

Policy Analysis

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Routing

Giving Kids the Chaff How to Find and Keep the Teachers We Need

by Marie Gryphon

Executive Summary

New research on the role that teachers play in student achievement is demonstrating that higher-quality teachers can significantly improve educational outcomes, especially among poor students. But finding and retaining the best teachers remains a struggle for school administrators, and political considerations often prevent school districts from attracting and hiring high-quality teachers.

Although many of the attributes that make great teachers are elusive, school administrators seldom hire teachers possessing the qualities that are known to boost student achievement. In fact, high-ability teaching candidates may fare worse than their lower-ability counterparts because of biases in the hiring and compensation system, and they are more likely to leave the profession after a few years for other careers.

Across-the-board salary increases will not improve the quality of the teaching profession as

a whole because salary increases draw more weak teaching applicants as well as strong ones, and dysfunctional hiring processes prevent the best applicants from being chosen from an enlarged applicant pool.

Only new hiring policies that effectively separate the wheat from the chaff can transform the teaching profession. But administrators are unlikely to change their hiring practices unless they are given real incentives to do so. In districts where school choice fosters competition among schools, public school administrators seek out higher-performing applicants and work harder to retain them. That effect is especially pronounced in low-income districts and can meaningfully improve educational outcomes for poor students. School choice can help improve the quality of the teacher labor force, thereby boosting student achievement and restoring meritocracy to the education system.

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Student achievement has remained stagnant since 1970.

Introduction

In 1983 the U.S. government published a report called “A Nation at Risk,” which warned that U.S. students lagged behind their foreign counterparts in academic achievement. Since that time policymakers have increased real per pupil spending on public education by 50 percent in an effort to close the gap. They have funded reforms such as class-size reduction, higher seniority pay, and salary premiums for teachers who hold master’s degrees. Despite those efforts, student achievement has remained stagnant since 1970.

Public schools around the country have used the same process for hiring and evaluating classroom teachers for decades. Teachers are chosen and compensated on the basis of criteria set by teachers’ unions and other entrenched interests, and because those criteria do not focus on the qualities that define good teachers, they often favor less-qualified applicants over applicants whose skills could dramatically improve educational outcomes for their students. Public school compensation policies also fail to lure the best candidates and underpay many of the best classroom performers, causing promising potential teachers to choose nonteaching careers.

Now, politicians and education pundits have declared that the United States is facing a teacher crisis.¹ Millions of teachers are retiring, and schools are struggling to place and keep high-quality teachers, especially in socioeconomically depressed areas. School districts are offering bonuses to qualified new teachers, especially in math and science, and experts have lauded programs such as Teach for America, which trains bright, motivated college students to become classroom teachers. But contrary to popular belief, the teacher crisis is not a labor shortage; there are more aspiring teachers than there are teaching jobs. Rather, it is a problem of identifying the highest-quality teaching applicants and finding policies that will keep them in the classroom.

Teacher quality is difficult to measure and even more difficult to predict in applicants

for teaching positions. The specific attributes traditionally thought to be associated with teacher quality—years of education and job experience—turn out to be poor predictors of teaching success. Standardized test scores are correlated with better classroom performance but explain only some of the “teacher effect.” Great teachers likely share less easily quantifiable attributes as well, such as dedication and love of their students.

Expecting hiring managers to perfectly predict future performance on the basis of such abstract qualities may be unrealistic. However, data show that despite the evidence that candidates with higher test scores tend to make better teachers, school administrators are not making hiring decisions on the basis of candidates’ measured academic ability. In fact, teachers with higher test scores are somewhat *less* successful in the public school job market than are their lower-scoring colleagues. In addition, despite a recognized shortage of teachers with strong math and science skills, administrators often reject applicants who majored in those subjects in favor of education majors.

Everyone seems to have an opinion about the best way to separate the wheat from the chaff in the teaching profession. The most commonly proposed solution to the teacher quality problem is money: spend more on teacher salaries, and higher-quality applicants will join the field. However, universal salary hikes also attract more low-quality applicants to the field, and if administrators do not select the most desirable candidates under the status quo, there is no reason to believe that offering more money will make them more likely to do so. Merit pay systems that reward teachers for demonstrated student achievement seem promising, but at best they may help with the retention of higher-performing existing teachers. They do little to overcome current certification and hiring practices that make recruiting the most promising candidates so difficult.

