

# Increasing the Odds

How Good Policies  
Can Yield Better Teachers

National Council on Teacher Quality

# Increasing the Odds

---

## How Good Policies Can Yield Better Teachers

National Council on Teacher Quality

**The National Council on Teacher Quality thanks the following researchers for reviewing this booklet:  
Eric Hanushek, Michael Podgursky, Richard Murnane, and Dan Goldhaber.**

### **Board of Directors**

Andrew J. Rotherham (Chair), *Progressive Policy Institute* · Gaynor McCown (Vice-Chair), *The Teaching Commission* · Chester E. Finn, Jr., *Thomas B. Fordham Foundation* · Ira Fishman, *Patton Boggs LLP* · Gary Huggins, *Education Leaders Action Council* · Danielle Wilcox, *Consultant* · Kate Walsh, *President*

### **Advisory Board**

Steven J. Adamowski, *College of Education, U. of Missouri-St. Louis* · Roy E. Barnes, *The Barnes Law Group* · Alan D. Bersin, *San Diego Unified School District* · Lawrence S. Braden, *Saint Paul's School, New Hampshire* · Cheryl Ellis, *Sugar Creek Charter School, North Carolina* · Michael Feinberg, *The Kipp Foundation* · Ronald F. Ferguson, *Harvard University* · Eleanor Gaines, *Pinnacle Peak Elementary School, Arizona* · Michael Goldstein, *The Match School, Massachusetts* · Eric A. Hanushek, *The Hoover Institution* · Frederick M. Hess, *American Enterprise Institute* · Paul T. Hill, *Center for Reinventing Public Education* · E.D. Hirsch, *Core Knowledge Foundation* · Jan Hungate, *Hallsburg Independent School District, Texas* · Jason Kamras, *Sousa Middle School, Washington, D.C.* · Frank Keating, *American Council of Life Insurers* · Lisa Keegan, *The Keegan Company* · W. Michael Kelley, *Author* · Paul Kimmelman, *Learning Point Associates* · Martin J. Koldyke, *Academy for Urban School Leadership* · Wendy Kopp, *Teach For America* · Haily Korman, *122nd Street Elementary School, Los Angeles* · Deborah M. McGriff, *Edison Schools* · William Moloney, *Colorado Department of Education* · Eva Moskowitz, *New York City Council* · Robert H. Pasternack, *Maximus Inc.* · James A. Peyster, *Massachusetts School Board* · Michael Podgursky, *Department of Economics, U. of Missouri-Columbia* · Michelle Rhee, *The New Teacher Project* · Felicity Messner Ross, *The Ingenuity Project* · Stefanie Sanford, *Bill and Melinda Gates Foundation* · Kim Smith, *NewSchools Venture Fund* · Lewis C. Solomon, *The Milken Family Foundation* · Thomas Toch, *Author* · Joseph Wilson, *Ithaca High School, New York*.

*Affiliations are for identification purposes only*

Great teachers make a profound difference in the lives of children. Each of us can remember the personal qualities of a great teacher whose influence stretches into our adulthood—or who gave our own children a solid start in life. But these elusive qualities are hard to measure. It's even harder to use them to predict who will become a great teacher:

In the public school arena, the policies enacted by state governments and local school districts decide who will have access to this honored profession. These policies have a tremendous impact on the quality of the nation's teaching force, making it critical that they are based on the best knowledge available. Otherwise, prospective teachers who might prove to be quite effective are shut out and others who should not be are allowed in. To be fair and practical, these policies must also rely on *objective* measures of a prospective teacher's strengths.

No matter how good these policies aim to be, states and school districts will never be able to render fully informed judgments about a prospective teacher. No test or transcript can predict a person's true worth. Only at the school level is it practical for this critical, more subjective, scrutiny to occur.

Still, good policies can help schools do a better job. While we may wish we knew a lot more about the attributes of effective teachers, enough is known to at least improve the odds that the right candidates will get the green light.

Currently, many of the policies in place at the state and district levels do not reflect the best research. For many years states and districts have operated under some flawed assumptions about the importance of certain credentials, buttressed by research that in many cases has been of poor quality.

This booklet from the National Council on Teacher Quality summarizes briefly what the research says about the attributes of an effective teacher. NCTQ has combed through the research, good and bad, to present in plain English, shorn of all statistical jargon, findings that have resulted from well-designed and well-executed studies.

It is our firm hope that the information that follows will help policymakers look for new and better ways to improve teacher quality and help schools understand that no regulation, no matter how sound, can replace the critical need for schools to screen prospective teachers carefully. It is our firm belief that well-designed policies based on good research will increase the odds that the individuals who make it through the pipeline will be teachers each of us would want for our own children.



By Kate Walsh and Christopher O. Tracy

Illustrated by Colleen Hale

# Master's Degrees

## Background

Currently, half of all teachers hold a master's degree, and the number of teachers in the United States with master's degrees has nearly doubled in the last 50 years.<sup>1</sup> One reason for this increase is that states and school districts view an advanced degree as a sign of a teacher's quality. Districts award higher salaries—11% more on average—to teachers with master's degrees.<sup>2</sup> Districts also make it inexpensive for teachers to get these degrees by subsidizing most or all of the tuition. In 1996, districts spent an estimated \$19 billion to help teachers earn advanced degrees.<sup>3</sup>

By far, most teachers earn their master's degrees in the field of education, in such areas as curriculum and instruction or educational leadership. Even at the secondary level, fewer than one in four master's degrees (22%) is in a teacher's subject area. At the elementary level, only a small fraction of these degrees (7%) is in an academic subject.<sup>4</sup>

## What the Research Tells Us

The evidence is conclusive that master's degrees do not make teachers more effective.<sup>5</sup> In fact, the evidence strongly suggests that rewarding teachers for these degrees is an inefficient use of limited public resources.

- Some studies have even shown that master's degrees have a slightly *negative* impact on student achievement.<sup>6</sup>
- Very few studies diverge from this consensus; the findings of those that have are inconclusive. For instance, one study found that having a master's degree modestly improved student achievement in grades 1 through 7 but had no impact in grades 8 through 12.<sup>7</sup>
- The type of master's degree may make a difference. The most recent studies have shown that some master's degrees provide more value than others. One found that students of high school math teachers with a master's degree in mathematics performed slightly better than those of teachers without an advanced degree or a degree in a subject other than mathematics.<sup>8</sup> However, this same study did not find similar effects from master's degrees in other subject areas.<sup>9</sup>
- Only one study looked at the impact of elementary teachers earning master's degrees in a subject area, and it found no effect.<sup>10</sup>

Advanced degrees do not make teachers more effective.

