipated demand for teachers. The school-age population has shrunk from 52.6 million in 1970 to 45.9 million in 1980; by 1989, the projected population will have decreased to 33 million (U.S. Department of Commerce, Current Population Reports). Thus, nationwide we may expect a decrease in over-all demand for teachers, assuming that the teacher-student ratio remains roughly constant. Demand affects supply in two ways: (1) by influencing students' career decisions based on their assessed probabilities of getting a job, and (2) by affecting wage rates (one element of the attractiveness of a profession to academically talented candidates).

The third determinant of the supply of teacher candidates is the perceived attractiveness of teaching. This variable is a complex function of salary and other factors. In real terms, average teacher salary has declined from \$6,821 in 1966-67 to \$6,769 in 1982-83 (National Education Association, 1982-83). The decline has, of course, occurred during a decade of teacher surplus. Other factors which affect the attractiveness of teaching range from career alternatives available to prospective teachers to class size to the esteem with which teachers are viewed. The latter may be affected, in the long run, by how easy or hard it is to become a teacher. In a general way, these factors determine the supply of potential teacher candidates.

A variety of external policies also affect the supply of and demand for teachers. The availability of student aid increases the supply of college graduates. Since a large fraction of college graduates are potential teachers (Vance and Schlecty, 1982), the more student aid is available, the greater the supply of teacher candidates. Federal programs have been used to prepare teachers in vocational, career, bilingual, special, and reading education, while categorical programs for students have created a demand for particular types of teachers. The National Defense Education Act of 1958 deliberately set out to increase the supply of science, mathematics, and foreign language teachers. Some legislation has indirect effects. One of the most important pieces of legislation to increase the supply of teachers was the provision granting exemption from the military draft to young men who were teachers. Other legislation has a symbolic effect. Modest

categorical programs (e.g., energy education, environmental education) probably signal an emerging need and thus induce some young people to prepare to teach in these areas.

Judicial rulings, federal and state, may increase demand for personnel. Early court rulings mandating the provision of education to handicapped students began to create demand for special education teachers. Court orders mandating desegregated faculties may create demand for minority personnel. Court orders mandating school finance reform may increase the discretionary revenue to some school districts, thus increasing the demand for teachers.

State legislation can have a dramatic effect on the demand for teachers. In the first place, state aid legislation helps to determine overall budget; since 70-80 percent of school budgets are personnel costs, the overall budget shapes the potential size of teacher demand. Legislation that mandates specific subject-matter requirements creates demand. Legislation that regulates class size or teacher-pupil ratio shapes demand. On the other hand, legislation which increases or decreases the ease of certification strongly affects supply.

All of these supply and demand factors influence the number and type of students entering the teacher education process. Although not shown on the figure, there are several selection decisions. These are admission to college, to teacher preparation, to student teaching, and the recommendation for initial certification (Schalock, 1979, p. 364). While these decisions affect supply, presumably decreasing it at each stage, other forces are endeavoring to increase the quality of the prospective teachers.

The teacher education program is affected by several agencies whose function it is to control program quality. The college or university of which the teacher education program is a part is subject to the regional accreditation process. If the teacher education program participates in NCATE review, as do about 40 to 50 percent, it must meet a number of additional standards. Most states operate a program approval process which requires teacher education programs to meet state standards. Teacher education programs are also influenced to conform to regulations which control the content of school district curricula because they must prepare teachers to teach required courses or mandated programs. The graduates of teacher education programs then meet the states' standards for certification and licensing.

In this study, we will examine how teacher competency tests for certification affect schools of education by virtue of their presence as an additional standard and/or by their effects on the program approval or accreditation processes. The tests directly increase the standards for individual certification. In addition, however, they may also affect the other quality control mechanisms which, in turn, will affect schools of education and school districts. Thus, for example, performance on the test may become one of the criteria which is examined by NCATE or by the program approval process.

As will be described in substantial detail below, we will examine the direct and indirect effects of teacher competency tests upon the practices of schools of education. We will ascertain effects upon admission standards, curriculum, and graduation standards. We will attempt to discover effects upon supply and upon quality as measured by the tests and as perceived by teacher educators and employers.

We will examine the direct and indirect effects of the NTE upon school districts. We will ascertain effects upon teacher supply (e.g., in various fields), upon teacher quality (as perceived by directors of personnel), and upon the mix of teachers (e.g., race). These effects may vary for school districts of different types. Demographic and locational factors make some districts more attractive to teachers. Salary, working conditions, and the ability of district management will ameliorate or exacerbate problems associated with recruitment. Finally, the state can affect the hiring ability of local districts not only by controlling teacher quality and supply but by directly affecting locally available finances and working conditions.