School choice has many advertised benefits, but the tendency of competition among schools to encourage better teacher-hiring

decisions is rarely discussed. Private and charter schools have been far more successful than public schools at consistently hiring high-quality teachers, especially in math and science. By eschewing compensation systems based on seniority, they are able to reward and retain high-performing teachers. In public schools that face significant local competition, administrators respond to competitive pressures and hire more qualified teachers.

Teachers Matter

Most parents and teachers think that good teaching is critical to student achievement. But the idea that teachers matter went out of fashion among economists and education experts following the 1966 publication of a government study titled *Equality of Educational Opportunity*. Dubbed the Coleman Report, after its principal author, it reported that standard measures of teacher quality, such as years of formal education and job experience, have little or no effect on student learning.² The report concluded from this that student achievement depends overwhelmingly on the resources—such as wealth, health, and family background—that children bring with them to school, rather than on the quality of instruction that teachers provide.

The Coleman Report disappointed policymakers who hoped to reduce poverty by improving schools, and the report's methodology came under significant criticism.³ The Coleman Report's methodology was imperfect. But many economists and education experts in the decades since have likewise tried and failed to prove that teaching quality—as traditionally measured—has much to do with how well students learn.

Researchers who try to measure the impact that teacher quality has on student learning face profound difficulties. One difficulty is the presence of confounding factors: differences between student groups that have nothing to do with their teachers but can't be neutralized using statistical techniques. For example, students attend schools not on a

random basis but on the basis of neighborhoods that differ in terms of their socioeconomic and cultural character. Teachers do not choose schools randomly either. They tend to teach at schools close to their own homes, and more experienced teachers tend to teach in wealthier neighborhoods. Finally, students are not always randomly assigned to teachers; often they are placed in particular classes for nonrandom reasons such as parent request, student course selection, and academic record.⁴

Traditional social science methods require researchers to guess in advance which of the teacher qualities, from the limited number for which data can be collected, will prove to be important. Because of that, researchers who cannot show a strong link between achievement and measured teacher characteristics such as years of education and experience have been unable to show that teachers matter.

Economists Steven Rivkin, Eric Hanushek, and John Kain (the Rivkin Group) recently loosened this empirical logjam with a paper that analyzed an unusually comprehensive data set from Texas with a special methodology to measure the impact that teacher quality has on student performance.⁵ The Rivkin Group looked at data collected over several years from multiple student cohorts at the same set of public schools in Texas. Comparing the educational outcomes of students in different classes at the same schools allowed the group to account for the concomitant effects of neighborhood and peer influence, socioeconomic status, the inherent qualities of the tested children, and different school management styles. Instead of attempting to determine which specific teacher attributes, such as experience and educational attainment, are important, the group simply sought to measure the effect that teachers have on student performance by calculating the variation in student performance among their students. The Rivkin Group's work presents concrete evidence of the extent to which the best teachers can outperform the worst teachers under identical circumstances.

It turns out that parents have been right all along. Teachers matter a lot. "Results reveal

Private and charter schools have been far more successful than public schools at consistently hiring high-quality teachers.

A teacher with 10 years of experience is no more effective, on average, than a teacher with 5 years of experience.

large differences among teachers in their impacts on achievement and show that high quality instruction throughout primary school could substantially offset disadvantages associated with low socioeconomic background,” the group concludes.⁶ The group noted that good teachers matter more than smaller class sizes. Rivkin and his colleagues found that raising teacher quality by one standard deviation would improve student achievement more than a very expensive class-size reduction of 10 students per class.⁷

Moreover, the Rivkin Group’s estimate of the teacher effect is probably too low, because it measures only the variation in the quality of teachers within schools. It is likely that there are large differences in teacher quality between schools as well, but the authors did not include between-school differences in teacher quality in their estimate because they could not measure them accurately. Hanushek believes that the true teacher effect is about twice as large as the Rivkin Group’s conservative estimate.⁸

After Rivkin and his colleagues found that teacher quality has a large effect on student achievement, they checked to see whether any specific, measurable attributes of teachers usually considered important—formal education, job experience, and academic ability—explained the teacher effect. Generally, they do not.

