



Teaching
and Learning Division

Teaching and Learning Research Report Series



The Academic Quality
of Prospective Teachers:

**The Impact of
Admissions and
Licensure Testing**

CONTENTS

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Acknowledgements	2
Abstract	3
The Context: Teacher Academic Ability, Supply, and Diversity	4
The Impact of Teacher Testing	7
Reforms Within Colleges of Education	7
The Study	9
Key Issues	9
Study Overview	11
Limitations and Caveats	12
Study Findings	14
SAT®/ACT Baseline Data	14
Results For Those Entering Teacher Education Programs	15
Results For Those Who Seek Licensure	19
Teacher Education Institutions	24
Results by Licensure Area	26
Raising and Lowering Standards	31
Conclusions	38
References	41
Appendix A	44

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ABSTRACT

This study examined the academic and demographic profile of the pool of prospective teachers and then explored how this profile is affected by teacher testing. Specifically, the study linked SAT and ACT college admissions test data from 1977-1995 with data from more than 300,000 prospective teachers who took a college of education entrance exam or teacher licensure test from The Praxis Series™ between 1994 and 1997. The data revealed that teacher academic ability varies widely by type of licensure sought, with those candidates seeking licenses in academic subject areas having the highest college admissions test scores, and those in non-academic fields like elementary education having the lowest scores. In contrast to many previous research claims that teachers lack the academic ability of other college-educated professionals, the data in this study suggest that teachers in academic subject areas have academic skills that are equal to or higher than those of the larger college graduate population. Across the board, teacher testing was found to positively influence the average SAT and ACT scores of the prospective teacher pool, while at the same time limiting the overall supply of teachers. The data further revealed that the prospective teacher pool is highly homogenous with respect to race/ethnicity, and that disparate passing rates on teacher tests limit the racial/ethnic diversity of the teaching force even further. If minimum passing scores on teacher tests are raised, as many advocates of high standards have recommended, the SAT and ACT scores of the prospective teacher pool will rise dramatically, but the supply and diversity of the pool will fall equally dramatically. The authors conclude that teacher testing holds great promise, but must be used judiciously and in combination with other reform efforts to ensure an adequate supply of academically talented and racially/ethnically diverse teachers.

THE CONTEXT: TEACHER ACADEMIC ABILITY, SUPPLY, AND DIVERSITY

The educational reform movements of the 1980s and 1990s have placed America's teachers under a microscope. Numerous blue-ribbon panels have characterized the American educational system as woefully inadequate to meet the demands of the 21st century (Carnegie Forum on Education and the Economy, 1986; National Commission on Excellence in Education, 1983; The Holmes Group, 1986); in many cases, these panels have placed the blame largely on America's teachers and the institutions that train them. Typically, reformers charge that teaching does not attract high caliber students, and argue for higher academic standards for pre-service teachers, including more selective entrance requirements for colleges of education, more rigorous academic coursework for education majors, and more challenging licensure requirements for individuals seeking entry to the profession. But are teachers really less academically capable than other professionals? Will raising undergraduate academic standards for prospective teachers have enough of a positive impact on the educational system to outweigh any detrimental side effects? How successful are teacher education institutions in preparing potential teachers? Although these questions have been asked for many years, the answers remain the subject of debate and controversy. This report seeks to inform the debate by profiling the academic and demographic characteristics of prospective teachers, and by analyzing the impact of testing on the prospective teacher pool.

Researchers have expressed serious concerns about the academic ability of teachers since at least the 1920s (Carnegie Forum on Education and the Economy, 1986; Ekstrom & Goertz, 1985, March; Haney, Madaus, & Kreitzer, 1987; Kerr, 1983; Koerner, 1963; Lanier, 1986; Lee, 1984; Sowell, 1993; Weaver, 1983). And year after year, high school seniors who intend to major in education have earned lower scores on college admissions tests of verbal and quantitative ability than their college bound peers (ACT, 1997; The College Board, 1997). This trend is particularly troubling in light of a growing body of evidence establishing a link between teacher verbal ability, as measured on standardized tests, and their students' achievement on standardized tests (Coleman et al., 1966; Ehrenberg & Brewer, 1995; Ferguson, 1991; Greenwald, Hedges, & Laine, 1996; Hedges & Greenwald, 1996; Strauss & Sawyer, 1986).

Concerns over teacher academic ability have become more critical as the cognitive challenges and expectations for teachers have risen. Today's knowledge-based economy makes effective education for all more pressing than in the past (Darling-Hammond & Cobb, 1996). Moreover, the American K-12 student population is more diverse with respect to income, social class, race/ethnicity, native language, and learning needs than at any other time in history. The democratic ideal holds that all students deserve equal educational opportunities and experiences; teaching such a diverse array of students requires teachers to draw upon a vast repertoire of instructional strategies and a strong foundation of content knowledge.

Academic ability is only one of several troubling issues being raised about our nation's teachers. Foremost among other concerns is the growing demand for teachers, brought about by increases in the student population (National Center for Education Statistics, 1998b), turnover in the teaching force (National Association of State Boards of Education, 1998; National Center for Education Statistics, 1997b; National Commission on Teaching and America's Future, 1997; U.S. Department of Education, 1998), and legislation decreasing class sizes (Hirsch, Koppich, & Knapp, 1998). Most predictions place the demand for new hires above 2 million over the next decade, or more than 200,000 teachers per year. This demand comes at a time when colleges of education typically confer fewer than 110,000 undergraduate degrees per year (National Center for Education Statistics, 1998a).

Where will these new teachers come from? States have frequently responded to increased demand by lowering standards through measures like emergency certification, thus illustrating the conflicts inherent in trying to raise the standards for teachers' academic performance and increase supply simultaneously (Boe & Gilford, 1992; National Center for Education Statistics, 1995). Emergency credentials boost supply by allowing candidates to bypass, at least temporarily, licensure requirements designed to help ensure a high-quality teaching force. Darling-Hammond and Cobb (1996) noted that 46 states grant emergency licenses to untrained applicants and that more than 30 officially sanction "alternative" routes to licensure, some of which require only a few weeks of training prior to entering the classroom. In 1994, 21% of newly hired public secondary school teachers did not even have an undergraduate minor in their primary teaching field, and more than 20% were practicing with either a substandard license or no license at all in their primary teaching field (The National Commission on Teaching & America's Future, 1997).

Not only do states issue emergency licenses as loopholes into teaching, they sometimes lower the teacher training and licensing standards themselves. Facing the prospect of having to hire 300,000 teachers over the next decade, California recently bucked a national trend by signing into law a measure allowing its teacher education programs to ease the requirements for fifth year programs. (Fox, 1998). Albert Shanker (1996), former president of the American Federation of Teachers, characterized the passing scores established by many states on their college of education entrance exams and teacher licensure tests as "ridiculously low" (p. 222) and sufficient only to keep "illiterates" (p. 221) out of teaching. Presumably, at least part of the reason states do not impose higher passing scores is for fear of lessening the supply.

A few states have been able to establish and maintain high standards, however. The Connecticut Beginning Educator Support and Training (BEST) portfolio system has been touted as an example of a rigorous performance assessment that has helped lead to a more academically able teaching force in Connecticut, as demonstrated by higher SAT scores (U.S. Department of Education, 1998). But Connecticut's high standards do not come cheaply. The state is able to maintain teacher supply in large part because it has by far the highest average teaching salary in the nation—\$51,495 in 1994-95 (National Center for Education Statistics, 1996). Because most states are not willing to pay such high salaries, the far more common response to the demand for more teachers is to lower standards.

Lowered standards have helped to ensure that, despite the huge demand for teachers, fewer than 1% of all teaching positions go unfilled (National Center for Education Statistics, 1997a). But while some have argued that there is no general teacher shortage, almost all agree that there are, and will continue to be, shortages in specific locations and subject areas (Ballou, 1996). These shortages are far more likely to occur in poor schools with large percentages of minority students (Darling-Hammond, 1998). Poor urban and rural schools find it more difficult to recruit and retain well-qualified teachers, making them more likely than affluent suburban schools to resort to lowering their standards for hiring new teachers. And, since poor urban schools typically have disproportionately high populations of minority students, the teacher crisis threatens the democratic ideal of equal opportunity regardless of racial/ethnic background. Not only do students in poor schools face a tough climb out of poverty, they face it with teachers who are the least well prepared academically. Thus, the real issues surrounding teacher supply and demand are not so much about quantity as they are about quality, distribution, and equity (Hirsch et al., 1998).

Increased demand is further complicated by a lack of demographic diversity within the teaching force. The ratio of majority to minority students is steadily decreasing, and forecasts call for this trend to continue in the decades ahead. While minorities made up one third of the student population in 1993-1994, nearly 9 out of 10 public school teachers are White, and approximately 3 out of 4 are female (American Association of Colleges for Teacher Education, in press). Nor does this profile appear likely to change significantly any time in the near future, as 86% of teachers in their 20s are White, and 84% are female (Feistritzer, 1996).

The Impact of Teacher Testing

Typically, the push to diversify the race/ethnicity of the teaching force has collided head-on with the higher standards movement. Standards have frequently been enforced through teacher tests. Yet minority candidates have traditionally scored less well than their majority peers on such standardized tests (Darling-Hammond, Dilworth & Bullmaster, 1996; Ekstrom & Goertz, 1985, March; Goertz & Pitcher, 1985; Murnane, 1991; Murnane et al., 1991; Schlechty & Vance, 1983; Sykes, 1983; Toch, 1991; Zimpher & Yessayan, 1987). Many critics of teacher testing fear that raising standards will mean raising the minimum acceptable scores on such tests, thereby excluding a disproportionate number of minorities from the profession. Of course, it is the right of each state to individually set its own testing requirements, including the kinds of tests required and the associated passing scores. But the picture has often been painted as a dichotomous one, in which states must decide between raising standards or increasing diversity, with the decision in favor of one necessarily coming at the expense of the other (Smith, 1987).

Finding the optimal balance among teacher academic ability, supply, and diversity has thus proven treacherous, and of all the reforms proposed, perhaps none has generated more controversy than teacher testing. Such testing has grown explosively since the 1980s, largely because policymakers have embraced it as the most effective means for ensuring an academically able teaching force (National Association of State Boards of Education, 1998). Today, virtually all states have some sort of teacher testing requirement, whether for entry into a college of education, to earn an initial license to practice, or both (National Association of State Directors of Teacher Education and Certification, 1998). Yet, at the same time, such testing has been blamed for restricting both the supply and racial/ethnic diversity of the teaching force. The true effects of teacher testing have thus become the focus of an ongoing debate that to date has spurred a great deal of rhetoric, but as yet little consensus (Boe & Gilford, 1992; Darling-Hammond, 1998; Darling-Hammond & Cobb, 1996; Darling-Hammond & Wise, 1983; Goertz et al., 1984; Ingersoll, 1996; National Commission on Teaching & America's Future, 1996; Sykes, 1983).