Finally, there may be effects of competency tests on the perceived attractiveness of teaching. By altering the public image of teaching and by decreasing teacher supply, the tests may lead to increases in salaries or other attractions to teaching. Because the tests may introduce greater selectivity in entry to the occupation of teaching, the public, and in turn, prospective teacher candidates may perceive an increase in the attractiveness of teaching. This could increase the supply of (high quality) teachers. Because the use of tests as a certification device is fairly recent, this effect may be barely perceptible by the time of the study and we do not expect to be able to track it within the time and resources of the study.

Effects of Teacher Competency Testing

The NTE and other state-developed tests of teacher competency comprise only one element of an array of state policies designed to upgrade teacher quality. Many states have tried to influence the quality of the teaching force by upgrading standards for admission to teacher education institutions, by changing course requirements for graduation, and by changing the requirements for continuing certification as well. As Table 1 indicates, states have instituted tests for admission to schools of education, lengthened the term of student teaching, added internships, and/or required performance assessments prior to permanent certification in addition to testing for initial certification.

All of these actions variously affect the supply of teacher candidates and the character of teacher preparation. We will endeavor to sort out the differential and convergent effects of these policies. It is already clear, however, that the competency tests themselves are having important effects.

Table 1

STATES REQUIRING TESTING FOR CERTIFICATION

<u>State</u>	<u>Authority</u>	<u>Year Enacted (Effective)</u>	<u>Type of Test</u>	<u>Other Requirements</u>
Alabama	SBE	1980 (1981)	State/NTE	
Arizona	Legislature	1980 (1980)	State	
Arkansas	Legislature	1979 (1983)	NTE	
Colorado	Legislature	1981 (1983)	State*	
Florida	Legislature	1978 (1980)	State	(1) Nationally-normed standardized test for SCDE admission; (2) criterion-referenced test for initial certification; (3) one year internship or 3 years successful teaching before certification
Georgia	SBE	1979 (1979)	State	(1) Teaching competency assessment during student teaching; (2) criterion-referenced test for initial certification; (3) inservice performance assessment before final certification (Ellett, Capie, and John 1980).
Louisiana	Legislature	1979 (1979)	NTE	(1) NTE for initial certification; (2) inservice performance assessment before permanent certification (SREB, 1979).
Mississippi	SBE	1977 (1977)	NTE	
New York	SBE	1980 (1984)	State	(1) Competency test for initial certification; (2) one year internship before final certification (Hathaway, 1980).
North Carolina	SBE	1979 (1981)	NTE/State	(1) Achievement test for admission to SCDE; (2) student teaching evaluation; (3) NTE for initial certification; (4) inservice continuing education and performance assessment (Lewis, 1979).
Oklahoma	Legislature	1980 (1982)	State	(1) Minimum GPA for admission to SCDE; (2) competency exam before graduation; (3) one year internship before certification; (4) participation in staff development for continuing certification (Kleine and Wisniewski, 1981).

Table 1 (cont.)

<u>State</u>	<u>Authority</u>	<u>Year Enacted (Effective)</u>	<u>Type of Test</u>	<u>Other Requirements</u>
South Carolina	Legislature	1979 (1982)	NTE/State	(1) Basic skills test for admission to SCDE; (2) full semester of student teaching; (3) NTE supplemented by state tests for initial certification; (4) inservice performance assessment; (5) continuing education for recertification (McDaniel, 1981).
Tennessee	SBE	1980 (1981)	NTE	
Texas	SBE/Legislature	1980-81 (1981)	State	
Virginia	Legislature	1980 (1980)	NTE	
West Virginia	SBE	1961 (1964)	NTE	

NOTE: SBE = State Board of Education
 NTE = National Teacher Examinations
 SCDE = School, college, or department of education

* Basic skills test only.

SOURCE: Education Commission of the States, Issuegram, August 1981, supplemented by other sources as noted.

One important, direct effect of teacher competency testing is to decrease the supply of teachers, especially the supply of minority teaching candidates. In 1982, 83 percent of Florida's prospective teachers passed the state's criterion-referenced test for certification; only 35 percent of black applicants passed the test (Toch, 1983). Sixty-six percent of Louisiana's 1978 teaching candidates passed the NTE; however, only 4 percent of applicants from black public colleges and 26 percent from black private institutions passed the test (SREB, 1979). When South Carolina raised the NTE cutoff score, in the late 1970s, about half of the state's graduates failed the test. At some black colleges, the failure rate reached 100 percent (SREB, 1979). Recent statistics on Alabama's and Arizona's state-developed tests show similar patterns. Failure rates on the Alabama tests for different fields of certification range from 7 to 28 percent for white candidates, and from 51 to 52 percent for black candidates. In Arizona, 74 percent of black and Native American candidates failed the state's 1982 test; compared to 59 percent of Hispanic and 25 percent of white candidates (Toch, 1983).