Like other researchers before them, Rivkin and his colleagues found that possession of a master’s degree makes no difference in teacher effectiveness—though it is nevertheless one of the principal determinants of public school teachers’ salaries today.⁹ Job experience improves teacher performance, but only for the first three or four years of teaching.¹⁰ A teacher with 10 years of experience is no more effective, on average, than a teacher with 5 years of experience.

The Rivkin Group did find that a teacher’s effectiveness in the classroom is related to high standardized test scores in high school and college. That is consistent with prior findings. Teachers’ scores can explain only a portion of the large difference in achievement that Rivkin and his colleagues attribute to

teacher quality, but they remain the most useful proxy available for determining the overall quality of a school’s teaching staff. In addition, subject-matter competence is thought to be particularly important in math. While the Rivkin Group did not address math preparation specifically, other research suggests that teachers with good subject-matter knowledge in math, as measured by tests, are more effective math teachers.¹¹

All in all, these findings mean that most of the teacher effect remains a mystery. Outstanding teachers may have attributes that are very difficult to measure, such as diligence, charisma, and a love of teaching. The large differences in teacher quality that exist within schools suggest that those who hire teachers, such as principals, either can’t tell in advance which job applicants will be good teachers or are making hiring decisions on the basis of criteria other than teaching quality.¹²

The Nature of the Problem

If the Rivkin Group is right in its conclusion that teachers matter a lot, then raising the quality of teaching is one of the most important ways that policymakers can improve educational outcomes for students. But a long line of initiatives designed to raise overall teacher quality, including large indiscriminate pay increases, elaborate teacher training regimes, and burdensome certification requirements, has failed to improve student outcomes. Moreover, in terms of the measurable characteristics that seem to matter—test scores and math and science preparation—teacher quality has actually declined in the past three decades.

The teacher quality problem is difficult to solve in part because of entrenched public school personnel practices. First, public schools systematically fail to hire the best applicants for teaching jobs. Second, they adopt compressed pay scales that entice low-ability workers while driving higher-ability workers away. Finally, they overcompensate experienced teachers with funds that could be better used to lure teachers with in-demand math and science skills.

Managers Don't Hire the Best

Part of the conventional wisdom about the teaching crisis is that the United States has too few willing teachers. But most measures suggest that the opposite is true, that the United States has a surplus of teaching applicants for a limited number of available positions. Economist Dale Ballou writes: "In every year there were at least twice as many applicants as there were persons hired in full-time public school positions. Far from indicating that the nation faces a teacher shortage, these data show that the teacher labor market as a whole has been in a chronic state of excess supply."¹³

Yet despite that surplus, the quality of teaching staffs remains dismally low and declining. In part, poor teacher quality is due to a weakness in the applicant pool as a whole. But the problem of poor teacher quality is also exacerbated by the perverse hiring practices of principals and school district administrators. Research shows that those gatekeepers systematically fail to hire the most capable applicants.

Ballou examined data from the Surveys of Recent College Graduates, a series of large,

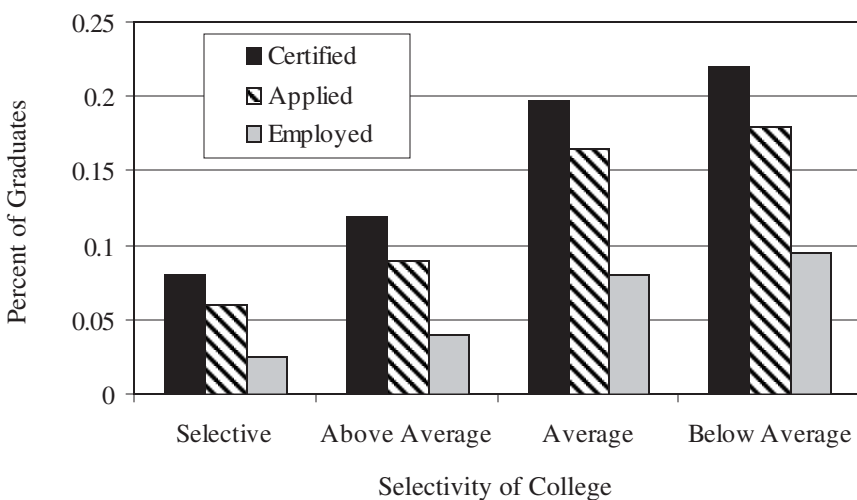
nationally representative surveys, to determine what factors improved an applicant's chances of success in finding a teaching position. He used the average standardized test scores at the college from which a teaching candidate graduated as a proxy for an applicant's tested academic ability.