Reforms Within Colleges of Education

Colleges of education traditionally have endured scathing criticism by critics who have charged that because education programs admit the least able college students, out of necessity education curricula lack academic rigor (Koerner, 1963; Lanier, 1986). Approximately 30 states have attempted to address this concern by legislating that students must pass admissions tests prior to entering teacher education programs. Virtually all these tests focus on "basic skills," as measured by assessments of reading, writing, and mathematics ability (National Association of State Directors of Teacher Education and Certification, 1998). But while there is widespread consensus that education programs do not have sufficiently rigorous entrance requirements, the impact of raising admissions standards has not yet been analyzed systematically.

The teacher education curriculum, too, has come under heavy fire. It has alternately been characterized as laden with too much theory and not enough practice (Riley, 1998), as theory disconnected from practice (Shanker, 1996), and as subject matter disconnected from teaching methods and learning theory (National Association of State Boards of Education, 1998). Harsh criticism has been directed in particular at the perceived mediocrity of subject-area content training within an education major (Galambos, 1985). Few would dispute that teachers should have a strong enough foundation of knowledge in their subject areas to enable them to be flexible and responsive in their instruction (Grossman, Wilson, & Shulman, 1989; Howey, 1996; Reynolds, 1992). While subject area knowledge is considered essential for effective pedagogy, however, by no means is it considered sufficient. Indeed, Shulman (1987), while acknowledging that teachers must have a firm knowledge of subject matter, identified pedagogical content knowledge as “that special amalgam of content and pedagogy that is uniquely the province of teachers” (p. 8).

Today, calls to abolish the undergraduate education major in favor of content area majors have the explicit support of the U.S. Secretary of Education (Riley, 1998). Already, 300 of the more than 1,200 colleges of education have instituted extended teacher training programs, many of which allow graduates to receive an undergraduate degree in their academic field and then earn a master’s in teaching during a fifth year of schooling that focuses largely on clinical experiences within a structured, supportive environment (Darling-Hammond, 1998).

Accreditation of teacher education programs has been alternately lauded and derided as another means for improving teaching. The National Council for Accreditation of Teacher Education (NCATE), in existence since 1954, serves as the preeminent national accreditation body in teacher education. NCATE has claimed that it benefits education by: (1) ensuring that colleges of education meet external quality standards; (2) encouraging institutions to modify their programs to reflect changes in knowledge and practice; (3) providing a common set of national standards; (4) strengthening institutional self-evaluation and catalyzing program improvement; and (5) deterring decreases in resource allocations (Roth, 1996). Proponents have asserted that NCATE has led the way in changing teacher preparation to match more rigorous licensing and master teacher certification requirements, and in encouraging links between student and teacher standards (Wise & Leibbrand, 1996). Today, NCATE accredits approximately 500 of the 1,200 colleges of education. These colleges account for approximately two thirds of all education graduates annually; many of the 700 unaccredited institutions graduate very small numbers of teacher candidates (Wise, 1997). Accreditation, along with more comprehensive teacher licensure (e.g., Interstate New Teacher Assessment and Support Consortium) and advanced certification (e.g., National Board for Professional Teaching Standards), form the “three-legged stool of teacher quality” advocated by the National Commission on Teaching and America’s Future (1996, 1997).

Since its inception, however, NCATE has proven controversial (Gardner, Scannell, & Wisniewski, 1996). While some institutions have credited NCATE with turning their program around, others have argued that the requirements are too prescriptive and unrepresentative (Gardner et al., 1996; Nicklin, 1992), and that NCATE institutions as a whole do not have sufficiently rigorous admissions requirements (Ballou & Podgursky, 1998).

THE STUDY

Key Issues

Our objective is to inform the policy debates that continue to swirl around the critical issues of teacher academic preparation, supply and demand, diversity, education programs, and program accreditation. We do this by drawing on available data from those individuals who have taken both a teacher test from The Praxis Series™ and either of the two major college admissions tests, the SAT or the ACT. We address the following key issues:

- *What are the academic and demographic characteristics of the prospective teacher pool, and how does teacher testing impact this pool?*

Though many claims about the academic quality of teachers are based on SAT and ACT data collected from high school students intending to major in education, these scores are a flawed proxy for the academic ability of the teaching force. Hanushek and Pace (1994) estimated that more than half of all potential education majors switch career plans between their senior year in high school and the end of their sophomore year in college. Moreover, about one quarter of the teaching force did not major in education (Feistritzer, 1996; NCES, 1996), and this number is likely to grow as current initiatives supporting subject area majors and alternate routes to teaching take hold.

One way around these problems is to look at the SAT and ACT scores, as well as undergraduate grades, of those who actually seek to become licensed teachers. We identified all individuals who took a test from Educational Testing Service's (ETS's) Praxis Series between Fall 1994 and Spring 1997. The Praxis Series™ is administered in 34 states and the District of Columbia either for entrance to college of education programs, for teacher licensure, or for both.¹ We then searched SAT and ACT records back through 1977 and created a matched data set that enabled us to provide a comprehensive look at those who are well into the teacher pipeline, particularly in contrast to potential education majors. The critical data are not the academic and demographic characteristics of a pool of 18-year-olds who think they might major in education, but rather the characteristics of those who are actually pursuing teaching upon graduating from college.

We must be able to differentiate the qualities of individuals who seek licensure from those who actually qualify for licensure. If teacher education programs are effective, then it is quite possible that through entrance requirements, program requirements, and licensure testing, some significant number of potential teachers will not become licensed to teach. In this study, we systematically ask two questions:

- ✓ What are the academic and demographic characteristics of all those who seek licensure?
- ✓ What are the academic and demographic characteristics of those who actually pass the licensure test requirements? In other words, how does licensure testing affect the pool of potential teachers?

¹ See Appendix A for a complete listing of the Praxis user states in 1997.

We also examine analogous issues for admission into teacher education programs, namely:

- ✓ What are the academic and demographic characteristics of all those who take teacher education entrance examinations?
- ✓ What are the academic and demographic characteristics of those who actually pass the entrance test requirements? In other words, how does program entry testing affect the pool of potential teaching students?

We also compare the academic characteristics of prospective teachers, as measured by SAT and ACT scores, with appropriate contrast groups. We first ask, how do those who pass college of education entrance tests compare with the pool of college bound high school seniors? Do the results look different from simply examining the data for intended college education majors?

We then ask, how do those who pass teacher licensure tests compare with all those who graduate from college? Existing data, though limited, suggest that college admissions test scores of college graduates may be significantly higher than for all those who enter college (Hanushek & Pace, 1995). The most appropriate comparison group for teachers—virtually all of whom are college graduates (National Center for Education Statistics, 1999)—is obviously others who have also completed college.

- *What is the relationship between academic quality and licensure area?*

Claims about teaching are often stated as if the teaching force were a homogeneous group. Yet academic requirements for most elementary teachers are typically far different from those for teachers of mathematics, for example. In this study, we compare the academic profiles of those who seek different kinds of teaching licenses and then compare these results with those of all college bound seniors, intended education majors, and college graduates.

- *How would raising licensure testing standards affect the academic and demographic profiles of the prospective teaching population?*

We explore several hypothetical questions in this study. While we analyze most of our data in terms of established passing scores for each state, we also investigate what would happen to the prospective teaching population if we set a single passing score for all candidates across all states. What would happen to the academic and demographic profiles of the prospective teaching population if we set a uniformly high passing standard, and correspondingly, what would happen if we set a uniformly low passing standard?

- *What is the relationship among teacher education training, teacher program accreditation, and the academic and demographic profiles of the prospective teaching population?*

We examine academic characteristics and performance on licensing tests as a consequence of attending teacher education institutions in contrast to preparing for licensure through alternate pathways. We also examine the characteristics and licensing performance of those who attend NCATE institutions as compared with those who attend institutions not accredited by NCATE. We further contrast the characteristics of those who major in general education programs with those who major in a content area.

Study Overview

The Praxis Series™ is the only national teacher-testing program currently in operation. Praxis I tests assess reading, writing, and math ability, and are generally required for entrance into a college of education. Praxis II tests focus on content and pedagogical knowledge in specific subject areas, and are used by states to grant initial teaching licenses. Praxis II also offers several series of licensing tests that focus on more generic teaching knowledge and pedagogical skills.

Almost 600,000 Praxis tests were administered during the three-year window examined in this study. Each teacher candidate who tested completed a background information questionnaire that asked for information on race/ethnicity, age, gender, parents' education level, language spoken at home, undergraduate and graduate majors, highest degree attained, college attended, and other variables. For all candidates, we considered the data listed on the candidate's most recent Praxis test registration form.

We created two parallel data sets: one for candidates who took the SAT and one for candidates who took the ACT. We searched both the SAT and ACT data sets from 1977 to 1995. We then matched the most recent SAT/ACT scores with the Praxis scores and background information that came from both the Praxis questionnaire and the SAT and ACT background questionnaires. For the SAT, math and verbal scores were included.² For the ACT, English and math scores were included. After completing the matches, there were 33,866 Praxis I candidates and 159,857 Praxis II candidates who had taken the SAT, and 55,064 Praxis I candidates and 112,207 Praxis II candidates who had taken the ACT. Data were analyzed separately for Praxis I and II. Individuals who took Praxis I and Praxis II tests between 1994 and 1997 appear in both Praxis data sets.

A third match was done to determine whether candidates had attended an NCATE-accredited college as undergraduates.³ These data were then matched to the Praxis and SAT/ACT database through the attending institution information provided by candidates when they registered to take Praxis tests.

² All scores are reported on the SAT scales that were recentered in 1995.

³ The American Association of Colleges for Teacher Education (AACTE) generously supplied an electronic file containing a master list of undergraduate institutions in the United States that were affiliated with NCATE as of 1997. Note that a small proportion of these institutions (approximately 8%) were in the process of accreditation, but were not fully accredited by NCATE in 1997. Because the vast majority of these schools would eventually receive accreditation, our analyses included these institutions as well.

We then assigned a state passing status to each candidate. For each Praxis test taker, we applied the passing scores in effect within the state in which the candidate tested. In each case, we applied the respective state's passing standard in 1997, even though a state may have changed its passing standard between 1994 and 1997.

Further, we had to define what it meant for a candidate to be considered "passing." In many cases, candidates must take multiple Praxis II tests to become licensed; for Praxis I candidates, multiple tests are almost always required. Candidates were considered to have passed if they passed all tests they had taken in a licensure area or in the Praxis I battery. So, for example, a candidate who took two Praxis II mathematics tests had to pass both in order to be considered licensed in mathematics. A candidate who did not meet the passing standard on one or both tests was considered not to have met the licensing requirement. A candidate who passed all tests taken in a certification area was considered to be a pass even if the state required more tests than the candidate had taken during the three-year window for which we had data. Since we could not determine how well candidates did on tests either prior to or subsequent to this three-year window, we based our estimation of passing status only on tests taken.