## Bottom Line

**Channeling public resources to teachers' pursuits of advanced degrees does not appear to improve teachers' effectiveness. Districts interested in exploring smarter compensation packages might consider redirecting lockstep salary increases connected to earning an advanced degree toward more targeted purposes.**



# Experience

## Background

Experience is highly valued in the teaching profession, more so than in many other professions. School districts link teacher pay directly to each year of experience and offer considerably more generous retirement packages than are available in private industry.<sup>11</sup> The relatively high value awarded to experience also manifests itself in times of teacher surpluses. Districts usually lay off a higher number of less costly junior teachers rather than consider other alternatives (though collective bargaining agreements clearly prevent some options from being considered). Philadelphia is a recent notable exception. To cut costs and avoid laying off younger teachers, the city made the unusual move of offering senior teachers early retirement packages.

With experience playing such a major role in districts' complex cost-benefit considerations, it makes sense to consider how experience impacts student achievement and whether policies and pay that are inexorably linked to experience are the most efficient use of public resources.

## What the Research Tells Us

For many reasons, measuring the real impact of experience on a teacher's effectiveness is complex, more so than measuring any other teacher attribute. Consequently, many well-constructed research attempts to interpret the relationship between experience and effectiveness have produced varying results that reveal no particular pattern. A few broad interpretations of the research are possible:

- In general, *some* experience does have an impact on student achievement...but it is not as clearly important as most policies and pay structures indicate. Experience has less of an impact on student achievement than other measurable teacher attributes.<sup>12</sup>
- The preponderance of research has found that the benefits of experience are realized after only a couple of years in the classroom.<sup>13</sup> However, a well-designed recent study has found that teacher effectiveness continues to improve for closer to four or five years.<sup>14</sup> In either case, after this initial learning curve, there isn't much evidence that teachers become more effective each year they are in the classroom.<sup>15</sup>

- A number of good studies have produced findings that diverge from this consensus, but no pattern emerges. Some found that the impact of teacher experience waivers considerably over the years but not in any predictable pattern.<sup>16</sup> Others found that teacher experience never has a discernible effect on student achievement.<sup>17</sup> Yet another found that lower achieving elementary students actually did better with inexperienced teachers.<sup>18</sup>

One reason that experience is hard to measure is that the most effective teachers may be the first to leave the classroom, moving on to school administration positions or other professions, distorting the real impact of teacher experience. It might look as if teachers generally become less effective over time because of factors like burnout, but in fact the best teachers have simply left the classroom.

While it may be foolhardy for districts to adopt policies that encourage teachers to leave, they may want to consider creative compensation packages that recognize the contributions of younger teachers who choose not to invest their entire careers in teaching. For example, districts may want to shift some resources from retirement packages to invest in disproportionately higher incremental pay increases for teachers in their third through fifth years, a period when teachers appear to be generally quite effective.

## Bottom Line

**Policies based on a simple linear growth over time in teacher effectiveness should be reexamined. If student achievement gains are a school district's primary focus, little evidence supports compensation packages that raise salaries equally for each year of service without regard to other considerations.**

A few years of experience makes a teacher more effective; after that it's unclear.

# Education Courses

## Background

Education courses have long been roundly accused of failing to increase a teacher's effectiveness; almost every state now has programs that allow teachers to bypass some education course requirements. The Texas State Board of Education has gone a step further in allowing teachers to work under a full license at the high school level without taking *any* education courses. The U.S. Department of Education provides substantial funding to the American Board for Certification of Teacher Excellence (ABCTE), a national program that licenses teachers who pass a series of tests but who may not have taken specific education coursework.

Critics charge that these alternative routes into the teaching profession lower the quality of teachers and denigrate those who seek to professionalize teaching. Such criticism reflects, in part, an assumption that schools of education impart the knowledge and skills that make their graduates more effective. But does the research support this assumption? Are teachers who have gone through a formal teacher preparation program, including student teaching, more effective?

## What the Research Tells Us

Supporters of formal teacher training often claim that "hundreds of studies" support the value of pre-service education courses. Recent reviews of the literature, however, have largely disputed that claim.<sup>19</sup> These reviews have found that all but a handful of these studies suffered from significant methodological shortcomings, ignored basic scientific protocol such as the "peer review"

process, and, in most cases, did not use student achievement to judge a teacher's effectiveness.<sup>20</sup> Some of the better research has concluded the following:

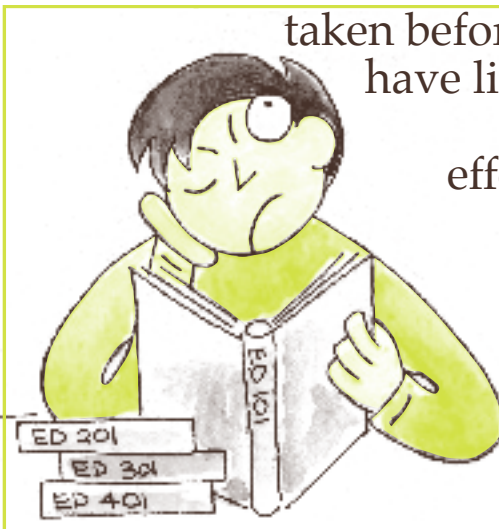
- One massive study by Bradford Chaney looked at the standardized test performance of 24,000 eighth graders to determine if students did better in mathematics and science if their teachers had a degree in education. The study found that an education degree had no impact on student scores.<sup>21</sup>
- Another study by economists Dan Goldhaber and Dominic Brewer found that students actually did worse on science achievement tests if their teachers had a degree in education.<sup>22</sup>
- Another study indicates why it is important to rely on the findings of more than one study and to not assume that what is true for one group of teachers is equally true for another: Richard Monk found that students did better on a math test if their teachers had taken courses in math education as opposed to pure mathematics. On the other hand, Monk found the reverse was true in science; teachers who took pure physical science courses as opposed to science education courses were more effective.<sup>23</sup>

It is hard to understand how pre-service training can appear to add so little value to a teacher's effectiveness. The prevailing views are that teaching skills must be learned on the job and that education courses lack rigor and true content. Economist Dan Goldhaber offers an interesting insight, theorizing that the apparent lack of an impact from education coursework might be related to the low academic caliber, on average, of the people that take such coursework. Because academic caliber is the most pronounced measurable attribute of an effective teacher, education coursework's true value may be masked by the fact that education schools attract on average less academically talented individuals.