The decrease in supply of teachers has led to teacher shortages in some of these states and to countervailing actions like the issuance of interim or provisional certificates to offset the supply effects of the tests (SREB, 1979). School districts in Florida, Georgia, and Louisiana recruit many of their teachers from out of state, while many positions in Louisiana are filled by uncertified personnel. In South Carolina, several thousand teachers teach outside of their fields of certification (Galambos, 1980; Florida Education Standards Commission, 1982; Louisiana State Department of Education, 1982; Woolford et al., 1982). Harris (1982) estimates that the shortfall of several thousand teachers annually in Texas will reach crisis proportions by 1985.

The differential failure rates for black and white teacher candidates have also spurred a new round of lawsuits against states. Despite the U.S. Supreme Court ruling in U.S. v. South Carolina (1978) upholding the constitutionality of the NTE for certification purposes, suits pending in Florida, Alabama, and North Carolina are challenging the use of the tests on the grounds that they intentionally discriminate against black applicants. These lawsuits will undoubtedly involve questions about the validity of the tests as measures of teacher competence as well as questions about the appropriateness of other uses of the test. Both Florida and Alabama, for example, have enacted provisions making state approval of teacher education institutions contingent on graduates' performance on the competency tests.

Other state uses of teacher test results suggest that the competency tests will influence the content of the curriculum in teacher education institutions. North Carolina, Tennessee, and Virginia are using NTE results for statewide studies of teacher education (ETS, 1982). In South Carolina, teacher education institutions are required to use NTE results as part of their own in-house evaluation process. One objective of this study is to discover to what extent and in what ways teacher competency tests influence the content of teacher education either directly or through the state approval/accreditation process.

Commentaries on the state of the art of teacher education program review methods emphasize the difficulty of setting standards and criteria. As Koff and Florio (1977) remark of teacher education accreditation standards:

[A]ccreditation as a quality control procedure is hardly an exact science. Every profession is responsible for developing a definition of quality that takes into consideration the complexities of the field it services. Education is not uniquely culpable, although the problem of accrediting SCDEs [schools, colleges, and departments of education] is particularly complex for four interrelated reasons. First, there is no clear consensus concerning educational goals. Second, there are substantive problems in relating educational outcomes to the characteristics of professional educators. Third, there are no clear connections between training strategies and the characteristics of educators. Fourth, power politics have made it difficult to deal with the fundamental questions associated with accrediting policy (pp. 5-6).

Many knowledgeable scholars and practitioners have questioned the utility of accreditation and state program approval because of the lack of both uniformity and rigor in the criteria and assessment techniques (cf Cronin, 1981; Wheeler, 1980; Getzels, 1977). Thus, it would not be surprising to find that the availability of a presumably objective measure of student or program performance might assume a prominent role in the evaluation of teacher education institutions.

There is some evidence that competency test results are already affecting teacher education programs, at least in those institutions where graduates perform poorly on the tests. In response to high failure rates on the Florida test, the Dean of Florida A&M University's School of Education has announced plans to raise the G.P.A. requirement for admission to the school, require the use of essays in every course, and increase the number of required course hours in Mathematics and English (Toch, 1983). He expects these actions to reduce the school's enrollment from the current 600 to 400; a decrease of more than half from the 1,000 students enrolled in 1978. This move may mean the difference between survival and extinction for the program, since state approval in Florida is to be contingent on a pass rate of at least 80 percent of each institution's graduates.

The Southern Regional Education Board has also announced a new effort to increase the use of analytic test questions in nine predominately black colleges located in five states that use the NTE. A consultant from ETS will work with SREB to revise questions submitted by faculty at the colleges while adding others to build a pool of 1,500 "analytical questions" for use in course examinations next fall (Aldrich, 1983). Presumably, the use of such questions will lead to changes in course content as well.

Whether the screening or curricular effects of the tests will lead to improved teacher quality is another question. There are two schools of thought about major influences on the supply of high quality teachers. Weaver (1978; 1979) argues that factors within education are most important, that decreased demand for teachers has led to a decline in the quality of supply as schools of education have attempted to maintain enrollments by lowering their standards. This line of reasoning leads one to expect improvement if competency tests raise standards in schools of education.