For each candidate, we also assigned passing status based on two hypothetical passing standards, *low* and *high*. Passing standards vary substantially among states for most of the Praxis tests. We set the high standard for every test at the highest passing score used by any state in 1997, and the low standard at the lowest passing score used by any state in 1997. We then considered each candidate's passing status in light of the test requirements of the state and these hypothetical passing standards. For all analyses, the most recent Praxis test scores were used in those instances when a candidate took the same test multiple times.

For the majority of the analyses, we used the state passing status as the basis for comparisons. For each variable of interest, we analyzed the makeup of the candidate pool, including SAT/ACT scores, and then compared those who met Praxis passing requirements with those who did not. We also conducted a series of analyses using the hypothetical low and high passing scores as the basis for understanding the potential impact of raising or lowering teacher testing standards.

Limitations and Caveats

A study of this type is bound to have certain limitations that place restrictions on the interpretation of its findings, and it is critical not to overgeneralize the results from this or other related studies.

Perhaps the most significant limitation has to do with our defining academic ability through SAT/ACT scores. Obviously, these standardized test scores present a narrow picture of an individual's academic skills, and there are unquestionably many more facets to "academic ability" than SAT/ACT scores. Nevertheless, we know of no other widely available data that enable trustworthy comparisons of individuals' academic qualities.

SAT/ACT scores do provide objective measures of skills valued by many colleges. But why consider SAT/ACT scores at all if they do not purport to predict teacher effectiveness? We do not mean to imply in any way that candidates who perform well on the SAT or ACT will automatically make good teachers, nor that someone who performs poorly on the SAT or ACT cannot excel as a teacher. Nonetheless, at least two lines of reasoning support the appropriateness of studying the SAT/ACT scores of teachers. The first is that if schooling is to be considered an academic enterprise, then it seems only logical that teachers be drawn from among the more academically able; all things being equal, academic ability is clearly a desirable trait in teachers. A second comes from growing evidence that verbal ability, as measured in the standardized test scores of teachers, is positively related to students' test scores (Ehrenberg & Brewer, 1995; Ferguson, 1998). So while SAT/ACT scores provide an incomplete proxy for academic ability, and many qualities unrelated to academic ability go into making an accomplished teacher, "It would be absurd to argue that academic ability is not or should not be at least one measure of teacher quality" (Weaver, 1983, p. 1).

A second limitation of the study is that the Praxis database is not completely representative of the entire teacher candidate population. Not all states use The Praxis Series™, and in a small number of states that do, not all teacher candidates are required to take each of the tests offered. For example, completion of specific teacher education programs in California may exempt an individual from taking licensing tests.

Moreover, the database was created by taking all Praxis I and II test takers from 1994 to 1997, and then matching them by social security number to all candidates who took the SAT/ACT during the previous 20 years. Teacher candidates who did not take both a Praxis test and the SAT or ACT in the time periods specified were dropped from the database. Those who took the SAT or ACT prior to 1977, for example, would not appear in the database. To be accurate, these data represent only those teacher candidates who took both the SAT or ACT and a Praxis test within a prescribed time period. Still, the study includes more than 300,000 candidates who were in the teaching pipeline between 1994 and 1997, and there is no compelling reason to believe that the sample's overall profile is skewed substantially with respect to that of the overall prospective teaching population.

Another limitation of the study is that all background information was self-reported, and self-reporting may introduce bias. For example, the analyses by race/ethnicity would be skewed if candidates from one racial/ethnic group were less likely than others to identify their racial/ethnic background on the questionnaire. But, since there was no clear way to identify erroneous or biased background data, no adjustments were made to the self-reported information in the database.

Finally, in considering the study data, it is important to bear in mind that Praxis tests are not designed to predict teacher effectiveness. As program entrance and licensure tests, they measure knowledge considered essential to effective pedagogy, but do not attempt to measure the full breadth of skills that go into being an accomplished teacher. Therefore, passing a Praxis test does not guarantee that an individual will become a satisfactory teacher. It does, however, warrant that the individual has acquired a level of knowledge that is adequate for a beginning teacher.

STUDY FINDINGS

Given the complex interrelationships among teacher academic ability, supply, and diversity, combined with the debate and controversy surrounding the role of teacher testing in the reform movement, it is critical to provide hard data about the impact of testing on the pool of potential teachers. This section presents the results of our analyses. In most cases, the SAT and ACT data are consistent with one another, and therefore, the accompanying discussion usually considers them together. In the relatively rare instances when the SAT and ACT data present different pictures, the discussion explicitly addresses these differences.

We typically discuss the data on two levels: for the overall population taking the Praxis tests, and for those who pass in comparison with those who do not. We chose this strategy because it is important to understand who is seeking entry to the teaching pipeline, both at the undergraduate and licensure stages, and how testing affects the pool of potential teachers. Those who pass Praxis tests are permitted to continue further in the pipeline, while those who fail cannot proceed until they pass.

SAT®/ACT Baseline Data

SAT scores are reported on math and verbal scales that range from 200 to 800, and the corresponding ACT math and English scales range from 1 to 36. The data in Table 1 present average SAT and ACT scores by gender and race/ethnicity for high school students in 1997. These data are intended to provide a context for understanding the subsequent discussion of SAT and ACT scores for various groups of Praxis test takers.

Table 1: Mean SAT and ACT Performance by Gender and Race/Ethnicity

	SAT		ACT	
	Math	Verbal	Math	English
All Test Takers	511	505	20.6	20.3
Male	530	507	21.3	19.9
Female	494	503	20.1	20.7
African American	423	434	17.8	17.4
Asian American/Asian	560	496	24.1	21.2
Hispanic	458	457	20.2	19.1
Native American	475	475	20.0	19.5
White	526	526	22.3	22.2
Other	514	512	20.5	19.9

Sources: The College Board. (1997). *College Bound Seniors: A Profile of SAT Program Test Takers*. New York: Author.
ACT. (1997). *The High School Profile Report: Normative Data*. Iowa City, Iowa: Author.

Average SAT and ACT scores tend to remain relatively stable from year to year. For example, for the years covered in this study, 1977-1995, the average SAT math scores ranged from 492 to 506, and the average SAT verbal scores ranged from 499 to 507 (The College Board, 1997); with the introduction of the Enhanced ACT in 1989-1990, mean mathematics and English test scores have ranged from 19.9 to 20.8, and 20.2 to 20.5, respectively (ACT, 1997).

Math SAT scores do vary considerably by gender, however. This fact is especially important to keep in mind when one considers that the overall teaching population is nearly 75% female. Because, on average, females do not do as well as males on the composite SAT, we would expect a predominantly female sample (e.g., teachers) to have a lower SAT profile than a random sample of individuals that included equal numbers of males and females.

**Results For
Those
Entering
Teacher
Education
Programs**

Table 2 provides further context for interpreting the Praxis I data. Praxis I tests typically are used for determining whether or not a candidate can enroll in a college of education.

Table 2: Mean SAT/ACT Scores for Praxis I Comparison Groups

	SAT		ACT	
	Math	Verbal	Math	English
Intended Education Majors	479	485	19.6	19.8
All College Bound Seniors	511	505	20.6	20.3
<i>Male</i>	530	507	21.3	19.9
<i>Female</i>	494	503	20.1	20.7
Praxis I Test Takers	491	503	19.9	20.9
Praxis I Candidates Who Pass	514	525	20.4	21.6
<i>Male</i>	535	527	21.2	20.8
<i>Female</i>	507	524	20.1	21.8

Sources: The College Board. (1997). *College Bound Seniors: A Profile of SAT Program Test Takers*. New York: Author.
ACT. (1997). *The High School Profile Report: Normative Data*. Iowa City, Iowa: Author.

Several interesting trends emerge from the data in Table 2. First, the data clearly demonstrate the oft-cited disparity between intended education majors and their college bound peers with respect to admissions test scores. But it would be remiss to use these data alone as evidence that education majors trail their peers in academic ability, because the scores for Praxis I candidates are higher than those of high school students expressing an interest in education. Those who pass Praxis I tests have even higher scores, scores that are comparable to those of all college bound seniors in math, and substantially higher than all college bound seniors' verbal/English scores. The relative strength of the Praxis I passing population's scores becomes even more apparent when the results are broken out by gender, thereby controlling for the relatively large percentage of females in the Praxis I population. For both males and females, successful Praxis I candidates have composite college admissions scores that are higher than those of the pool of college bound seniors.

Because the Praxis I population consists primarily of college students actively seeking entrance to a college of education, the Praxis I passing population clearly provides a better proxy for eventual education majors than does the population of high school seniors intending to major in education. The data in Table 2 suggest that, contrary to assertions in much of the research literature, students entering colleges of education have test scores that are comparable to or even higher than those of the larger college bound population.

Table 3 presents passing data for Praxis I test takers overall and by gender. Results are given separately for Praxis/SAT test takers and Praxis/ACT test takers. Almost all subsequent tables in this report will contain the same columns shown in Table 3: “% Pass” represents the percentage of candidates within each subgroup who passed the test; “N” stands for the total number of test takers in each group; and “% Pool” defines the composition of the candidate pool. Table 3 shows, for example, that 79% of the males and 77% of the females who took both Praxis I and the SAT met the passing standard for Praxis I. Of the 33,866 people who took both Praxis I and the SAT, 26,182 passed Praxis I. The pool of passers was 75% female and 25% male. Those who passed had average math and verbal SAT scores of 514 and 525, respectively, compared to average scores of just 414 and 427, respectively, for those who did not pass. ACT data are presented using the same reporting structure.

Table 3: Mean SAT/ACT Scores by Passing Status and Gender (Praxis I)

	% Pass	N ⁴	SAT			% Pass	N	ACT		
			% Pool	Math	Verbal			% Pool	Math	English
All Praxis I Test Takers										
All Candidates		33,866	--	491	503		55,064	--	19.9	20.9
Male		8,242	24%	513	505		14,833	27%	20.7	20.1
Female		25,624	76%	484	502		40,231	73%	19.6	21.2
Candidates Who Pass										
All Candidates	77%	26,182	--	514	525	88%	48,248	--	20.4	21.6
Male	79%	6,537	25%	535	527	89%	13,164	27%	21.2	20.8
Female	77%	19,645	75%	507	524	87%	35,084	73%	20.1	21.8
Candidates Who Do Not Pass										
All Candidates		7,684	--	414	427		6,816	--	16.5	16.1
Male		1,705	22%	430	420		1,669	24%	17.0	15.2
Female		5,979	78%	409	429		5,147	76%	16.4	16.4

The number of ACT takers who took Praxis I is considerably higher than the number of SAT takers who took Praxis I, even though the SAT has higher annual administration volumes. The reason for this is likely because Praxis I is required for all students by institutions and/or licensing agencies in a number of Midwestern states, and the ACT is taken more frequently than the SAT by students in the Midwest.