## Bottom Line

**Pre-service education courses may help some aspiring teachers to be more effective than they would have been otherwise, but there is no evidence to support policies that bar individuals from the profession because they lack such coursework. Other credentials or experience may add just as much or more value.**

Education courses  
taken before teaching  
have little impact  
on teacher  
effectiveness.



# Traditional Certification

## Background

For over a century public school teachers have been required to be certified or licensed in their state. While certification requirements have evolved over time and vary somewhat from state to state, generally prospective teachers must complete a formal training program sanctioned by the state's department of education. These formal programs include coursework in both education and a content area, a student teaching experience, and, in all but a few states, the requirement that the teacher pass some kind of licensing test.

The reasonable assumption that states are making is that a trained, certified teacher will be more effective than one who is not formally trained. Yet for as long as states have required certification, the process has been looked upon skeptically by many and eschewed by nonpublic schools, especially the nation's most elite private schools.

Even if there are some legitimate grounds for the skepticism about certification, doesn't the process at least offer a floor, assuring us that teachers meet some minimal set of qualifications?

## What the Research Tells Us

Many education researchers have set out to prove the value of certification over the years:

- Economists Dan Goldhaber and Dominic Brewer got into a heated debate with certification advocate Linda Darling-Hammond when they published a study of 2,400 math and science teachers. This study found that students whose teachers had emergency certification performed just as well as students whose teachers had standard certification. Darling-Hammond maintained that the emergency certified teachers had taken a lot of education courses anyway.<sup>24</sup>
- A study of California's class size reduction program using data on all public elementary schools in the state found that teachers' certification status had very little impact on student achievement.<sup>25</sup>
- Using data from all 50 states and 65,000 teachers, education professor Linda Darling-Hammond reported that states that employed a higher percentage of fully certified teachers were more likely to report higher student test scores.<sup>26</sup> However, this study suffered from a significant design problem associated

with trying to examine data from the state level, and it failed to recognize that some states classify alternatively certified teachers as fully certified, while others classify such teachers as provisional.

Studies that do not distinguish between alternatively certified teachers (who generally meet a significant academic standard) and emergency certified teachers (who sometimes do not have a college degree or were not able to pass a basic skills test) do not help to shape better policies on this controversial issue. There are only a couple of good studies that compare traditionally certified teachers with an isolated group of alternatively certified teachers:

- One well-designed study found that 41 teachers who were all part of the same alternative certification program were just as effective as 41 teachers who were all traditionally trained and certified.<sup>27</sup>
- A recent study from Mathematica Policy Research found that first and second year Teach For America teachers produced slightly higher math gains and equivalent reading gains as more experienced, traditionally certified teachers in the same schools.<sup>28</sup>

## Bottom Line

**Even if all of the research on certification is considered uncritically, at best the conclusion is that the traditional certification process may only add some marginal value. Currently, the intended benefits of traditional certification (that teachers are properly trained) do not appear to justify the real costs (restricting the pool of individuals that schools can consider). States should ensure that their certification systems are sufficiently flexible to accommodate capable nontraditional candidates.**

**Traditional routes into teaching do not appear to yield more effective teachers than alternative routes.**

# Teacher's Race

## Background

In the past 20 years, the number of minority students has risen rapidly to now comprise over one-third of the U.S. school population. During the same time period, the number of minority teachers has declined to fewer than one in five. These two trends have driven a myriad of policies in states and school districts that are designed to boost the supply of minority teachers. Proponents of such efforts argue that these actions are needed because minority students are better served by minority teachers of the same race. Some argue that race should be the foremost consideration in hiring decisions.

While there may be many good reasons to champion the call for more minority teachers, do such strategies lead to greater student learning gains? How much consideration should districts place on a teacher's race or ethnicity relative to other teacher attributes?

## What the Research Tells Us

Even though most states have adopted formal policies to recruit and hire minority teachers, only a handful of studies have looked at the ramifications of these policies. The conclusions of this limited research, all of it having looked only at the impact on black students, are decidedly mixed:

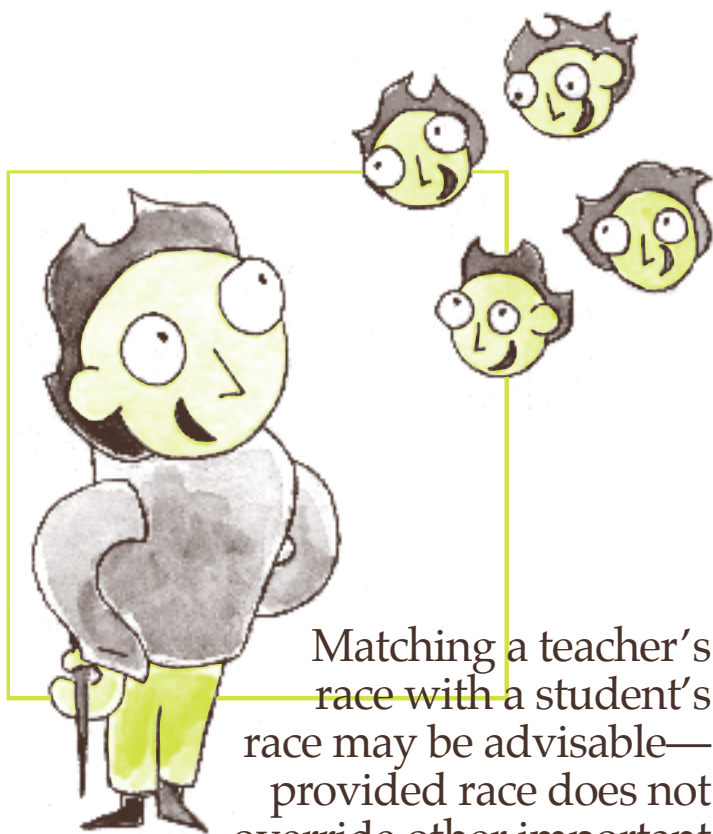
- One study of a large school district in the late 1980's found that having a black teacher did not affect the scores of black 7th and 8th graders.<sup>29</sup>
- A study using longitudinal data of 8th, 9th, and 10th graders across the United States found no effect of the teacher's race on scores for white, blacks, or Hispanics.<sup>30</sup>
- A study done in the early 1970's looked at the gains of 1st through 3rd graders and found that black teachers, in particular relatively young black teachers, produced significantly higher gains among black students than white teachers.<sup>31</sup>
- A recent study on this issue found that both black and white elementary students in Tennessee benefited significantly from being assigned a teacher of their own race.<sup>32</sup>