Schlechy and Vance (1981) also note the recent decline in the number of academically able teaching candidates, but they argue that expansion of employment opportunities in other segments of the economy has had the most devastating effect on the quality of supply. Their research questions the utility of two major assumptions underlying efforts to upgrade entrance and exit standards: (1) that teaching is sufficiently attractive to academically able individuals to assure an adequate supply of teachers, and (2) that academically able persons attracted to teaching will remain in the profession. They find that relatively few academically able persons enter teaching, and most of those that do leave the profession within a few years. Thus, they reason, the main result of higher standards (without other changes in the relative attractiveness of the profession) will be a shortage of teachers. Cronin (1981) argues similarly that upgrading entry and exit standards may screen out some candidates without ensuring that more able persons will choose the profession over other more lucrative fields marked by less "bureaucratic harassment."

While both schools of thought have some merit, neither addresses the question of whether more "academically able" teachers will be better teachers. Will teachers who have passed a teacher competency test perform better in the classroom than those who have not? A number of studies of the validity of the NTE have been conducted with remarkably similar results. Studies of the concurrent validity of the test--how well it correlates with other measures of academic ability or knowledge--find fairly strong relationship between NTE scores and scores on other tests such as the Graduate Record Examinations (Pitcher, 1962; Quirk et al., 1973; Ayers and Qualls, 1979). More modest but still significant relationships are found between NTE performance and undergraduate course preparation or grade point average (Willson and Stoller, 1981; Quirk et al., 1973; Merritt, 1980; Andrews, Blackmon and Mackey, 1980; Ayers and Qualls, 1979).[2] However, no studies have found any consistent

[2] All of the subtests, however, are not equivalent on measures of concurrent validity. Willson and Stoller (1981) found substantial "criterion-related validity" for the NTE Mathematics subtest but very little for the Science subtest. Similar discrepancies between teacher preparation concurrence with various NTE subtests were found in the study of concurrent validity conducted for the NTE in South Carolina when the state's use of the test was being challenged in court (McDaniel, 1977).

relationship between NTE scores and measures of teacher performance in the classroom. Correlations between NTE scores and desired teaching behaviors or outcomes are generally nonsignificant; negative correlations occur nearly as often as positive ones (Ayers and Qualls, 1979; Andrews, Blackmon and Mackey, 1980; Quirk et al., 1973).

Although we do not propose to assess the validity of teacher competency tests in this study, we will examine perceptions of the concurrent and predictive validity of the tests. These perceptions are important for two reasons. First, the concurrent validity of the tests--the degree to which they measure knowledge related to actual teacher preparation--must be high if policymakers are to assume that the tests measure what teachers can be expected to know. Of course, if concurrent validity is perceived to be low, the fault may lie either with the tests or with the content of teacher preparation. In either case, such perceptions would have important legal and policy implications. Legal defense of the use of competency tests--especially if they produce discrepant outcomes for different classes of applicants--rests on consensus, at least, about concurrent validity.[3] Difficult political results of the tests, which may range from lawsuits to selective teacher shortages, will also be handled more or less easily depending on perceptions of their validity.

Perceptions of predictive validity of the tests are important for the above reasons, and also because such perceptions may influence school district hiring practices. If personnel directors believe, based on their own validation efforts or other feedback, that the tests have substantial predictive validity, they may rely heavily on applicants' scores in their hiring decisions. Some districts, for example, have used NTE scores to rank teachers for hiring and have then based salaries on the rankings.[4] If, on the other hand, the scores are believed to have little predictive validity, districts may expand their selection criteria to favor other measures and may even seek to hire on emergency certificates candidates who have not passed the test. Thus, perceptions of the predictive validity of the tests may mediate the degree to which the tests influence district selection practices.

[3] Generally, courts require that tests used for hiring and promotion be shown to relate directly to effective job performance, i.e., that they have predictive validity (Huff, 1974). However, in the South Carolina NTE challenge, a less stringent test of concurrent validity was accepted. The validation study conducted by ETS and the State Department of Education asked over 400 faculty members of the 25 state-approved teacher education institutions to make judgments about the relation between test content and the curriculum and to make estimates of the proportions of "minimally knowledgeable candidates" who would be expected to know the answers to individual test questions. Cutoff scores based on the results of this exercise were adopted by the state and approved by the court (McDaniel, 1981).

[4] This use of NTE scores was upheld by the U.S. Fourth Circuit Court of Appeals in Newman v. Crews in 1981.

Another set of factors influence the supply of teachers to individual school districts and, hence, the degree to which they may directly experience the supply effects of competency test screening. These factors involve the attributes of the exchange package underlying the equilibrium between teacher supply and demand. As Antos and Rosen (1975) explain:

Labor market transactions involve mutual, joint exchange of both labor services and consumption attributes at the workplace. Teachers sell the services of their labor, but simultaneously purchase utility bearing characteristics of the schools in which they work. On the other side of the bargain, school administrators purchase desired teacher services and jointly sell characteristics of schools and students to their teachers (Antos and Rosen, 1975, p. 123).