One notable discrepancy between the SAT and ACT data is that nearly 9 in 10 ACT takers passed Praxis I, as opposed to under 8 in 10 SAT takers. The reason for this disparity is not immediately clear, but is likely attributable to a combination of factors, including candidate demographics.

Approximately three fourths of the Praxis I candidates are female. Males and females pass at about the same rate, so Praxis I tests do not influence the composition of the prospective teaching pool with respect to gender. SAT/ACT scores are much higher for those who pass Praxis I than for those who do not.

Table 4 presents the Praxis I data by race/ethnicity. The composition of the pool is consistent with portrayals of the teaching force as racially/ethnically homogeneous, particularly with respect to the ACT population, in which 90% of the candidates are White, just 5% are African American, and other minority candidates combined make up less than 5% of the pool. The SAT population is more diverse, with substantially higher percentages of African American and Asian American/Asian candidates, but even so, more than 8 in 10 of the SAT candidates are White.

⁴ The numbers of candidates reported in this and subsequent tables represents only those candidates who self-reported the relevant background information on the Praxis biographical questionnaire. Thus, the total number of candidates varies from table to table.

Table 4: Mean SAT/ACT Scores by Passing Status and Race/Ethnicity (Praxis I)

	% Pass	N	SAT		% Pass	N	ACT			
			% Pool	Math			Verbal	% Pool	Math	English
All Praxis I Test Takers										
All Candidates		33,770	--	491	503	54,797	--	19.9	20.9	
African American		3,603	11%	413	428	2,829	5%	16.4	17.0	
Asian American/Asian		1,277	4%	517	490	728	1%	20.8	19.6	
Hispanic		602	2%	459	476	694	1%	18.6	19.3	
Native American		187	1%	457	459	555	1%	17.4	18.1	
White		27,506	81%	501	514	49,548	90%	20.1	21.2	
Other		595	2%	488	507	443	1%	19.9	20.7	
Candidates Who Pass										
All Candidates	77%	26,115	--	514	525	88%	48,036	--	20.4	21.5
African American	46%	1,650	6%	456	474	63%	1,790	4%	17.2	18.4
Asian American/Asian	76%	966	4%	542	517	77%	558	1%	21.7	21.1
Hispanic	69%	418	2%	490	506	83%	575	1%	19.2	20.1
Native American	64%	120	0%	490	497	81%	450	1%	17.8	18.9
White	82%	22,537	86%	517	529	89%	44,293	92%	20.5	21.7
Other	71%	424	2%	526	547	84%	370	1%	20.6	21.6
Candidates Who Do Not Pass										
All Candidates		7,655	--	414	427	6,761	--	16.5	16.1	
African American		1,953	26%	378	389	1,039	15%	15.0	14.5	
Asian American/Asian		311	4%	440	406	170	3%	17.4	14.8	
Hispanic		184	2%	388	408	119	2%	15.8	15.7	
Native American		67	1%	397	391	105	2%	15.5	14.9	
White		4,969	65%	428	445	5,255	78%	16.9	16.5	
Other		171	2%	395	409	73	1%	16.0	15.9	

Praxis passing rates differ substantially by race/ethnicity, with White candidates passing at the highest rate, and African Americans at the lowest. These disparate passing rates serve to limit the racial/ethnic diversity of the teaching force; however, it is worth noting that the overall Praxis I population lacks diversity even when passing status is taken out of the equation.

The relationship between SAT/ACT scores and passing rates is fairly consistent, as groups with higher standardized test scores also pass the licensing tests at a higher rate. The exceptions to this relationship are Asian American/Asian and “Other” candidates, who tend to have college admissions test scores that are higher than White candidates’, but whose passing rates are significantly lower. Across all groups, those who pass Praxis I have substantially higher SAT/ACT scores than those who do not.

In sum, Praxis I appears to have precisely the impact that both proponents and detractors of teacher testing claim it has: a significant positive impact on the academic profile of the prospective pool of education majors, at the price of limiting supply and racial/ethnic diversity.

Results For Those Who Seek Licensure

We also conducted analyses of candidates who took the Praxis II assessments, which are used as part of the licensing requirements in most states. We found that, overall, SAT/ACT scores for those who passed the licensing tests were comparable to those who succeeded on the Praxis I assessments. As with Praxis I, we compared the SAT scores of Praxis II test takers with those of college bound seniors. But because Praxis II candidates have completed all or most of their college career, it is more accurate to compare their scores with those of all college graduates. Individuals with relatively low SAT/ACT scores are less likely to complete college than their higher scoring peers, so SAT/ACT scores for college graduates are likely, because of attrition, to be higher than the scores of college aspirants. Note however, that the relative number of test takers demonstrates that most Praxis II test takers were not required to take the Praxis I tests. The majority of Praxis II candidates entered teacher education programs by satisfying requirements other than the Praxis I assessments.

Table 5 shows that composite SAT and ACT scores for all Praxis II test takers are similar to the respective scores for all college bound seniors. However, composite scores for those who pass the Praxis II exams are slightly higher than for college bound seniors. As with the Praxis I data, disaggregating by gender clarifies that, indeed, both male and female Praxis II test takers have SAT/ACT scores that are comparable to or higher than those of the pool of college bound seniors.

Table 5: Mean SAT/ACT Scores for Praxis II Comparison Groups

	SAT		ACT	
	Math	Verbal	Math	English
All College Bound Seniors	511	505	20.6	20.3
<i>Male</i>	530	507	21.3	19.9
<i>Female</i>	494	503	20.1	20.7
All College Graduates	542	543	--	--
Praxis II Test Takers	498	511	19.7	21.5
Praxis II Candidates Who Pass	507	522	20.1	22.0
<i>Male</i>	529	525	20.8	21.1
<i>Female</i>	500	521	19.9	22.3

Sources: The College Board. (1997). *College bound seniors: A Profile of SAT program test takers*. New York: Author.

ACT. (1997). *The High School Profile Report: Normative Data*. Iowa City, Iowa: Author.

National Center for Education Statistics. (1998). *Baccalaureate and Beyond*. Washington, DC: Author.

A somewhat different picture emerges when only SAT scores from college graduates are considered.⁵ College graduates have much higher SAT scores than college aspirants—31 and 38 points, respectively, on the math and verbal scales. The math scores for Praxis II candidates are much closer to those of college aspirants than they are to college graduates, while the verbal scores are somewhere in between. And even though those who pass Praxis II have higher SAT/ACT scores than the overall Praxis II population, their scores still lag well behind those of all college graduates.

The data in Table 5 suggest that the relative standing of those in the teacher pipeline compared with their college peers changes over time. In the career selection process that takes place during college, the group of students who choose teaching as a career, taken as a whole, are not as high achieving as their college peers with respect to SAT scores.

Table 6 displays the Praxis II results by gender. The data are consistent for both the SAT and ACT populations. Approximately three fourths of the candidates are female. Both males and females pass Praxis II at about the same rate, so licensing tests have virtually no effect on the gender makeup of the pool of those who meet licensing requirements. Close to 90% of all Praxis II test takers pass; their SAT and ACT scores are much higher than the scores for those who do not pass

Table 6: Mean SAT/ACT Scores by Passing Status and Gender (Praxis II)

	SAT		ACT			SAT		ACT		
	% <i>Pass</i>	<i>N</i>	% <i>Pool</i>	<i>Math Verbal</i>		% <i>Pass</i>	<i>N</i>	% <i>Pool</i>	<i>Math English</i>	
All Praxis II Test Takers										
All Candidates		159,857	--	498	511		112,207	--	19.7	21.5
Male		40,090	25%	520	514		26,617	24%	20.3	20.5
Female		119,767	75%	491	509		85,590	76%	19.5	21.8
Candidates Who Pass										
All Candidates	87%	139,644	--	507	522	89%	100,214	--	20.1	22.0
Male	87%	34,697	25%	529	525	87%	23,274	23%	20.8	21.1
Female	88%	104,947	75%	500	521	90%	76,940	77%	19.9	22.3
Candidates Who Do Not Pass										
All Candidates		20,213	--	435	434		11,993	--	16.3	16.6
Male		5,393	27%	464	446		3,343	28%	17.0	16.2
Female		14,820	73%	425	430		8,650	72%	16.1	16.8

⁵ ACT scores for college graduates are not yet available so are not included in this analysis.

Table 7 displays the overall Praxis II results by race/ethnicity. As with Praxis I, these data present a picture of a racially/ethnically homogeneous teaching force. Fewer than 10% of the candidates are African American. Representation by those with Spanish-speaking backgrounds is even lower, approximately 2-3 % of the Praxis II pool. Similarly, few Asian Americans and even fewer Native Americans are taking Praxis II tests. Overall, the pool of candidates for teacher licensure is predominantly White and female.

Table 7: Mean SAT/ACT Scores by Passing Status and Race/Ethnicity (Praxis II)

	<i>% Pass</i>	<i>N</i>	<i>SAT</i>		<i>% Pass</i>	<i>N</i>	<i>ACT</i>			
			<i>% Pool</i>	<i>Math Verbal</i>			<i>% Pool</i>	<i>Math English</i>		
All Praxis II Test Takers										
All Candidates		159,270	--	498	511		111,591	--	19.7	21.5
African American		11,510	7%	424	440		11,111	10%	16.5	17.5
Asian American/Asian		3,810	2%	534	508		840	1%	22.5	21.7
Hispanic		5,352	3%	465	473		2,481	2%	18.5	19.4
Native American		488	0%	478	484		631	1%	17.9	19.2
White		135,035	85%	505	518		94,846	85%	20.1	22.0
Other		3,075	2%	497	517		1,682	2%	18.8	20.1
Candidates Who Pass										
All Candidates	87%	139,245	--	507	522	89%	99,804	--	20.1	22.0
African American	69%	7,984	6%	441	463	61%	6,757	7%	17.4	19.0
Asian American/Asian	75%	2,874	2%	547	529	82%	691	1%	23.0	22.7
Hispanic	59%	3,134	2%	486	503	81%	2,007	2%	18.8	20.1
Native American	80%	388	0%	491	499	81%	514	1%	18.6	20.4
White	91%	122,534	88%	511	525	93%	88,583	89%	20.3	22.3
Other	76%	2,331	2%	515	541	74%	1,252	1%	19.7	21.5
Candidates Who Fail										
All Candidates		20,025	--	436	434		11,787	--	16.4	16.7
African American		3,526	18%	384	389		4,354	37%	15.1	15.2
Asian American/Asian		936	5%	495	445		149	1%	19.9	17.1
Hispanic		2,218	11%	434	432		474	4%	16.6	16.2
Native American		100	1%	427	424		117	1%	14.9	14.3
White		12,501	62%	446	446		6,263	53%	17.2	17.8
Other		744	4%	438	441		430	4%	15.9	16.2

Pass rates do vary significantly by race/ethnicity. The passing rate for White candidates exceeds 90% in both the SAT and ACT pools. The passing rate for all other groups is significantly lower, with Hispanics and African Americans passing the Praxis II tests at the lowest rates on the SAT and ACT, respectively.