In addition to these studies looking only at student achievement outcomes, other research has found that minority students may perform less well if they perceive that a stereotype regarding their ability will come into play, meaning that they could potentially under-perform for a teacher of a different race.<sup>33</sup>

There is some evidence that teachers of all races may exhibit some racial biases, however unintended, in the classroom.<sup>34</sup> However, it is not clear how these biases play out, such as a finding that black students will perform less well if assigned to a white teacher instead of a black teacher. For example, one recent study found that the academic performance of black students assigned to at least one black teacher in the early grades was slightly worse relative to those black students who had not been assigned to any black teachers.<sup>35</sup>

## Bottom Line

**States and districts seeking to increase the number of minority teachers in order to match teacher and student race should do so prudently. There is insufficient evidence to support hiring policies that give a teacher's race primary consideration.**



Matching a teacher's race with a student's race may be advisable—provided race does not override other important considerations.



# Subject Area Knowledge

## Background

Policy debates over the importance of subject area knowledge are not particularly contentious. Some observers believe that subject knowledge is paramount; others believe it to be a “necessary but not sufficient” condition for effective teaching. When specific policy responses are proposed, the issue can become more controversial as groups struggle over how many college courses constitute sufficient training.

The No Child Left Behind Act of 2001 signaled an attempt to redress a perceived imbalance in the content of teacher training programs. Many observers believe that the pendulum had swung too far in the direction of training teachers in professional skills, at the expense of their training in a subject area. To be considered “highly qualified”, teachers must now demonstrate that they know the subjects they teach, which for many states, surprisingly, is a new requirement. However, many teacher educators worry that the law is causing the pendulum to swing too far in the other direction and that elementary teachers in particular do not need the subject matter training now required.

Is this increased emphasis on subject matter preparation an over-reaction? Does it put too much emphasis on a “necessary, but not sufficient” attribute of an effective teacher?

## What the Research Says About Secondary Teachers

- Many studies have found that strong preparation in mathematics makes high school math teachers more effective.<sup>36</sup>
- Similar results have been found for high school science teachers who are well-prepared in their field.<sup>37</sup>
- Some limited evidence suggests that there may be a ceiling effect from the impact of coursework. One study found that the positive impact achieved from taking courses did not increase after four and six college-level courses were taken. In other words teachers who had taken seven courses were no more effective than teachers who had taken four to six.<sup>38</sup>

## What the Research Says About Elementary Teachers

Little research has tackled the issue of what kind or amount of subject matter preparation makes elementary teachers more effective, leaving policymakers to speculate about the best approach. The only published study on the subject examined whether elementary

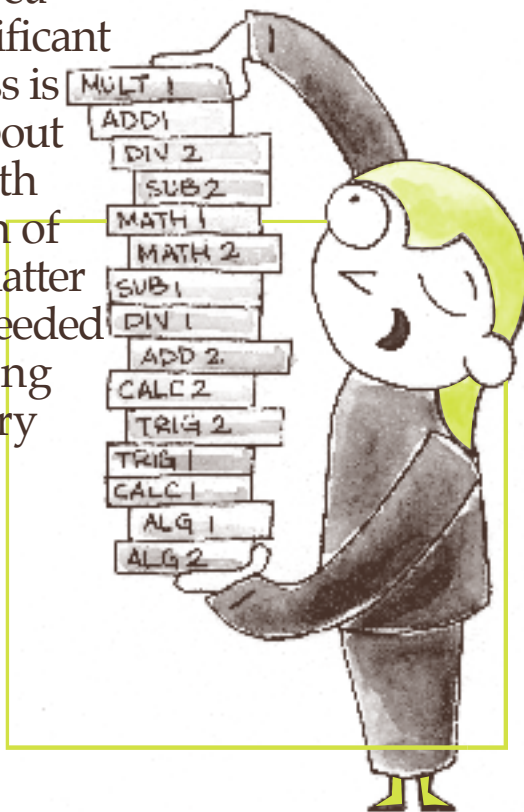
teachers’ recent coursework (within three years) in mathematics raised student achievement. No relationship was found.<sup>39</sup>

Absent any research, many educators assume that the best content preparation for elementary teachers is a broad liberal arts education. This supposition is supported by other research finding that teachers with relatively high levels of literacy, a quality that is achieved by means of a broad education, are more effective (see page 8).

## Bottom Line

**The growing call for more subject matter training for secondary teachers appears justified. While less is known about the optimum subject matter training for elementary teachers, broad training across many subjects would appear to be a judicious requirement.**

Strong preparation in a secondary teacher’s intended subject area adds significant value. Less is known about the breadth and depth of subject matter training needed for teaching elementary grades.



# Teachers' Level of Literacy

## Background

Literacy is often narrowly understood as a person's ability to read; in its broadest but truest sense it indicates a person's world knowledge. In other words, the more someone is familiar with a broad range of subjects—from baseball and cooking to World War II and the structure of the atom—the more literate a person is. Literacy levels are easily measured. A simple vocabulary test or the verbal portions of the SAT or ACT all measure literacy. In effect, our knowledge of words is the best reflection of our general knowledge of the world.

Why is this important in a discussion of effective teachers? Effective teachers are in fact more literate. Unfortunately, schools of education, states, districts, and schools do not always make the recruitment of highly literate teachers a priority. For example:

- Many schools of education have few or no admissions criteria. Nearly 90% of the colleges and universities that house schools of education accept more than 70% of their applicants.<sup>40</sup>
- Many teacher education programs focus their programs of study on the teacher's elected subject area and education coursework, arguably neglecting teachers' need to be broadly educated with coursework that is directly relevant to what a K-12 teacher needs to have in his or her repertoire.<sup>41</sup>
- When hiring, many school districts are reluctant to consider important indicators of teachers' literacy that might help to determine the caliber of teacher prospects.<sup>42</sup> Such indicators could include relative performance on teacher licensing exams and on standardized tests such as the SAT, ACT, or GRE. States could readily report this data to school districts but almost always do not.<sup>43</sup>
- States have set low standards for the literacy level they require from new teachers to earn a license. A study conducted in 1999 by the Educational Testing Service found that if all states set their passing scores on a test of basic skills (reading, writing, and mathematics) to the level of Virginia (the state with the highest passing score), the number of candidates in the nation who would pass would drop from 77% to a mere 47%.<sup>44</sup>

More effective teachers will score relatively higher on tests of literacy.