Using a hedonic wage technique to estimate salary differentials needed to attract teachers to different types of districts, researchers have found that school district characteristics such as geographical location, climate, neighborhood and student characteristics, cost of living, class size, and other working conditions affect teacher supply (cf Boardman, Darling-Hammond, and Mullin, 1982; Kenny and Denslow, 1980; Antos and Rosen, 1975). Theoretically, in a state of perfect competition, equilibrium would be achieved by salaries being set to reflect these factors. However, teachers' salaries are primarily determined by the money available for hiring new teachers (from the district's point of view, another largely exogenous constraint) and by salaries offered in other districts (Matthews and Brown, 1980). Furthermore, because of the costs of information and mobility, the distribution of local labor markets accords monopsony power to those districts which have few geographically proximate competitors, undermining the assumption of perfect competition (Boardman, Darling-Hammond and Mullin, 1982; Chambers, 1981). Finally, the rigidity of local school district practices--lockstep salary schedules, tenure and seniority rules, and constraints on the nonpecuniary adjustments that can be made to attract desirable teachers--reduces the ability of the market to adjust quickly to changes in supply or demand, thus exacerbating disequilibrium (Chambers, 1981).

Certain kinds of school districts, then, will experience shortages of qualified teachers even when the overall market indicates a surplus. This will affect the degree to which they can be selective in hiring teachers as well as the ways in which their selection processes must respond to supply changes induced by efforts to upgrade certification standards. Thus, we will investigate the differential effects of competency testing on teacher supply in school districts of different types.

Finally, we recognize in this effort that the influences of a single policy initiative like teacher competency testing must be considered in the light of other political, demographic, and economic

factors in each state. Although we will not study all of the relationships discussed, our conceptual approach includes these factors as a means of tempering our view of the problem and of sensitizing ourselves to other potentially important influences on school of education and school district behavior.

RESEARCH DESIGN

Our method for examining the effects of teacher competency tests on teacher preparation and supply will include:

1. Interviews with state officials--legislators, school board members, certification commission members, and department of education officials responsible for test administration and approval of teacher education institutions--to discuss the creation, operation, and perceived effects of the testing standard.
2. Interviews with accreditation and program approval agency officials about the uses of test results in the accreditation/approval processes.
3. Collection of data from state departments of education and the Southern Regional Education Board about the outcomes of the tests.
4. Surveys of teacher education institutions about the effects of certification tests and other state policy initiatives on curriculum, admission standards, counselling, grading policies, retention, and graduation policies.
5. Telephone interviews with selected teacher education institution officials to obtain more detailed information about effects mentioned in the survey responses.
6. Surveys of school districts about the effects of certification tests on teacher supply and composition of the teaching force.

The study sample will consist of five (5) states that currently use teacher competency tests for certification. Three will be states using the NTE, and two will be states using state-developed tests. Although we recognize that generalization from such a small sample must be extremely limited, we believe an indepth investigation of effects in five states can provide useful information about how certification tests influence educational organizations and why similar and dissimilar consequences occur in different states. Including both NTE and state test users in the sample will allow us to examine whether the use of a state-developed test allows for more influence on the part of state policymakers or education organizations on the content or outcomes of the test. The sample selection process is described in more detail below.

commission members, and legislators to discuss the creation, operation, and perceived effects of the NTE certification standard. We will also seek to understand the operation of other state policies that relate to certification of teachers or accreditation/approval of teacher education institutions. We will determine whether and how these policies have affected the standards for accreditation of teacher education institutions.

In addition to the interviews, we will collect data available in the states concerning testing outcomes--e.g., percentages of prospective teachers who pass the test by sex, race, teacher education institution, subject matter area, etc.--and information regarding state uses of the testing data for decisionmaking. We will also collect demographic data for use in sampling school districts.

As part of Phase 1 we will visit one school of education and one school district near the state capitol in each state. These visits will sensitize us to the issues perceived as salient by these agencies in each state and will help us to refine the survey questionnaires.

Phase II: Survey Instrument Development and FEDAC Review

Following the planning phase, we will develop two different survey instruments:

1. A questionnaire to be administered to the heads of all teacher education institutions in each sample state; and
2. A questionnaire to be administered to a sample of school district personnel directors in each sample state.

The survey instruments will be submitted for FEDAC clearance as described below.

School of Education Survey. The teacher education institution survey will seek to determine (1) whether use of the NTE as a state certification standard has changed admissions standards, counselling, grading policies, curricula, retention or graduation requirements; and (2) whether the testing data is used by college administrators in making program decisions. Among the questions we will ask are the following:

- o Have schools of education altered admissions standards? Have they instituted standardized admissions tests or changed the cutoff scores for admission? Have they increased the required high school or college GPA? Has the selection ratio (number of admissions to number of applicants) changed?
- o Have standards for retention of students been changed? Are a greater percentage of students "counselled out"? Have more decision points for retention been introduced? Have grading procedures or graduation requirements changed?