The relationship between SAT/ACT scores and passing rates is fairly consistent, as groups with higher standardized test scores also pass the licensing tests at a higher rate. SAT/ACT scores invariably are much lower for candidates, across all racial/ethnic groups, who do not pass the Praxis II assessments. The one exception is Asian American candidates, who tend to have composite college admissions test scores that are higher than White candidates, but whose Praxis II passing rates are significantly lower.

The net result is that a pool of teacher candidates that is overwhelmingly White prior to licensure testing becomes even more homogeneous after testing. These data suggest that the most recent entrants into the teaching pool are no more diverse, with respect to race/ethnicity, than their predecessors. The academic profile for those who pass Praxis II, however, is stronger than the entire candidate pool, indicating that licensure testing removes those with the lowest SAT/ACT scores from the pool of potential teachers.

Do undergraduate grades have any meaning or, as has been suggested, has grade inflation, particularly in the field of education, rendered them meaningless? Table 8 shows that approximately two thirds of all teacher candidates have self-reported GPAs of 3.0 or greater, while just 4% have GPAs of less than 2.5. Yet, even within this restricted range, there is a consistent relationship between GPA and licensure test passing rate. The top quartile of students, those with GPAs of 3.5 or above, almost always pass the licensing tests. As mean GPA decreases, so do passing rates. Still, two thirds of the “C” students meet state licensing requirements.

Table 8: Mean SAT/ACT Scores by Passing Status and Undergraduate GPA (Praxis II)

	SAT					ACT				
	<i>% Pass</i>	<i>N</i>	<i>% Pool</i>	<i>Math</i>	<i>Verbal</i>	<i>% Pass</i>	<i>N</i>	<i>% Pool</i>	<i>Math</i>	<i>English</i>
All Praxis II Test Takers										
All Candidates		159,289	--	498	511		111,691	--	19.7	21.5
3.5 - 4.0		40,403	25%	530	552		28,455	25%	21.6	24.0
3.0 - 3.49		66,711	42%	499	512		44,538	40%	19.8	21.5
2.5 - 2.99		46,030	29%	473	479		33,527	30%	18.3	19.6
2.0 - 2.49		6,056	4%	463	464		4,992	4%	17.4	18.5
< 2.0		83	0%	442	467		168	0%	16.5	17.8
Candidates Who Pass										
All Candidates	87%	139,217	--	507	522	89%	99,801	--	20.1	22.0
3.5 - 4.0	95%	38,439	28%	534	556	96%	27,438	27%	21.8	24.2
3.0 - 3.49	89%	59,350	43%	506	520	92%	40,765	41%	20.0	22.0
2.5 - 2.99	81%	37,338	27%	484	492	84%	28,020	28%	18.8	20.3
2.0 - 2.49	67%	4,029	3%	483	489	70%	3,487	3%	18.1	19.7
< 2.0	69%	57	0%	471	493	50%	84	0%	17.8	20.7
Candidates Who Fail										
All Candidates		20,072	--	435	434		11,890	--	16.4	16.7
3.5 - 4.0		1,964	10%	453	461		1,017	9%	17.7	18.9
3.0 - 3.49		7,361	37%	443	445		3,773	32%	16.6	17.2
2.5 - 2.99		8,692	43%	429	423		5,507	46%	16.1	16.2
2.0 - 2.49		2,027	10%	423	416		1,505	13%	15.7	15.6
< 2.0		26	0%	379	410		84	1%	15.2	15.0

Higher GPA is consistently associated with higher SAT/ACT scores. This relationship holds for both those who pass and for those who do not pass the licensing tests. Candidates with GPAs of 3.5 and above have SAT/ACT scores that far exceed scores of all college bound seniors. In fact, the composite SAT scores of those who pass Praxis II and have the highest grades are slightly higher than those of all college graduates (Table 5).

Despite grade inflation, college grades do appear to retain some meaning. Students who do better in the classroom tend to be more successful on licensing tests. To a small extent, the teacher pool is made up of proportionately more successful students as a result of licensure testing. Nevertheless, the effects are small due, no doubt, to the relatively restricted range of grades that are used.

Teacher Education Institutions

The role of teacher education institutions has come under increasing scrutiny, with considerable debate over whether prospective teachers should major in education or an academic field. For both SAT and ACT candidates, 86% of those who seek licensure still come through teacher education programs. Two thirds of candidates report that they are currently in such programs when they take the Praxis II tests. These data are presented in Table 9.

Current teacher education students have the highest passing rate on the licensure tests. Interestingly, those who report they have never been enrolled in a teacher education program have the lowest passing rates, while their mean SAT scores are as strong as the scores for those who were or had been previously enrolled in teacher education programs when they took the licensing tests. The ACT population of those who were never enrolled in a teacher education program also pass at a lower rate, though their ACT scores are lower than for students who were in teacher education programs at the time of testing, but almost identical to those enrolled in such programs in prior years.

These results make it clear that teacher education programs have an important impact in preparing their students to meet the requirements of licensure. Academic ability, as measured by SAT/ACT scores does not, in itself, ensure that someone will have the knowledge and skills that are assessed by teacher licensure tests. Teacher education programs appear to be providing some critical knowledge that enables education students to pass licensure tests at higher rates than students who never enrolled in a teacher education program.

Table 9: Mean SAT/ACT Scores by Passing Status and Enrollment in Teacher Education Programs (Praxis II)

	% Pass	N	SAT			% Pass	N	ACT		
			% Pool	Math	Verbal			% Pool	Math	English
All Praxis II Test Takers										
All Candidates		159,071	--	498	511		111,520	--	19.7	21.5
Currently		104,594	66%	502	515		75,193	67%	19.9	21.7
Formerly		32,171	20%	482	495		21,459	19%	19.2	21.0
Never		22,306	14%	502	513		14,868	13%	19.2	20.8
Candidates Who Pass										
All Candidates	87%	139,035	--	507	522	89%	99,650	--	20.1	22.0
Currently	91%	95,268	69%	509	523	93%	69,801	70%	20.2	22.1
Formerly	85%	27,206	20%	494	510	85%	18,272	18%	19.7	21.7
Never	74%	16,561	12%	520	535	78%	11,577	12%	20.0	22.1
Candidates Who Fail										
All Candidates		20,036	--	436	434		11,870	--	16.4	16.7
Currently		9,326	47%	437	434		5,392	45%	16.4	16.6
Formerly		4,965	25%	416	417		3,187	27%	16.3	16.9
Never		5,745	29%	450	449		3,291	28%	16.3	16.5

Accreditation of teacher education programs has also been the target of significant debate. The proportion of licensure candidates who report attending institutions with NCATE-approved programs is higher for the ACT pool than for the SAT pool. Overall, as displayed in Table 10, approximately three fifths of those seeking licensure report having been trained at an institution with an NCATE-approved program, a figure that is consistent with other estimates of the size of the student population in NCATE-approved institutions (Wise, 1997).

Passing rates for those who attend institutions with NCATE-approved programs are higher than for those students who attend institutions not accredited by NCATE. This holds for both SAT and ACT students. It is especially noteworthy that the NCATE rates are higher since candidates at NCATE institutions have somewhat lower SAT or ACT scores than do candidates at non-NCATE schools. Thus, NCATE-accredited institutions appear to increase the likelihood that candidates will meet state licensing requirements.

Table 10: Mean SAT/ACT Scores by Passing Status and NCATE Accreditation (Praxis II)

	<i>% Pass</i>	<i>N</i>	<i>SAT</i>			<i>ACT</i>				
			<i>% Pool</i>	<i>Math</i>	<i>Verbal</i>	<i>% Pass</i>	<i>N</i>	<i>% Pool</i>	<i>Math</i>	<i>English</i>
All Praxis II Test Takers										
All Candidates		160,075	--	498	511		112,207	--	19.7	21.5
NCATE		85,488	53%	496	508		77,048	69%	19.6	21.5
Non-NCATE		74,587	47%	500	513		35,159	31%	19.9	21.5
Candidates Who Pass										
All Candidates	87%	139,826	--	507	522	89%	100,214	--	20.1	22.0
NCATE	91%	77,771	56%	503	517	91%	69,769	70%	19.9	22.0
Non-NCATE	83%	62,055	44%	512	528	87%	30,445	30%	20.4	22.2
Candidates Who Fail										
All Candidates		20,249	--	435	434		11,993	--	16.3	16.6
NCATE		7,717	38%	425	423		7,279	61%	16.2	16.6
Non-NCATE		12,532	62%	442	441		4,714	39%	16.5	16.8

Results by Licensure Area

Discussions of teacher academic ability most often treat teachers as a homogeneous population. Given the varying kinds of academic skills required of teachers in different licensure areas, we thought it would be useful to examine college admissions scores by licensure area and see how these scores compared with the scores of peers from the same subject matter disciplines. For this analysis, we include only SAT scores.⁶

Figures 1 and 2 present SAT math and verbal data, respectively. In each figure, we plotted the mean SAT scores for intended education majors and all college bound seniors. We then plotted mean SAT scores for all college graduates. These data appear as the three horizontal lines. We then plotted, for each licensure area, the mean SAT score for those who passed the Praxis II tests.

The trends are fairly consistent for both math and verbal SAT, though teacher candidate verbal performance is generally stronger than math performance. There is a great disparity between those who qualify for licenses in specific content areas and those who qualify for licenses in elementary, special, and physical education. Elementary education candidates, by far the largest single group of prospective teachers, have SAT scores that are clearly higher than those of college bound seniors who announce their intention to be education majors. Their verbal scores are slightly higher than college bound seniors', but their math scores are somewhat lower. However, elementary education candidates have much lower math and verbal scores than all college graduates.

For those who qualify for content licenses, we see a far different pattern. With the exception of Art & Music, verbal SAT scores for teachers who succeed on licensing tests in content areas are higher than for all college graduates, up to 35 points higher in the case of those passing licensing tests in English/Language Arts. Math SATs for teacher candidates who pass licensing tests in mathematics and science are substantially higher than for all college graduates (55 and 26 points for math and science candidates, respectively). For virtually all content areas, SAT scores for successful Praxis II candidates are significantly higher than those for all college bound seniors.