These policies and practices illustrate a widely accepted view of teaching in the United States that downplays the importance of a teacher's academic caliber. In fact, many educators believe that smarter teachers are less effective with struggling students because they cannot appreciate the students' difficulties. But is this attitude justified?

## What the Research Tells Us

Studies repeatedly conclude that teachers who are more literate are more likely to produce greater student learning gains. For example:

- Two recent reviews of the research found that a teacher's level of literacy<sup>45</sup> as measured by vocabulary and other standardized tests affects student achievement *more than any other measurable teacher attribute*, including certification status, experience, and the amount of professional development that a teacher receives.<sup>46</sup>
- These summary findings were based on numerous robust studies spanning many decades that looked at the impact of literacy on student achievement, all finding that a teacher's level of literacy is a strong predictor of student achievement.<sup>47</sup>
- One such study found that teachers who are highly literate improved student achievement .2 to .4 grade levels more than teachers who were the least literate.<sup>48</sup>
- A recent study of National Board teachers in North Carolina found that the teacher attribute that most consistently distinguished Board-certified teachers from other teachers was how literate they were. Board-certified teachers had significantly higher average scores on standardized tests such as licensing exams and the SAT and GRE.<sup>49</sup> This is particularly significant in light of a recent finding that confirms that National Board teachers produce relatively higher student achievement gains.<sup>50</sup>
- While there appears to be no reason to believe that licensing tests would not correlate with teachers' performance on other standardized tests, no study has yet determined if higher scores on licensing exams such as the Praxis series correlate with greater teacher effectiveness.

## Bottom Line

**Clearly a prospective teacher's level of literacy, however measured, should be a primary consideration in the hiring process.**

# Selectivity of College

## Background

When school districts hire new teachers, they generally look first for teachers who have earned certification. They give far less consideration to the academic caliber of candidates, including the quality of the candidates' alma mater. In a study published in 1996, education economist Dale Ballou found that public schools do not exhibit hiring preferences toward candidates with strong academic credentials, presumably because they feel that other teacher attributes are more important than a teacher's past academic performance.<sup>51</sup> The numbers help to tell the story: fewer than 7% of U.S. public school teachers graduated from "selective" colleges. In comparison, private schools clearly place much greater value on hiring teachers from selective colleges, with non-religious private schools hiring nearly double the percentage that public schools hired.<sup>52</sup>

Is de-emphasizing a teacher's academic record a good policy? Should districts give greater priority to such factors as where a candidate attended college? Or would such a policy discriminate against candidates who may be well educated but who did not attend a selective college?

## What the Research Tells Us

Without exception, studies find that students make greater learning gains if their teachers have attended a more selective college.

- One study compared the academic performance of hundreds of middle and high school students in Philadelphia and found that students made greater gains when assigned to teachers who had attended higher rated colleges. Interestingly, black and low-income students assigned to these teachers posted the highest gains.<sup>53</sup>
- A massive study of 30,000 high school students also found a strong positive relationship between the selectivity of teachers' college and student academic gains.<sup>54</sup>
- A study of roughly 800 middle schoolers in California found that when a school had a larger percentage of teachers who graduated from one of the top 100 rated institutions in the nation, student achievement was higher.<sup>55</sup>

While teachers from more selective colleges may be more effective, some evidence suggests that they may be quicker to leave the profession.

- According to the National Center for Education Statistics, first-year teachers who scored in the top quartile on the SAT were twice as likely to leave teaching after five years as those who scored in the bottom quartile.<sup>56</sup>
- Similarly, Richard Murnane and others found that both beginning and experienced teachers with higher scores on a licensing examination were more likely to leave the profession. This was particularly true for white teachers. Murnane also found that teachers with higher IQ scores were more likely to leave teaching at the end of each year than those with low IQ scores.<sup>57</sup>

It is important to note that there is certainly no reason to believe that a prospective teacher who did not attend a selective college but who has strong academic credentials as manifested by other criteria will be any less effective. College selectivity, like literacy, is simply one way that researchers have been able to easily measure a teacher's overall academic caliber.

## Bottom Line

**The findings on college selectivity lend further support to what is already a robust body of evidence indicating that teachers with strong academic credentials are more likely to produce greater student learning gains. However, districts which purposely recruit candidates with higher academic credentials may need to prepare for higher turnover rates, unless they also address those factors that cause those teachers who have the most other options to leave the classroom.**



Colleges that are more selective in their admissions produce more effective teachers.

# Soft Attributes

## Background

All of the teacher attributes discussed in this booklet can help inform state and district policies for both licensing and hiring teachers. But what about other characteristics good teachers need? Isn't it more important that a teacher, for instance, be dedicated, energetic, and inspirational?

The answer is a resounding yes. In fact, measurable teacher attributes like SAT scores and experience account for only a small portion of why some teachers are more effective than others.<sup>58</sup> Most of what makes a teacher effective are the "soft" personal attributes that are much harder to measure.

Nevertheless, as long as state and local policymakers believe that it is their responsibility to set standards for entry into the profession, there are a number of reasons why they should rely only on those attributes that can be measured:

- First, identifying "soft" attributes is more art than science. It requires subjective judgments, making it impractical for states and districts to depend on such processes. For example, organizational skills may be critical to success in the classroom, but it is impractical to expect states to come up with a reliable policy designed to prevent disorganized people from entering the classroom.
- Second, it's difficult to prescribe a single combination of these soft attributes. Effective teachers may possess a few, some, or all of the attributes that we may think are important, but the recipe isn't going to be the same for any two teachers. The teacher attributes needed in one type of school, grade level, or subject may not be the same as those needed for another type of school, grade level, or subject.
- Most critically, though, these soft attributes do not *replace* the need for teachers to demonstrate more measurable attributes. A highly energetic teacher who works twelve hours a day but doesn't know enough about the subject is still unlikely to be effective.

The teacher attributes that matter the most are the hardest to measure.

Even though these points negate the relevance of soft attributes for policymakers who are designing certification systems, it is still useful to acknowledge some of the work being done in this area, particularly by Teach For America (TFA) as well as the Haberman Educational Foundation. Both groups have studied the soft attributes needed to succeed in classrooms serving poor and minority children. The Haberman Foundation has focused on identifying the qualities of a teacher who is most likely to stay in teaching. Its list of attributes includes persistence and an ability to survive within a bureaucracy (for a full list go to <http://www.altcert.org/teacher/dimensions.asp>).