- o Has the curriculum changed? Is there a growing correspondence between the competency test and the curriculum? Have course requirements changed to emphasize more coursework in the testing areas? Have methods of instruction or course content changed? Do increased academic course requirements cause practical education (e.g., student teaching) to be de-emphasized?
- o Do schools of education use competency test results as a basis for making other program decisions, e.g., in reviewing their instructional programs, admission and retention policies, grading procedures, etc.?
- o How do school of education officials perceive the outcomes of the NTE's use for certification? Are poor candidates screened out? Are better candidates attracted to the teacher preparation program? To what extent do they feel the test has concurrent or predictive validity?

School District Survey. The school district survey will be designed to determine whether effects of the competency test certification standard have become visible at the local level. The survey instrument will include the following kinds of questions:

- o Have school districts experienced shortages of applicants, either overall or in particular subject areas? If so, do they attribute these shortages to the test certification standard or to other causes?
- o In general, how heavily do test scores count in the hiring decision? Do some districts apply higher cutoff scores than the state? At what stage of the selection process are test scores considered?
- o Do school districts perceive any difference in the quality of applicants or the composition of the applicant pool since the institution of the certification standard? If so, what differences are noticed?
- o For school districts that have attempted to validate their teacher selection processes, how useful do they find the competency test as compared to other measures as a predictor of later teacher performance?
- o Has the existence of the certification test changed district selection procedures in other ways (e.g., recruitment, screening methods, etc.)? Has it made the selection process more or less complicated?

Sampling Plan. The school district sample will be selected to represent diverse demographic characteristics with respect to size, location, student population, enrollment trends, and wealth. In most of

the states under consideration, the number of school districts is small, ranging from 66 in Louisiana to 152 in Mississippi; only Arkansas has as many as 373 districts. We will seek a sample of school districts that serve about 30 percent of the students in the state; and, in every case, will include at least 30 percent of the districts in the state. On average, we will sample approximately 50 school districts in each state. The sample will be selected to represent variations in:

- o Geographic location: urban, suburban, and rural districts may face different markets for teachers.
- o Size: small, medium, and large districts may have different recruitment and selection strategies as well as needs for composition of the teaching force.
- o Student population: characteristics of pupil populations (grade levels served, special pupil needs, race, academic achievement levels) may affect demand for different types of teachers.
- o Enrollment trends: increasing or decreasing enrollments will affect demand for teachers.
- o Wealth: poor and rich districts, offering different levels of salary, may face different pools of candidates.

FEDAC Clearance. The package prepared for FEDAC clearance will include a description of the study design, a discussion of the sampling plan and bias issues, question (item) justifications, data collection instruments, and privacy, confidentiality, and respondent burden statements. The package will be submitted after it has been reviewed by the NIE project officer and the Committee on Evaluation and Information Systems of the Council of Chief State School Officers.

We do not anticipate any difficulty gaining FEDAC approval or access to study respondents for this research. The topic is one that has not yet received extensive attention by researchers, so data collection efforts will not duplicate others being currently undertaken. Questionnaires will be short to keep respondent burden to a minimum. Our past experience with elite interviews and surveys of school districts and higher education institutions indicates a great willingness to cooperate on the part of officials who perceive the research as a way to make their views known on important issues.

Phase III: Survey Administration and Follow-up Interviews

Lists of teacher education institutions and school districts (with information about their demographic characteristics) will be obtained from the state departments of education in each of the sample states. The survey questionnaires will be mailed to both sets of respondents as soon as FEDAC clearance is obtained.

In order to increase response rates for both surveys we will (1) send reminder letters or postcards to nonrespondents after two weeks; (2) send a second mail questionnaire and letter to remaining nonrespondents after four weeks; and (3) make telephone reminder calls to those who have not responded after six weeks. We expect that the first two follow-up activities will yield a response rate of 60 to 70 percent,[5] and that the telephone reminders will increase response rates by about 10 percent. We will also use information on the differences between early and late respondents to help correct for self-selection bias in the survey response.[6] If response rates are much lower than anticipated, we can use the resources planned for telephone reminder calls to conduct telephone surveys of a subset of nonrespondents instead.

After the survey results are received, we plan to conduct follow-up telephone interviews with approximately 50 school of education deans to discuss in more detail responses indicating teacher preparation changes caused by the competency tests. These interviews will allow us to understand more fully how such changes have occurred and how they are linked to the tests or to other state policy initiatives.