Clearly, those qualifying for teacher licenses in specific content areas are a far stronger group, academically, than is suggested by the intended education major data. In fact, they are generally stronger than college bound seniors, and their overall verbal skill as measured by the SAT exceeds mean performance of all college graduates. Moreover, the math scores of teacher candidates who make primary use of mathematics in their teaching far exceed the scores of the average college graduate. However, claims of relatively low SAT scores compared to their college peers still ring true for those qualifying for an elementary, special education, or physical education license. And because elementary teachers account for more than half of the teaching population, the relatively low SAT scores of elementary teacher candidates pull down the average SAT scores of the entire Praxis II population, thereby masking the relatively high scores of those meeting licensure requirements in academic content areas.

⁶ All relevant comparison ACT data were not available at the time of this report. We anticipate that such data will be available and released at a later date.

Figure 1: Mean Math SAT Scores for Candidates Passing Praxis II by Licensing Area

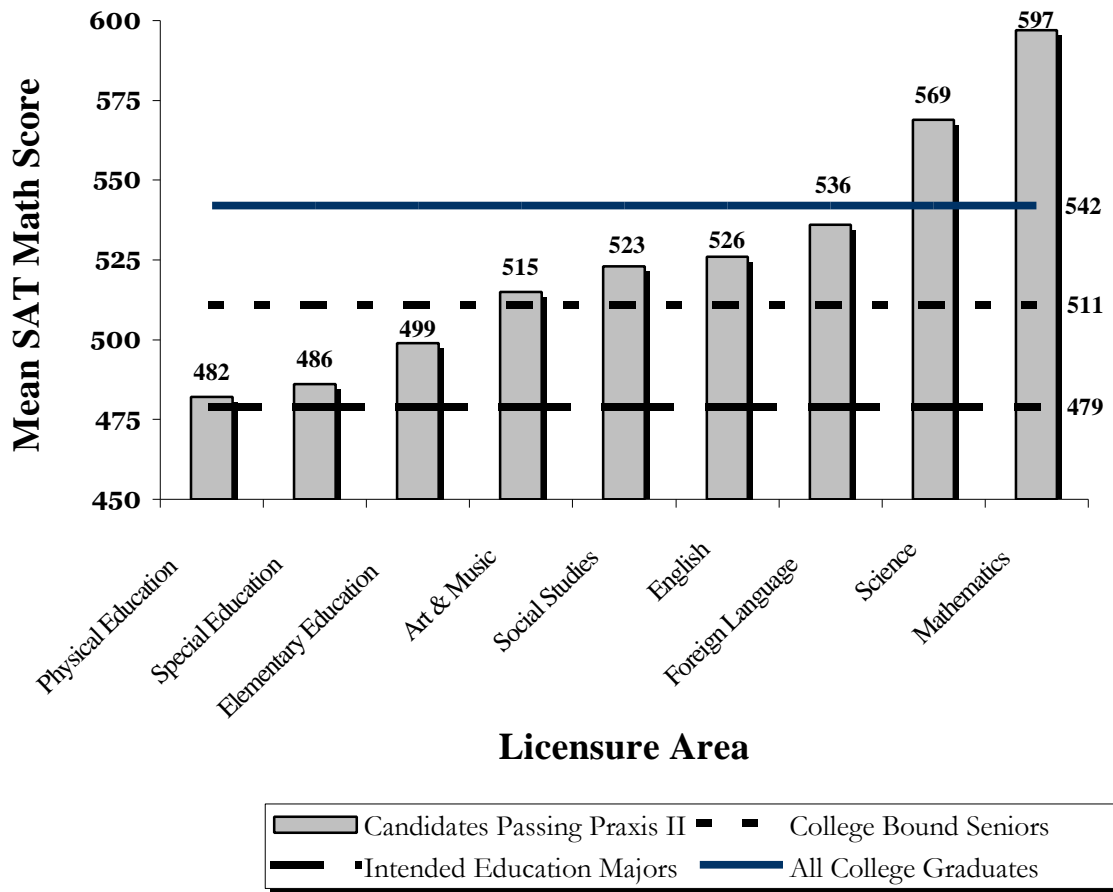
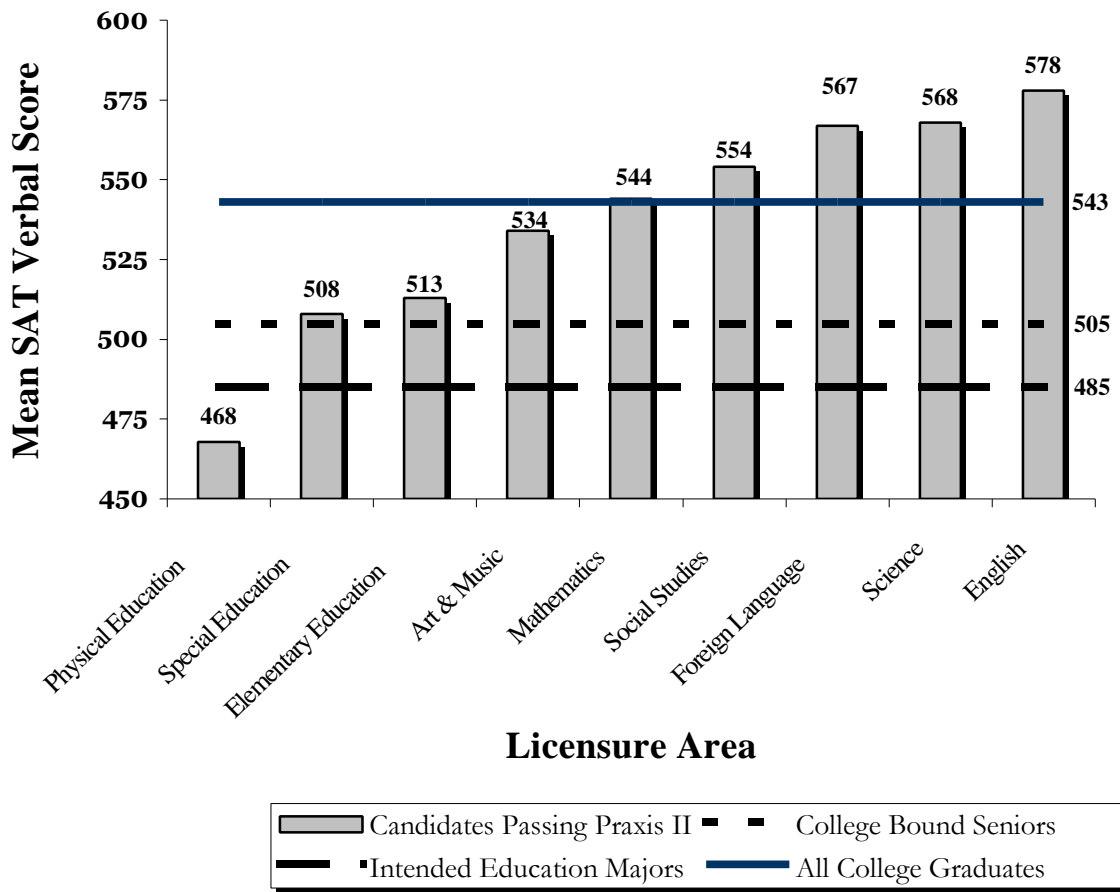


Figure 2: Mean Verbal SAT Scores for Candidates Passing Praxis II by Licensing Area



We then explored the relationship among academic preparation, SAT scores, and Praxis II passing rates. While 64% of those seeking elementary education licensure majored in elementary education, 79-97% of those seeking licensure in content domains had majors in either the content area or in the content education area (e.g., science or science education). The proportion of those with an undergraduate background in their content area varies dramatically by licensure area.

Table 11: Mean SAT Scores and Passing Status by Undergraduate Major and Licensure Area (Praxis II)

	% Pass	N	% Pool	Math	Verbal
Art and Music					
All Candidates	91%	4,463	--	515	534
Art and Music Education Majors	93%	3,306	74%	515	532
Other Education Majors	82%	56	1%	513	523
Art and Music Majors	88%	1,013	23%	515	540
Non-Education Majors	68%	88	2%	540	564
Elementary Education					
All Candidates	87%	43,399	--	499	513
Elementary Education Majors	94%	27,926	64%	486	498
Other Education Majors	75%	2,365	5%	493	506
Non-Education Majors	77%	13,108	30%	528	549
English					
All Candidates	89%	7,471		526	578
English Education Majors	92%	2,688	36%	508	556
Other Education Majors	74%	197	3%	512	562
English Majors	91%	3,577	48%	535	591
Non-Education Majors	79%	1,009	14%	543	596
Foreign Language					
All Candidates	80%	1,765	--	536	567
Foreign Language Majors	83%	1,440	82%	534	564
Other Education Majors	66%	325	18%	547	580
Mathematics					
All Candidates	76%	5,299	--	597	544
Mathematics Education Majors	89%	1,897	36%	580	524
Other Education Majors	50%	234	4%	581	532
Mathematics Majors	82%	2,272	43%	604	548
Non-Education Majors	56%	896	17%	623	577

Table 11 (continued)

	% Pass	N	% Pool	Math	Verbal
Physical Education					
All Candidates	85%	3,897	--	482	468
Physical Education and Health Majors	88%	3,511	90%	479	465
Other Education Majors	67%	135	4%	490	476
Non-Education Majors	64%	251	6%	516	505
Science					
All Candidates	82%	4,470	--	569	568
Science Education Majors	92%	268	6%	568	558
Other Education Majors	65%	193	4%	544	539
Science Majors	84%	3,749	84%	568	568
Non-Education Majors	72%	260	6%	592	598
Social Studies Major					
All Candidates	75%	6,866	--	523	554
Social Studies Education Majors	84%	1,867	27%	509	534
Other Education Majors	65%	143	2%	508	542
Social Studies Majors	74%	4,636	68%	528	560
Non-Education Majors	63%	220	3%	554	593
Special Education					
All Candidates	91%	9,004	--	486	508
Special Education Majors	91%	4,948	55%	482	502
Other Education Majors	89%	2,233	25%	481	501
Non-Education Majors	90%	1,823	20%	503	532

Those with content area backgrounds have much higher passing rates than candidates who do not have background in a content area. However, those individuals with no content training have higher SAT scores overall than those who have had content training. As with teacher education programs and NCATE accreditation, there seems to be evidence that teacher education institutions provide added value, in terms of licensing success, for candidates who proceed through their programs. Given that most of the Praxis II tests measure significant aspects of content, it is not surprising that pre-service preparation in content is associated with greater success on licensure tests.

Raising and Lowering Standards

A critical debate in the teacher reform movement has been over raising or lowering standards for entry into the profession. While some have argued that raising standards will improve the overall academic ability of the teaching force, others have countered that high standards will exacerbate supply problems, particularly in less affluent school districts, and will further limit the racial/ethnic diversity of the teaching force. In this section we look at how raising or lowering scores by a relatively modest amount—to the highest and lowest passing scores established in any state in 1997—would impact the academic ability, supply, and diversity of the teaching force.