Teach For America's recruitment process is particularly noteworthy because it focuses not on teacher retention but on identifying teachers who possess the attributes most likely to lead to higher student learning gains.

## Gaining a Full View of a Teacher

Since its inception, TFA has placed a lot of weight on academic credentials. For instance, most of its teachers have graduated from selective colleges and have an average SAT score of 1,300, 261 points higher than the average SAT score of other aspiring teachers who pass the Praxis I, a basic skills test required of new teacher in most states.<sup>59</sup>

As TFA grew, the organization realized that recruiting teachers who were smart and motivated was not enough. Even with a highly selective recruitment process (only one out of eight candidates is selected), TFA still found an unacceptably wide range of effectiveness in its teaching corps. To narrow this gap, TFA looked at the achievement gains students made under their teachers. It sorted its teachers into three "buckets": those who produced strong learning gains, those who produced acceptable gains, and those who produced substandard gains. TFA then worked to identify those personal attributes that were most prevalent among its most effective teachers and that distinguished them consistently from less effective teachers.

## Seven Critical Attributes

Using the data from this sorting exercise, TFA identified seven personal attributes common to teachers who produced the greatest student learning gains:

# Conclusion

- 1 High-Achieving: The individual has a history of success no matter what the endeavor.
- 2 Responsible: Instead of blaming others or circumstances, the individual takes full responsibility for achieving a positive outcome.
- 3 Critical thinker: The individual reflects about the linkages between cause and effect instead of simply reacting to the effect.
- 4 Organized: The individual is able to juggle multiple projects and tasks successfully.
- 5 Motivating: The individual is able to influence and motivate others to action, as evidenced by effective leadership in extracurricular activities such as student-run organizations or athletic teams.
- 6 Respectful: The individual assumes the best about people, especially people in low-income communities.
- 7 Shares the goals of the organization: The individual wants to work toward TFA's mission of eliminating educational inequities.

## Rigorous Screening

TFA used these findings to retool the second stage of its application process, designing a day-long interview for 12 candidates at time, run by two trained interviewers. In the course of the day, applicants teach a self-designed five-minute lesson to the group, analyze in writing a complex problem they could face as a teacher, discuss as a group causes of and solutions to the achievement gap, and engage in a highly structured one-on-one interview.

Candidates are then rated on each of the seven personal attributes in order to arrive at an overall profile that generates the final decision about their suitability. Notably, successful candidates are those that match one of several profiles of an effective teacher derived by TFA, a recognition by the organization that there is more than one profile of an effective teacher.

## Bottom Line

**Although tests and transcripts offer useful tools with which to begin a careful consideration of a candidate, none of these tools will ever outweigh the critical but largely subjective judgments that can only be formed at a personal level.**

Even high-quality, relevant research rarely cuts a clear path for policymakers. Research is by its nature full of nuances and complexities, qualities that are not much help to policymakers pressed to make critical decisions in a politically charged atmosphere. As a result, policymakers and the public are generally skeptical of the potential usefulness of educational research, and they dismiss even good research as uninformative, unreliable, incomprehensible, or impractical.

And yet, as the movement for greater accountability of educators has grown in recent years, the educational community has taken its cue from other fields and recognized that for public education to improve, quality research, despite its limitations, must play a role. Amid the political and ideological squabbling, it has become apparent that more high-quality research is needed—and that decision makers need to pay more attention to the results.

While current research is not always consistent in its findings, certain patterns do emerge. Perhaps most significant for policymakers is that a teacher's academic caliber has a clear, measurable effect on student achievement, a finding made all the more robust by its sweeping consistency. Strong academic credentials by themselves, of course, are not enough to guarantee that someone will be an effective teacher. However, they do suggest that when state regulations and district hiring processes devalue teachers' academic capabilities and background, our children are denied the very best education we can provide.