Ballou found that administrators were no more likely to hire high-ability teaching candidates than candidates of lower tested ability (Figure 1).¹⁴ He writes: "Applicants from better colleges do not fare better in the [public school teacher] job market. Indeed, remarkably, they do somewhat worse."¹⁵ That was the case despite substantial evidence that higher tested ability of teachers is one of the most reliable indicators of superior classroom performance.¹⁶

Ballou himself is not sure why school administrators hire the way they do.¹⁷ One might think that they are hiring on the basis of another, harder-to-measure attribute that is more related to teaching effectiveness than are test scores. But if that were the case, then this other teaching quality would actually be inversely related to scores, and if not measured, would eliminate the apparent positive

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Figure 1
Proportion of Graduates Reaching Each Stage of Teacher Recruitment, by College Selectivity



Source: Dale Ballou, "Do Public Schools Hire the Best Applicants?" *Quarterly Journal of Economics* 111, no. 1 (February 1996): 102.

Pay compression dissuades the best potential teachers from entering the profession because their alternative career options will be more enticing.

relationship researchers see between test scores and teaching effectiveness. Therefore, administrators must either hire on the basis of some other quality that they incorrectly believe is a better indicator of classroom ability or hire on the basis of qualities they consider desirable for other reasons unrelated to teaching effectiveness.

For example, Ballou also found that administrators were more likely to hire applicants who majored in education than applicants who majored in math or science, even when both were eligible to be employed in public schools, despite a recognized national shortage of teachers who bring those subject-specific skills to the classroom.¹⁸ It may be that administrators seek candidates with education degrees because such teachers will fit in better culturally with the existing teaching force. Such considerations, if important in the hiring process, will severely hamper efforts to reform teaching.

Pay Compression Pushes Out Talent

As teachers' unions gained size and strength during the latter half of the 20th century, teacher pay became increasingly uniform among individuals with similar levels of formal education and classroom experience. This uniformity, known to economists as "pay compression," creates incentives for low-achieving graduates to enter the teaching profession while deterring their highly capable counterparts. Economist Derek Neal observes that public school pay scales are even less flexible than the famously rigid Federal General Schedule, which governs pay and promotions within the federal bureaucracy.¹⁹

Pay compression dissuades the best potential teachers from entering the profession because their alternative career options will be more enticing than those of their less-capable counterparts, but they will be offered no additional compensation to teach. Because the public schools don't reward them for their merit, potentially excellent teachers choose to work elsewhere.

Pay compression is not the only possible explanation for the decline in teacher aptitude. Many observers argue, for example,

that the teaching profession has suffered because the waning of sexism in recent decades has made other, more lucrative professional opportunities available to women for the first time. It is undoubtedly true that women have more professional options than ever before, but it is less clear whether this change is largely responsible for the decline in teacher quality.