Each table in this section presents data at three passing score levels: the hypothetical low passing score, the passing score in effect in a candidate's state at the time of the Praxis test administration, and the hypothetical high passing score. Table 12 gives the data for Praxis I candidates by gender. The data reveal that the passing rates vary drastically across standards.

At the low standard, more than 9 in 10 candidates would pass, but at the high standard, passing rates drop below 50% for SAT takers and to 61 to 65% for ACT takers. Thus, raising standards would clearly limit the supply of prospective teachers gaining entry to teacher education programs. At all three score levels, the impact essentially would be equal for males and females; it does not appear that changing passing scores would alter the ratio of approximately three females to every male in the prospective teaching population.

Mean SAT/ACT scores rise commensurately with higher standards. Note, however, that the difference in SAT/ACT scores is far greater between current state passing standards and the high standards than it is between the state and low standards. This suggests that the real payoff in increased academic ability results from raising passing scores above their current levels, not from raising them from a low standard up to the levels currently in place. However, this increase comes at the cost of cutting the prospective teacher supply by almost 40% for all SAT takers, and approximately 30% for all ACT takers.

Table 12: Mean SAT/ACT Scores and Passing Status at Low, State, and High Passing Standards, by Gender (Praxis I)

	SAT					ACT				
	<i>% Pass</i>	<i>N</i>	<i>% Pool</i>	<i>Math</i>	<i>Verbal</i>	<i>% Pass</i>	<i>N</i>	<i>% Pool</i>	<i>Math</i>	<i>English</i>
Low Pass										
All Candidates	92%	30,979		502	513	94%	52,053		20.1	21.2
Male	93%	7,673	25%	523	514	95%	14,160	27%	20.9	20.4
Female	91%	23,306	75%	496	513	94%	37,893	73%	19.8	21.5
State Pass										
All Candidates	77%	26,182		514	525	88%	48,248		20.4	21.6
Male	79%	6,537	25%	535	527	89%	13,164	27%	21.2	20.8
Female	77%	19,645	75%	507	524	87%	35,084	73%	20.1	21.8
High Pass										
All Candidates	47%	15,967		545	558	62%	34,011		21.4	22.8
Male	48%	3,969	25%	567	563	65%	9,670	28%	22.1	22.0
Female	47%	11,998	75%	537	557	61%	24,341	72%	21.1	23.2

Table 13 shows the results for modified Praxis I standards by race/ethnicity. The results are similar to the gender data, in that SAT/ACT scores increase substantially as passing standards are raised, and the largest SAT/ACT score increases occur between the state and high passing standards. Also, passing rates across all groups again drop substantially when scores are raised to the high standard.

Table 13: Mean SAT/ACT Scores and Passing Status at Low, State, and High Passing Standards by Race/Ethnicity (Praxis I)

	SAT					ACT				
	% Pass	N	% Pool	Math	Verbal	% Pass	N	% Pool	Math	English
Low Pass										
All Candidates	91%	30,895	--	502	513	95%	51,820	--	20.1	21.2
African American	67%	2,415	8%	442	456	76%	2,163	4%	16.9	17.8
Asian American/Asian	92%	1,177	0%	526	500	89%	645	1%	21.2	20.3
Hispanic	86%	517	1%	477	489	93%	642	1%	18.9	19.7
Native American	84%	157	1%	474	477	92%	510	1%	17.6	18.5
White	94%	26,111	85%	507	519	96%	47,450	92%	20.3	21.4
Other	87%	518	2%	508	527	93%	410	1%	20.2	21.1
State Pass										
All Candidates	77%	26,115	--	514	525	88%	48,036	--	20.4	21.5
African American	46%	1,650	6%	456	474	63%	1,790	4%	17.2	18.4
Asian American/Asian	76%	966	4%	542	517	77%	558	1%	21.7	21.1
Hispanic	69%	418	2%	490	506	83%	575	1%	19.2	20.1
Native American	64%	120	1%	490	497	81%	450	1%	17.8	18.9
White	82%	22,537	86%	517	529	89%	44,293	92%	20.5	21.7
Other	71%	424	2%	526	547	84%	370	1%	20.6	21.6
High Pass										
All Candidates	47%	15,921	--	545	558	62%	33,857	--	21.4	22.8
African American	17%	612	4%	496	513	28%	780	2%	18.4	20.2
Asian American/Asian	45%	575	4%	567	552	54%	391	1%	22.8	22.5
Hispanic	34%	202	1%	532	551	54%	375	1%	20.3	21.4
Native American	28%	54	0%	519	548	48%	268	1%	18.8	20.5
White	51%	14,200	89%	546	560	64%	31,771	94%	21.5	22.9
Other	46%	278	2%	554	580	61%	272	1%	21.8	23.1

Unlike for gender, passing rates vary substantially across racial/ethnic groups. Thus, altering passing standards has implications for the racial/ethnic composition of the candidate pool. For example, at all three passing score levels, White candidates pass Praxis I at higher rates than all other groups, and African American candidates pass at the lowest rates. At the low passing standard, the vast majority of White candidates would pass Praxis I. The same is not true for African American candidates, who would pass Praxis I at 67% (SAT) and 76% (ACT).

Passing rate differences between racial/ethnic groups grow far larger as passing scores are raised. This phenomenon is particularly apparent for the SAT group, where more than half the White candidates would pass at the high standard, but just 17% of the African American candidates would pass.

For both the SAT and ACT populations, the African American passing rate drops by approximately 50 percentage points between the low and high passing scores. The net effect of this drastic drop in passing rates is to cut the percentage of those African American candidates in the teaching pool who take Praxis I by about half. At the low passing score, 8% (SAT) and 4% (ACT) of the passing population are African American, while at the high passing score, these figures drop to 4% and 2%, respectively. It is worth reiterating, however, that the prospective teaching force lacks racial/ethnic diversity even at the low passing score, with 85% (SAT) and 92% (ACT) of the candidates in the low passing pool being White. Further, because the majority of those who seek licensure never even take the Praxis I tests, other factors must also contribute to the homogeneity of the work force. Thus, entrance testing does not appear to be the root cause for the lack of diversity of the workforce, but if done in isolation, raising passing standards would clearly exacerbate an already troubling trend.

Raising or lowering Praxis II passing scores would have much the same impact as raising or lowering Praxis I passing scores. Table 14 contains the results by gender. Regardless of the passing standard used, the overall composition of the pool remains approximately three quarters female, even though females pass at higher rates at the high passing standard.

Table 14: Mean SAT/ACT Scores and Passing Status at Low, State, and High Passing Standards, by Gender (Praxis II)

	% Pass	N	SAT			% Pass	N	ACT		
			% Pool	Math	Verbal			% Pool	Math	English
Low Pass										
All Candidates	93%	149,037	--	503	517	94%	105,564	--	19.9	21.8
Male	93%	37,438	25%	525	520	93%	24,721	23%	20.7	20.9
Female	93%	111,599	75%	496	516	94%	80,843	77%	19.7	22.1
State Pass										
All Candidates	87%	139,644	--	507	522	89%	100,214	--	20.1	22.0
Male	87%	34,697	25%	529	525	87%	23,274	23%	20.8	21.1
Female	88%	104,947	75%	500	521	90%	76,940	77%	19.9	22.3
High Pass										
All Candidates	64%	102,546	--	525	545	69%	77,408	--	20.8	23.0
Male	59%	23,818	23%	551	553	63%	16,742	22%	21.8	22.2
Female	66%	78,728	77%	517	542	71%	60,666	78%	20.5	23.2

For both males and females, as the Praxis II passing scores increase, the SAT/ACT scores increase as well. Of course, the higher the passing score, the lower the supply of prospective teachers who meet that score. At the high passing score, roughly two thirds of the Praxis II candidates would earn their licenses, as opposed to well over 90% at the low passing score.

Breaking out the licensure test results by race/ethnicity provides much the same picture as looking at the Praxis I data by race/ethnicity. As shown in Table 15, nearly 9 in 10 candidates who meet the low passing score are White. And more than 9 in 10 of those who pass, when the high passing standard is applied, are White.

Once again we see the picture of a prospective teaching force that is not diverse to begin with, and would be further restricted if minimum acceptable passing standards were raised.

Table 15: Mean SAT/ACT Scores and Passing Status at Low, State, and High Passing Standards, by Race/Ethnicity (Praxis II)

	% Pass	N	SAT			% Pass	N	ACT		
			% Pool	Math	Verbal			% Pool	Math	English
Low Pass										
All Candidates	93%	148,571	--	503	517	94%	105,082	--	19.9	21.8
African American	82%	9,469	6%	434	453	73%	8,165	8%	17.1	18.6
Asian American/Asian	84%	3,205	2%	543	522	90%	758	1%	22.9	22.2
Hispanic	71%	3,819	3%	479	492	88%	2,193	2%	18.8	20.0
Native American	89%	433	0%	486	493	87%	546	1%	18.5	20.2
White	96%	129,021	87%	508	522	97%	91,999	88%	20.2	22.2
Other	85%	2,624	2%	507	530	84%	1,421	1%	19.4	21.0
State Pass										
All Candidates	87%	139,245	--	507	522	89%	99,804	--	20.1	22.0
African American	69%	7,984	6%	441	463	61%	6,757	7%	17.4	19.0
Asian American/Asian	75%	2,874	2%	547	529	82%	691	1%	23.0	22.7
Hispanic	59%	3,134	2%	486	503	81%	2,007	2%	18.8	20.1
Native American	80%	388	0%	491	499	81%	514	1%	18.6	20.4
White	91%	122,534	88%	511	525	93%	88,583	89%	20.3	22.3
Other	76%	2,331	2%	515	541	74%	1,252	1%	19.7	21.5
High Pass										
All Candidates	64%	102,245	--	525	545	69%	77,116	--	20.8	23.0
African American	33%	3,837	4%	466	497	31%	3,442	4%	18.3	20.5
Asian American/Asian	59%	2,260	2%	563	550	70%	590	1%	23.8	23.4
Hispanic	47%	2,506	2%	498	517	60%	1,497	2%	19.9	21.3
Native American	54%	265	0%	512	525	51%	321	0%	19.9	22.0
White	68%	91,520	90%	527	547	74%	70,347	91%	20.9	23.1
Other	60%	1,857	2%	532	563	55%	919	1%	20.8	22.9

At the current state passing scores, close to 9 in 10 of all candidates pass. However, passing rates vary significantly across racial/ethnic groups, with fewer than 60% of the Hispanic candidates from the SAT sample meeting their state passing scores. In contrast, more than 80% of the Hispanic population within the ACT sample meet their state passing scores. The reason for this discrepancy is not readily apparent. We plan to explore these types of racial/ethnic issues more closely in a future report by, among other things, disaggregating results for groups within the various racial/ethnic categories.