# References

- 1 National Center for Education Statistics (NCES), 2003. *Digest of Education Statistics 2002*. Washington, D.C.: U.S. Department of Education, Table 85, <http://nces.ed.gov/programs/digest/d02/tables/dt085.asp>.
- 2 Goldhaber, D. and Brewer, D., 1998. Why should we reward degrees for teachers? *Phi Delta Kappan*, October 1998: 134-138.
- 3 National Commission on Teaching and America's Future (NCTAF), 1996. What matters most: Teaching for America's future. New York: Author.
- 4 National Center for Education Statistics (NCES), 2002. *The Condition of Education 2002*. Washington, D.C.: U.S. Department of Education, Table 32-2.
- 5 Hanushek, E., 1986. The economics of schooling: production and efficiency in the public schools. *Journal of Economic Literature* XXIV: 1141-1178; Hanushek, E., 1992. The trade-off between child quantity and quality. *Journal of Political Economy* 100: 84-117; Hanushek, E., Kain, J., and Rivkin, S., 1998, revised 2002. Teachers, schools and academic achievement. NBER Working Paper No. 6691, [http://edpro.stanford.edu/eah/papers/basic\\_july2002.PDF](http://edpro.stanford.edu/eah/papers/basic_july2002.PDF); Hamisch, D.L., 1987. Characteristics associated with effective public high schools. *Journal of Educational Research* 80: 233-41; Jepsen, C., & Rivkin, S., 2002. Class size reduction, teacher quality, and academic achievement in California public elementary schools. San Francisco, CA: Public Policy Institute of California. [http://www.ppic.org/content/pubs/R\\_602CJR.pdf](http://www.ppic.org/content/pubs/R_602CJR.pdf); Link, C. and Ratledge, E., 1979. Student perceptions, IQ, and achievement. *Journal of Human Resources* 14: 98-111; Monk, D., 1994. Subject area preparation of secondary mathematics and science teachers and student achievement. *Economics of Education Review*, 12 (2): 125-145; Summers A., and Wolfe, B., 1977. Do schools make a difference? *The American Economic Review* 67 (4): 639-652.
- 6 Ehrenberg, R. and Brewer, D., 1994. Do school and teacher characteristics matter? Evidence from high school and beyond. *Economics of Education Review* 14: 1-23 (Ehrenberg and Brewer found that an increase in the percentage of teachers with master's degrees was associated with lower gains among white students but higher gains among black students); Murnane, R., 1975. *The impact of school resources on the learning of inner city children*. Cambridge, MA: Ballinger; Kiesling, H., 1984. Assignment practices and the relationship of instructional time to the reading performance of elementary school children. *Economics of Education Review* 3 (4) 341-50; Rowan, B., Correnti, R., and Miller, R.J., 2002. What large-scale, survey research tells us about the teacher effects on student achievement: Insights from the Prospects study of elementary schools. *Teachers College Record*, Vol. 104, No. 8, pp. 1525-67, <http://www.cpre.org/Publications/tr51.pdf>.
- 7 Ferguson, R., 1991. Paying for public education: New evidence on how and why money matters. *Harvard Journal on Legislation* 28: 465-498.
- 8 Goldhaber, D., and Brewer, D., 1997. Evaluating the effect of teacher degree level on educational performance. In W. Fowler (Ed.), *Developments in school finance*. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 199-210; Goldhaber and Brewer 1998.
- 9 Goldhaber and Brewer 1997; Goldhaber and Brewer 1998.
- 10 Rowan, Correnti, and Miller 2002.
- 11 See Michael Podgursky's discussion of the difference in fringe benefits between public school teachers and private sector workers in the Spring 2003 edition of *Education Next* (Podgursky, M, 2004. Fringe benefits: There is more to compensation than teacher's salaries. *Education Next*, Spring 2003, p. 71, <http://www.educationnext.org/20033/71.html>)
- 12 Hanushek 1971; 1986; 1992; Hanushek, E., 1996. A more complete picture of school resource policies. *Review of Educational Research* 66: 397-409; Rowan, Correnti and Miller 2002.
- 13 Hanushek, Rivkin and Kain 1998; Rivkin, S., and Hanushek, E., 2003. How to improve the supply of high quality teachers, in Diane Ravitch (ed.), *Brookings Papers on Education Policy* 2004. Washington, DC: Brookings Institution Press. <http://www.brookings.edu/dybdocroot/press/books/abstracts/BPEP/200401.pdf>.
- 14 Rockoff, J., 2004. The impact of individual teachers on student achievement: Evidence from panel data. *American Economic Review*, 94 (2), May 2004: 247-252.
- 15 Murnane 1975.
- 16 Murnane, R. and Phillips, B., 1981. What do effective teachers of inner-city children have in common? *Social Science Research* 10: 83-100; Ferguson 1991.
- 17 Ferguson and Ladd 1996; Goldhaber and Brewer 1998.
- 18 Summers and Wolfe 1977.
- 19 Allen, M. B., 2003. *Eight Questions on Teacher Preparation: What Does the Research Say?* Denver, CO: Education Commission of the States, <http://www.ecs.org/html/education/teachingquality/tpreport/home/summary.pdf>; Walsh, K., 2001. *Teacher Certification Reconsidered: Stumbling for Quality*. Baltimore, MD: The Abell Foundation, <http://www.abell.org/publications/detail.asp?ID=59>.
- 20 See, for example, Ashton, P. and Crocker, L., 1986. Does teacher certification make a difference? *Florida Journal of Teacher Education* 3: 73-83; Denton, J. and Lacin, L., 1984. Quantity of professional education coursework linked with process measures of education. *Teacher Education and Practice* 1: 39-46; Druva, C. and Anderson, R., 1983. Science teacher characteristics by teacher behavior and by student outcome: A meta-analysis of research. *Journal of Research in Science Teaching* 20 (5): 467-479; Evertson, C., Hawley, W., and Zlotnick, M., 1985. Making a difference in educational quality through teacher education. *Journal of Teacher Education* 36; Ferguson, S. and Womack, S., 1993. Impact of subject matter and education coursework on teaching performance. *Journal of Teacher Education* 44 (1): 55-63; Greenberg, J.D., 1983. The case for teacher education: Open and shut. *Journal of Teacher Education* 34 (4): 2-5; Guyton, E. and Farokhi, E., 1987. Relationships among academic performance, basic skills, subject matter knowledge and teaching skills of teacher education graduates. *Journal of Teacher Education* 38: 37-42.
- 21 Chaney 1995.
- 22 Goldhaber and Brewer 2000.
- 23 Monk 1994.
- 24 Goldhaber and Brewer 2000.
- 25 Jepsen and Rivkin 2002.
- 26 Darling-Hammond, L., 1999. *Teacher quality and student achievement: A review of state policy evidence*. University of Washington: Center for the Study of Teaching and Policy.
- 27 Miller, J., McKenna, M., and McKenna, B., 1998. A comparison of alternatively and traditionally prepared teachers. *Journal of Teacher Education* 49 (3): 165-176.
- 28 Decker, P., Mayer, D. and Glazerman, S., 2004. *The Effects of Teach For America on Students: Findings from a National Evaluation*. Mathematica Policy Research, Inc. Princeton, New Jersey, [http://www.teachforamerica.org/documents/mathematica\\_results\\_6.9.04.pdf](http://www.teachforamerica.org/documents/mathematica_results_6.9.04.pdf).
- 29 Farkas, G., Grobe, R., Sheehan, and D., Shuan, Y., 1990. Cultural Resources and School Success: Gender, ethnicity, and poverty groups within an urban district. *American Sociological Review* 55 (1): 27-42.
- 30 Ehrenberg, R., Goldhaber, D., and Brewer, D., 1994. Do teacher's race, gender, and ethnicity matter? Evidence from the National Education Longitudinal Study of 1988. *Industrial and Labor Relations Review* 48: 547-61.
- 31 Murnane 1975.
- 32 Dee, T., 2004. Teachers, race and student achievement in a randomized experiment. *The Review of Economics and Statistics* 86(1), February 2004, pages 195-210, <http://www.swarthmore.edu/socsci/tdee1/Research/restat04.pdf>.
- 33 Steele, Claude M. A threat in the air—How stereotypes shape intellectual identify and performance, *American Psychologist* 52(6): 613-629, June 1997.