Phase IV: Analysis

The survey results will be coded for computer analysis and will be analyzed, as appropriate, using analysis of variance and chi square tests of statistical significance. Both intrastate and cross-state analyses will be conducted. The dependent variables will be reported changes in teacher preparation and teacher supply; independent variables will be characteristics of teacher education institutions and school districts. Cross-state analyses will include state demographic characteristics and characteristics of the state policy tools as independent variables as well.

The quantitative analysis of the two surveys will be combined with the results of the state-level interviews, selected interviews with local officials, and available state data to produce a report that assesses the effects of the teacher competency certification standard as it operates in individual states and, more generally, in the group of states that have adopted this policy tool. The report will examine the changes in teacher selection and preparation reported by schools of education and school districts.

[5] Although mail surveys tend to have lower response rates than telephone surveys, a nearly identical approach used in Rand's Study of Alternatives in Education resulted in a 73 percent completion rate after a single follow-up (Bridge and Blackman, 1978, p. 26).

[6] A number of techniques are available for adjusting for this type of bias. See, for example, Bridge (1974) and Bridge and Blackman (1978).

In our assessments of the effects of state policies, we have discovered that different actors use different criteria and standards of evidence to judge policy effects and reach different conclusions about policy effects. Some may use political or symbolic criteria whereas others use measurable outcome criteria. Some may rely upon casual observation for their conclusions whereas others rely upon disciplined inquiry. In reaching conclusions about policy efficacy, some may pay attention only to intended policy effects, whereas others pay attention to unintended and cumulative policy effects as well. We will, in this study of the impact of teacher testing, assess the policy effects from a variety of perspectives.

ORGANIZATION AND MANAGEMENT PLAN

Direction and Responsibilities

The study will have as co-principal investigators Arthur E. Wise and Linda Darling-Hammond of Rand's Washington Office. They have been working together for several years on a number of projects, have co-authored several papers and are currently in the process of preparing two book-length manuscripts. Through close collaboration they have evolved a unified intellectual approach to the study of teachers and teaching, one that they bring to this study. They are members of Rand's Education and Human Resources Program, directed by Richard Shavelson who is also an expert in research on teaching.

Darling-Hammond and Wise will share responsibility for conceptualizing the study, selecting the five states and visiting them, interviewing state officials and school of education officials, and preparing a report on the interviews. Based upon written information gathered during the visits and information derived from the initial interviews, they will devise the survey questions.

Jennifer Hawes, who has served as a survey manager on numerous projects, will manage the two surveys. She will collaborate with the co-principal investigators on survey development, will supervise preparation and administration of the instruments as well as all follow-up to nonrespondents, and will code the data for computer entry.

The final report will be authored by Darling-Hammond and Wise who will combine the knowledge derived from the literature review, from the state visits, and from the survey results into a report which will assess the impact of teacher competency testing on schools of education, school districts, teacher supply, and teacher quality.

Staff Time Commitment

The projected staff commitment is as follows:

<u>Staff Member</u>	<u>Person Days</u>
A. Wise	70
L. Darling-Hammond	70
R. Shavelson	5
J. Hawes	50
Survey Support	76
Secretarial Support	48

Schedule

The project is scheduled for 15 months and includes a four-month waiting period for FEDAC review:

Schedule

Year 1

To Be Completed By

Phase 1: Planning and Collection of Background Information	
Literature review and site selection	Month 1
Site visits and interviews	Month 2
Phase 2: Survey Instrument Development	
Design of survey	Month 3
FEDAC clearance package submitted	Month 4
FEDAC clearance package approved	Month 8
Phase 3: Survey of Schools of Education and School Districts	
Conduct of survey	Month 10
Interviews with school of education deans	Month 10
Phase 4: Analysis and Report Preparation	
Computer analysis	Month 11
Draft report	Month 13
Final report	Month 15

Qualifications of Staff

Arthur E. Wise is an educational researcher and senior social scientist at Rand. He, with the assistance of Linda Darling-Hammond and Milbrey McLaughlin, is currently completing a study of teacher evaluation practices. That study is an assessment of the effects of teacher evaluation practices in four school districts. In addition, he and Darling-Hammond are completing a study of teachers and educational policies. The study, based on in-depth interviews, is an investigation of how teachers' work is being altered by federal, state, and local policies. He recently authored Legislated Learning, a book concerned with policies designed to upgrade the quality of teaching in classrooms.

He is a frequent lecturer and workshop leader at conferences sponsored by such organizations as NEA, NSBA, AASA, and ASCD, and their state affiliates. He has been an education school faculty member and administrator and a federal official concerned with research on teaching.