Instituting high passing scores on licensure tests would have a significant impact on the supply of teachers, as only about two thirds of all candidates would pass. African American candidates would be the hardest hit by such an increase, with only about one third passing at the high standard, compared to more than two thirds of the White candidates. Across all racial/ethnic groups and at all three passing standards, the licensure test passing rates are somewhat higher than the entrance exam pass rates associated with Praxis I. So, for institutions and states using the entire Praxis Series, the Praxis I test acts as a barrier for proportionately more candidates than do the content-specific Praxis II licensing tests. However, those who take entrance tests only comprise a small proportion of those who eventually seek licensure, suggesting that other forces also work to limit the diversity of the prospective teaching population.

One final way we looked at the potential impact of raising or lowering passing scores was by examining candidates' undergraduate GPAs. The SAT/ACT data from all the Praxis I and II gender and race/ethnicity tables provide strong evidence that raising admissions and licensure testing standards will significantly increase the academic caliber of the pool of teacher candidates. We chose to look at GPA as well because we wanted to see the extent to which GPA would substantiate our findings that used SAT/ACT scores as a proxy for academic ability. To be sure, GPA data, especially when self-reported, must be interpreted with caution, because they do not represent a standardized or highly generalizable measure. Nonetheless, GPA does provide one indication of a candidate's academic performance as an undergraduate, thus making it a useful complement to the SAT/ACT data that were collected on candidates when they were college bound seniors.

Table 16 presents the findings with respect to GPA. As already discussed, the vast majority of teaching candidates, even at the low passing score, have GPAs above a 2.5, or "C" average. Since less than 1% of the candidates reported GPAs below 2.0, these data are not reported. Most of the candidates at all three levels fall between a 3.0 and 3.5 average. Note that passing rates rise with GPA. This finding is not surprising, as one might expect that undergraduates with stronger academic records would be more likely to pass licensing tests.

Between the low and state passing scores, passing rates are close enough that raising the standard does not have much of an impact on the overall composition of the pool. When the high standard is implemented, however, the pool begins to assume a new shape, with respect to GPA. Fully one third of the passing students at the high standard have a GPA of 3.5 or higher, and less than 1 in 4 have a GPA below 3.0. This result occurs because more than 8 in 10 candidates with GPAs of at least 3.5 pass Praxis II even at the highest standards, as opposed to fewer than half with GPAs below 3.0. These data suggest that implementing the high passing standard would not pose a

particularly large barrier for those with GPAs above 3.5, but would serve to deny licenses to at least 1 of every 3 people with lower GPAs. In contrast, at the current state passing scores, the real differentiation appears to occur between those candidates who have GPAs above 2.5 versus those with lower GPAs.

Table 16: Mean SAT/ACT Scores and Passing Status at Low, State, and High Passing Standards, by GPA (Praxis II)

	% Pass	N	SAT			% Pass	N	ACT		
			% Pool	Math	Verbal			% Pool	Math	English
Low Pass										
All Candidates	93%	148,646	--	503	517	94%	105,114	--	19.9	21.8
3.5 - 4.0	98%	39,595	27%	532	554	98%	28,001	27%	21.7	24.1
3.0 - 3.49	94%	62,708	42%	503	516	96%	42,656	41%	19.9	21.8
2.5 - 2.99	90%	41,427	28%	479	486	91%	30,380	29%	18.6	20.1
2.0 - 2.49	80%	4,845	3%	475	479	79%	3,961	4%	17.9	19.4
State Pass										
All Candidates	87%	139,217	--	507	522	89%	99,801	--	20.1	22.0
3.5 - 4.0	95%	38,439	28%	534	556	96%	27,438	27%	21.8	24.2
3.0 - 3.49	89%	59,350	43%	506	520	92%	40,765	41%	20.0	22.0
2.5 - 2.99	81%	37,338	27%	484	492	84%	28,020	28%	18.8	20.3
2.0 - 2.49	67%	4,029	3%	483	489	70%	3,487	3%	18.1	19.7
High Pass										
All Candidates	64%	102,580	--	525	545	69%	77,101	--	20.8	23.0
3.5 - 4.0	83%	33,534	33%	544	569	86%	24,439	32%	22.1	24.7
3.0 - 3.49	66%	44,029	43%	522	541	72%	32,007	42%	20.6	22.7
2.5 - 2.99	49%	22,555	22%	505	519	56%	18,645	24%	19.4	21.4
2.0 - 2.49	40%	2,422	2%	503	515	39%	1,963	3%	19.2	21.2

As one would expect, SAT/ACT scores rise with both passing standards and GPA. In fact, for the top GPA group at the high passing standard, the SAT math scores are equivalent to those of all college graduates, and the SAT verbal scores are significantly higher than those for college graduates.

The low, state, and high passing score data by gender, race/ethnicity, and GPA confirm two important points. First, the higher states choose to set passing scores on entrance and licensure tests, the better the academic quality of their pool will be. Second, this academic improvement clearly comes at the cost of limiting both the supply and diversity of the potential teaching force.

CONCLUSIONS

Taken together, our data highlight the complexity of the issues facing policymakers as they debate critical issues of teaching and learning. Based on this study, we make the following assertions about teaching candidates and teacher testing.

First, the teacher population hardly can be considered an academically homogeneous group. Sweeping claims about the academic skills of all teachers do not take into account the profound differences between groups of individuals seeking different kinds of licenses. Policy implications, in turn, are quite different for different segments of the prospective teaching force. For elementary teachers, the issue seems to be one of improving quality, to the extent that SAT/ACT scores are an appropriate measure of quality. For content specialists, the issue appears to be one of increasing quantity.

Second, candidates applying for a teaching license, specifically those who pursue licensure in academic content areas, have reasonably strong academic skills—skills that are substantially higher than many have suggested. These individuals have academic skills, at least as measured by college admissions tests, that generally are as strong as, and in several cases stronger than, those of their college graduate peers.

Third, the relatively poor standing of candidates in the elementary, special education, and physical education teacher pools supports reform efforts that argue that all teachers ought to have a firm grounding in at least one academic content area. Those with strong academic skills do not seem to be attracted to elementary education from the outset. And, since elementary education teachers make up, by far, the largest group of licensed teachers, this issue cannot be minimized. In fact, our data clarify that general claims about teachers are dominated by the overwhelming proportion of elementary teachers in any representative sampling.

Fourth, admissions and licensure testing clearly raise the academic ability of the population by denying access to those with lower test scores. Without exception, we found that those who passed Praxis I and II tests had higher average SAT/ACT scores than those who failed, and that the higher the Praxis passing score was set, the higher the SAT/ACT scores were of the passing population. Teacher testing thus appears to be working in the sense that it elevates the academic ability of the pool of teachers.

Fifth, the effect of testing on the diversity of the teaching force is not promising. Worse, the lack of diversity cannot be simply ascribed to testing policies. The proportion of minority individuals being attracted to teacher education is far smaller than the proportion of minority students in U.S. classrooms. Disparate passing rates by race/ethnicity exacerbate this mismatch between the teacher and student populations. Licensure testing takes a predominantly White population of potential teachers and creates an even more homogeneous group. Our data suggest that, without radical changes in the recruitment and adequate training of talented minorities, this trend will not change any time soon.

Sixth, the raising of licensing standards has profound effects on the characteristics of the pool of prospective teachers. Raising standards raises the academic profile of those who meet passing requirements by reducing the pool of candidates and selectively removing individuals with less academic skill. Raising standards also limits the racial/ethnic diversity of the pool of prospective teachers who meet passing requirements. We do not argue that the impact on diversity implies that passing standards should not be raised; indeed, the data in this report provide convincing evidence that high standards lead to a teacher population with even higher academic ability. We do feel, however, that bleak passing rates and disparities among racial/ethnic groups suggest that any moves to adopt higher standards must be accompanied by aggressive efforts to support and enhance all candidates' knowledge and abilities so they stand a better chance of meeting those high standards.

Seventh, findings based on undergraduate GPA data mirror the SAT/ACT results. Students who are more successful in the classroom also are more successful on licensing tests and have higher college admissions test scores. Raising standards increases the likelihood that the pool of teachers will be made up of individuals with strong academic records.

Eighth, teacher education programs, and NCATE accredited institutions, in particular, are relatively successful in helping students meet licensure testing requirements. Passing rates for students attending these institutions are higher than for students from other institutions, even when students from other institutions have higher mean college admissions scores.

Ninth, while there are no ready answers to the problems facing education, and teacher preparation in particular, it is clear some frequently cited data do not bring relevant information to the debate. For example, using intended education major as a proxy for those who enter the teaching field is not helpful. There is little relationship between those who actually meet licensure requirements and those who think they might major in education as they complete high school. It is also clear, in light of SAT scores, that assessments of the teacher pool should account for the relative proportion of females in the sample, as women have traditionally scored less well than males on these tests, even when other measures suggest that they have at least equal academic ability.

If high standards are the wave of the future, and passing scores on Praxis and other teacher tests are to rise, effective ways to increase both the overall supply of teachers and the relative percentages of minority teachers must be found, particularly in specific content areas. Many reforms have been suggested in this vein, such as higher teacher salaries, targeted recruitment and training as early as middle school, rigorous but flexible alternate route programs to lure mid-career professionals into teaching, and supportive induction programs to lower attrition rates of novice teachers.

While all these sound promising in theory, it remains to be seen whether they and similar measures will be effective on a large scale. Until they are, policymakers must walk a tightrope with respect to teacher testing. Our data suggest that the mere act of raising passing scores will not be a silver bullet solution for improving teacher quality. Rather, these data suggest that though testing with higher standards holds great promise for ensuring that teachers are academically able, if not used judiciously, such testing can also exacerbate already daunting problems with the supply and diversity of potential

teachers. Those who both major in content areas and complete teacher education programs appear to be a relatively strong and academically able group. The challenge now is to create incentives and mechanisms that increasingly promote this pathway and to avoid pathways that neither attract nor produce a pool of racially/ethnically diverse teacher candidates with strong academic skill.

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APPENDIX A

The following table lists all the states that had established passing scores on one or more of the Praxis I and/or Praxis II tests in 1997. Praxis administration volumes vary widely across states, as some states may elect to use only a small subset of tests within the series, whereas others may use a large number of different Praxis test titles

State	Praxis I	Praxis II
Arizona		X
Arkansas	X	X
California		X
Connecticut	X	X
Delaware	X	X
District of Columbia	X	X
Florida	X	X
Georgia	X	X
Hawaii	X	X
Indiana		X
Kansas	X	X
Kentucky		X
Louisiana		X
Maine	X	X
Maryland		X
Minnesota	X	
Mississippi	X	X
Missouri		X
Montana	X	
Nebraska	X	
Nevada	X	X
New Jersey		X
New Mexico		X
New York		X
North Carolina	X	X
Ohio		X
Oklahoma	X	
Oregon	X	X
Pennsylvania	X	X
Rhode Island		X
South Carolina		X
Tennessee	X	X
Virginia	X	X
West Virginia	X	X
Wisconsin	X	

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