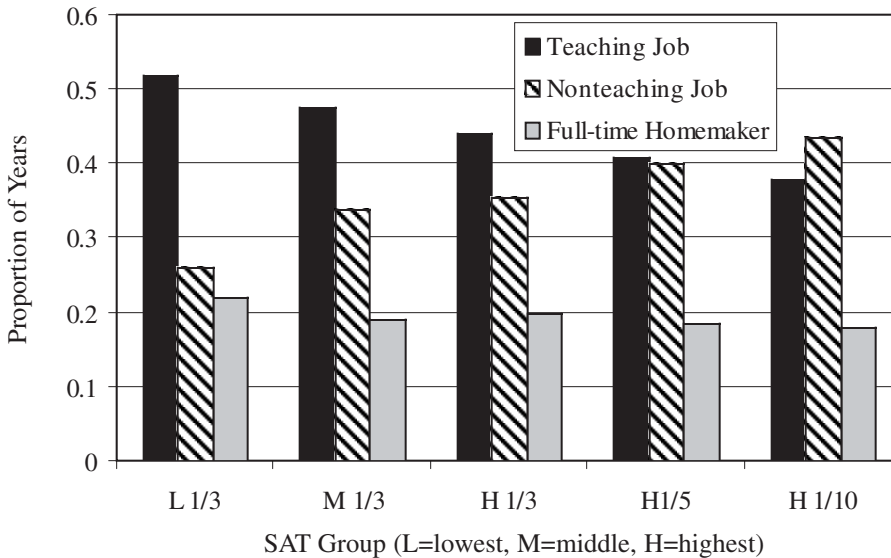
Policymakers need to know whether pay compression or new options for women are primarily responsible for the decline in teacher quality, because those two different problems would be addressed in different ways. If pay compression is responsible for low teacher aptitude, only a system of differential pay that offers unique rewards to highly capable teachers will reverse the trend. If alternative opportunities for women disproportionately drew highly capable women from teacher applicant pools, then across-the-board raises for teachers might improve average teacher quality.

Economists Caroline Hoxby and Andrew Leigh analyzed the career choices of recent college graduates in the 1970s and 1980s to determine whether high-quality potential teachers had been "pushed out" of teaching by increasingly compressed pay scales or "pulled" by additional career options for women.²⁰ Although additional options for women were partly responsible for reductions in teacher aptitude, Hoxby and Leigh found that the adverse selection effect associated with pay compression had three times as strong an effect on teacher quality.²¹

Seniority Pay Retains Mediocre Teachers

Teacher attrition is widely considered a costly crisis in American education.²² People believe that attrition reduces quality because they assume that more experienced teachers are more effective in the classroom. Responding to reports of a projected increase in attrition, an Associated Press report laments, "The projected turnover rate will deprive school districts of an enormous amount of teaching experience just as the U.S. pushes to get a top instructor in every class."²³

Figure 2
Proportion of Total Career Years That Teachers Spend in Teaching Jobs, Nonteaching Jobs, and as Homemakers, by SAT Group



Source: Todd R. Stinebrickner, “A Dynamic Model of Teacher Labor Supply,” *Journal of Labor Economics* 19, no. 1 (January 2001): 206.

However, careful analysis of the characteristics of teachers who leave the profession and of those who stay yields a more nuanced picture. It is the character of teacher attrition, not the amount of attrition, which lowers the quality of teaching in public schools. Higher-ability teachers tend to leave the profession. Lower-ability teachers tend to stay in order to obtain the relatively steep salary increases associated with seniority (Figure 2).²⁴ Higher-ability teachers are more likely to leave teaching in favor of nonteaching professions where their skills are apt to bring greater compensation.

Ballou writes, “Seven-year [teacher] survival rates range between 50 and 60 percent, with high quality teachers one-half to two-thirds as likely to last this long as low-quality instructors.”²⁵ While the conventional wisdom is that attrition is “too high,” attrition is actually too low among the least-capable teachers. Hanushek observes that a policy change that simultaneously caused the best teachers to teach for two years longer and caused the worst teachers to quit two years

sooner would substantially improve average public school teacher quality.²⁶

Hanushek has found that teachers reach full effectiveness after four years. Beyond that point, experience, per se, is not associated with student achievement gains; a 15 year classroom veteran will produce the same results, on average, as a teacher with 5 years of experience.²⁷ But the more senior teacher is paid far more for his services solely as a function of seniority, because union-negotiated pay scales systematically overcompensate teachers with many years of experience. That salary pattern is not replicated in private schools, where teachers receive little seniority pay after the first few years.

False Hopes

Despite decades of experimentation intended to raise teaching quality, policymakers face much the same problem that they did in 1983 when “A Nation at Risk” first appeared. Unfortunately, many remedies prescribed by

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politicians and unions today have already failed in the past, and research suggests that others are unlikely to work as well as intended.