Linda Darling-Hammond, an educational researcher and social scientist at Rand, is co-principal investigator of the study of teachers and educational policy. In addition to her extensive involvement with the Teacher Evaluation Study, she has conducted a study of the supply of and demand for teachers. She was principal investigator for a recently completed study of state administrative responses to federal education block grants and co-principal investigator for a study of the impact on state and local governments of federal regulatory provisions in categorical education programs. Before joining Rand, she was director of research on urban education for the National Urban Coalition, where she conducted studies of urban school programs and school finance. She has also been a classroom teacher and an education school faculty member.

Jennifer Hawes has been a survey research specialist at the Rand Corporation for 10 years. She has been involved in all aspects of survey research from instrument design to data analysis. She has been the manager of five surveys in the areas of employment, military manpower, education, and training.

FACILITIES AND ARRANGEMENTS

Facilities

A description of the research facilities of the Rand Corporation is appended to this proposal. Of particular importance to the proposed project are the services of two groups.

The Survey Research Group is responsible for coordinating Rand survey activities and providing technical services to Rand staff members whose work requires primary data collection techniques. The group comprises about 15 staff members, including survey research professionals and technical support staff. The professional staff hold academic degrees which span several behavioral science disciplines. They have had experience with academic and market research surveys as well as a variety of large and small surveys conducted for Rand research projects.

The Rand Statistical Research and Consulting Group was established in 1976 and currently consists of six statisticians. Its objective is to enhance the quality of Rand research by making statistical expertise easily available to all members of the research staff. During the six years of its existence, the consulting service has been heavily used by the staff. Typically, the Group fields questions related to data analysis, theoretical or applied statistics, probability modeling, and statistical computing, while the applications range from military manpower problems to predicting student performance. The areas of statistical expertise of the statisticians in the group are numerous.

Rand's computer facilities and other support services are described in the Appendix to this proposal.

Arrangements for Data Collection

We do not anticipate great difficulty in obtaining the cooperation of respondents. The information which we seek is not sensitive; and in similar studies in the recent past we have not encountered difficulty in gaining access.

Interviews with State-level Actors. As noted in the body of the proposal, we will interview state legislators, state department of education officials, state school board members, and certification commission members. Our goal is to understand the origin and purpose of the competency test and the context within which it operates. Some information will be obtained from records in the public domain, and no particular state-level official's participation is indispensable. However, in other Rand studies we have encountered little difficulty in gaining access to high level state officials. We have found that government officials and educators are willing to provide us with information when they feel they can make a contribution to public understanding of an important issue, and when--in turn--we can provide them with information about efforts in other states. In addition to good preliminary preparation before we conduct on-site interviews, which minimizes respondent burden by focusing our data requirements, we always make certain that each study respondent receives a copy of our draft and final reports. Thus we ensure that respondents will personally benefit from the research.

School District Questionnaires. As noted, we plan to mail questionnaires to a sample of school districts in each state. The questionnaire and any necessary follow-up telephoning will be addressed to the districts' directors of personnel. In a recent study of teacher evaluation practices, we encountered little difficulty in obtaining information from directors of personnel in 32 school districts about their teacher evaluation systems. Our experience has been that school system personnel are rarely asked for their views and are generally willing to share information.

School of Education Questionnaires. We will distribute a questionnaire to all deans of schools of education in each state. Although we have had no experience obtaining information from schools of education, we assume that they will cooperate. Changes in schools of education have not been extensively studied; thus, the problem of data request overload will not exist. Moreover, deans are likely to have strong opinions about the teacher competency tests and will be likely to want to share their views. This motivation we have found to be a powerful incentive for cooperation in similar data collection activities.

In past research we have, when necessary, obtained the endorsement of relevant Washington-based education associations as a means of promoting cooperation in our studies. We are confident that we can obtain such endorsement for this important study.

Plan for Dissemination

The findings of this study will likely be of interest to a wide variety of audiences--policymakers who are considering the implementation of teacher certification standards; school of education personnel who must adapt to the standards; school district personnel who experience the consequences of the standards; researchers who are studying schools of education; and the general public which is concerned with the quality of teachers. Our dissemination practices and strategies will ensure that these findings reach all of these audiences.

The first product of the research will be a Rand Report which will be sent to the regular recipients of Rand Education Reports and a special list to be devised by the principal investigators and NIE. The Rand Public Information Office will issue a press release, and, if the findings warrant, arrange for a press conference.

The principal investigators will also publish articles in educational periodicals and magazines and deliver papers at conferences attended by educators, researchers, and policymakers. These activities lead to the broad dissemination of research findings not only in the educational community, but also in the general community.

It is worth noting that very little research has been conducted on the impact of policy on schools of education or of the impact of schools of education on teacher quality and teaching policies. Although this research is focused on the impact of a specific policy, we hope through our dissemination activities to encourage researchers to help illuminate one of the major determinants of the quality of American education.

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