- 34 Taylor, Marylee C. Race, sex, and the expression of self-fulfilling prophecies in a laboratory teaching situation. *Personality and Social Psychology* 6, 1979: 897-912.
- 35 Fryer, Roland G. and Levitt, Steven D., 2004. Falling behind, New evidence on the black-white achievement gap. *Education Next* 4(4), Fall 2004: 64-71.
- 36 Chaney, B., 1995. Student outcomes and the professional preparation of 8th grade teachers. *NSF/NELS:88 Teacher transcript analysis*. Rockville, MD, Westat; Goldhaber, D., and Brewer, D., 1996. Why don't schools and teachers seem to matter? Assessing the impact of unobservables on educational productivity? *Journal of Human Resources* 32: 503-23 ERIC: ED400237; Goldhaber and Brewer 1998; Goldhaber, D., and Brewer, D., 2000. Does teacher certification matter? High school certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22: 129-145; Monk 1994; Rowan, B., Chiang, F., and Miller, R.J., 1997. Using research on employees' performance to study the effects of teachers on students' achievement. *Sociology of Education* 70 (October): 256-284; Wenglinsky, H., 2000. *How Teaching Matters: Bringing the Classroom Back Into Discussions of Teacher Quality*. Princeton, NJ: Educational Testing Service, <http://www.ets.org/research/pic/teamat.pdf>.
- 37 Chaney 1995; Goldhaber and Brewer 1998; Monk 1994; Rothman, A., 1969. Teacher characteristics and student learning. *Journal of Research in Science Teaching* 6(4): 340-348; Wenglinsky 2000.
- 38 Monk 1994.
- 39 Eberts, R.W. and Stone, J.A., 1984. *Unions and Public Schools*. Lexington, MA: D.C. Heath and Company.
- 40 NCTQ Reports, forthcoming publication.
- 41 For example, Professor Sandra Stotsky describes the coursework taken by prospective teachers in Massachusetts as often unrelated to the academic knowledge needed by K-12 teachers. (Stotsky, S. with Haverty, L., 2004. Can a State department of education increase teacher quality? Lessons learned in Massachusetts. *Brookings Papers on Education Policy*, 2004. Dianne Ravitch, ed., Washington, D.C.: Brookings Institution Press.
- 42 An example of district hiring practices is illustrated in Edward Liu's study of four states (Liu, E., 2003. *New teachers' experiences of hiring: Preliminary findings from a four-state study*. Prepared for the annual meeting of the American Research Association, Chicago, April 2003) and in the New Teacher Project's recent study of district hiring practices in three large urban school districts (Levin, J. and Quinn, M., 2003. Missed opportunities: How we keep high-quality teachers out of urban schools. The New Teacher Project: <http://www/tnpt.org>).
- 43 An NCTQ review of state regulations regarding what must be reported to districts about certified candidates reveals that few states require that districts receive indicators of relative academic caliber such as scores on licensing exams.
- 44 Gitomer, D.H., Latham, A.S., and Ziomeck, R., 1999. *The academic quality of prospective teachers: The impact of admissions and licensure testing*. Princeton, NJ: Educational Testing Service, <http://www.ets.org/teachingandlearning/researchrpt.html>.
- 45 These studies also use the terms cognitive ability or verbal ability to indicate literacy.
- 46 Wayne, A.J., and Youngs, P., 2003. Teacher characteristics and student achievement gains: A review. *Review of Educational Research*, Vol. 3, No. 1, pp. 89-122; Whitehurst, G.J., 2002. *Scientifically based research on teacher quality: Research on teacher preparation and professional development*. Paper presented at the White House Conference on Preparing Teachers.
- 47 Ferguson 1991; Ferguson, R., and Ladd, H., 1996. How and why money matters: An analysis of Alabama schools. In H. Ladd (ed.), *Holding Schools Accountable*. Washington, D.C.: Brookings Institution: 265-298; Hanushek, E., 1971. Teacher characteristics and gains in student achievement: Estimation using micro-data. *The American Economic Review* 61 (2): 280-288; McLaughlin, M., and Marsh, D., 1978. Staff development and school change. *Teacher College Record* 80 (1): 69-94; Murnane 1975; Strauss, R., and Sawyer, E., 1986. Some new evidence on teacher and student competencies. *Economics of Education Review* (5) 41; Winkler 1975.
- 48 Hanushek 1971.
- 49 Goldhaber, D., Perry, D., and Anthony, E., 2004. *NBPTS certification: Who applies and what factors are associated with success?* University of Washington, Center for Reinventing Public Education, working paper, [http://www.urban.org/Uploaded-PDF/410656\\_NBPTSCertification.pdf](http://www.urban.org/Uploaded-PDF/410656_NBPTSCertification.pdf).
- 50 Goldhaber, D. and Anthony, E., 2004. *Can teacher quality be effectively assessed?* University of Washington, Center for Reinventing Public Education, [http://www.crpe.org/workingpapers/pdf/NBPTSquality\\_report.pdf](http://www.crpe.org/workingpapers/pdf/NBPTSquality_report.pdf).
- 51 Ballou, D., 1996. Do public schools hire the best applicants? *Quarterly Journal of Economics*, 111(1).
- 52 Ballou, D., and Podgursky, M., 1997. *Teacher Pay and Teacher Quality*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research. The term "selective" in this study refers to schools ranked in Barron's Profiles of American Colleges as "most competitive" or "highly competitive."
- 53 Summers and Wolfe 1977.
- 54 Ehrenberg and Brewer 1994.
- 55 Winkler, D., 1975. Educational Achievement and School Peer Composition. *Journal of Human Resources* 10: 189-204.
- 56 National Center for Education Statistics 2002.
- 57 Murnane, R., Singer, J. D., Willett, J.B., Kemple, J.J., and Olsen, R.J., 1991. *Who Will Teach?: Policies That Matter*. Cambridge, MA: Harvard University Press.
- 58 Goldhaber, D., Brewer, D., and Anderson, D., 1999. A Three-Way Error Component Analysis of Educational Productivity. *Education Economics*, 7(3): 199-208.
- 59 Gitomer and Latham 1999.



Additional copies of this booklet may be obtained by contacting:

**National Council on Teacher Quality**

1225 19th Street NW, Suite 400, Washington DC 20036

t 202-263-8320 · f 202-261-2638 · [www.nctq.org](http://www.nctq.org)

The National Council on Teacher Quality advocates for reforms in a broad range of teacher policies at the federal, state, and local levels, including raising the standards for entry into the profession while also eliminating obstacles that keep many talented individuals from considering a career in teaching. It urges a more market-sensitive approach to the structure of the profession, in order to encourage a more equitable distribution of the finest teachers to the schools that need them the most and in the subject areas that are particularly difficult to fill. It also seeks to make a career in the classroom professionally satisfying, elevating our best teachers to positions of honor and respect.

*Subscribe to NCTQ's free bimonthly electronic newsletter, Teacher Quality Bulletin, to stay abreast of trends in federal, state, and local teacher policies and the events that help to shape them.*