Salary Hikes Aren't Enough

Across-the-board salary increases are a favorite teachers' union remedy for the problem of poor teacher quality. The National Education Association advocates a minimum starting salary of \$40,000 for its members because "professional salaries help attract and retain high quality teachers who help students achieve at higher levels."²⁸

But Ballou shows that wholesale pay hikes may actually have the opposite effect. High salaries can reduce teacher quality if administrators are making poor hiring decisions: "Drawing more applicants into a recruitment process that does not screen well may only make matters worse, particularly if the career choices of better candidates are more sensitive to changes in the probability of getting a job," Ballou explains.²⁹

For example, a very talented teacher would have a probability of obtaining a job approaching 100 percent in a well-screened labor market. Under such circumstances, raising the starting salary by 10 percent would increase the expected value of the teaching profession to high-ability applicants, drawing more of them into the profession.

In a poorly screened system, in which applicants are chosen without regard to ability, the most capable candidate is no more likely to be hired than any other applicant. Therefore, if raising salaries by 10 percent increased the number of applicants by one-third, the high-ability teacher's expected value from teaching would actually go down, because the probability of not being hired in that school year would more than cancel out the benefit of the higher salary.

Ballou's research suggests that teaching is a very poorly screened labor market, a finding shared by other researchers.³⁰ Therefore, across-the-board salary increases—without dramatic changes in hiring practices—are unlikely to raise teacher quality much, and might actually lower it.³¹

Across-the-board salary increases can also slow the pace of reform by reducing teacher turnover.³² Higher salaries reduce attrition, and Ballou's work suggests that lower-quality teachers stay in their jobs the longest. It is more difficult to raise the quality of teaching through new hiring practices if fewer open positions are available to fill.³³

Merit Pay Isn't Enough

Merit pay is an increasingly popular idea for reforming public schools. The theory is simple and sound: rewarding better teaching will result in better teachers, both because all teachers will try harder and because more capable potential teachers will expect to be compensated for their skills. It seems to work in the private sector.

But rewarding merit in the public sector is very difficult. One problem with a highly regimented merit pay system is that it yields exactly what it measures and no more. These highly targeted improvements often come at the expense of other important aspects of educational quality. Economist Randall Eberts and his associates studied the effects of a merit pay system in a Michigan high school in 1996.³⁴

The high school studied sought to reduce dropout rates by financially rewarding teachers for keeping more students enrolled in their courses each semester.³⁵ Although course retention rates went up as a result of the new system, evidence suggests that little, if any, additional learning took place. Average daily attendance rates, test performance, and course passage rates all declined after the retention policy took effect.³⁶ "Merit" is a difficult thing to quantify. Regimented programs like the one in Michigan are intended to reward it, but they too often generate more of what they happen to measure—retention, in this case—without achieving the underlying goal of increasing learning.

Moreover, merit pay programs are designed through a political process that is heavily influenced by the teachers' unions. As a result, past and present merit programs are designed to improve performance exclusively by raising teacher effort despite evidence that teacher

preparation regimes are expensive and ineffective. In other words, without better training, increasing effort will not necessarily improve results.³⁷ To truly raise teacher quality, a merit system would have to change the character of the teacher labor force by attracting more qualified new hires and removing lower-quality teachers from their jobs.

Merit pay systems, carefully implemented, can be better than nothing. They can motivate public employees to work more effectively. The Department of Homeland Security, along with projects involving 750,000 civilian Defense Department employees, discarded the federal government's rigid, seniority-based pay schedule in favor of a new system with fewer pay grades and a lot more discretion for supervisors in negotiating salaries and rewarding performance. To minimize corruption, the new system featured a Merit Systems Protection Board to review supervisor decisions that were challenged by employees. American Enterprise Institute political scientist Frederick M. Hess writes, "Dozens of studies of test projects involving more than 30,000 Defense Department employees have found that the system improved performance and morale."³⁸

The merit pay system evaluated by Hess is an improvement over a pure seniority system, but it is still a second-best solution. It makes sense in a national security context because many of those jobs really cannot be privatized. But education is different—school choice can eliminate the aspect of central planning present in most public school merit pay schemes by letting market forces inform hiring decisions.

How Choice Can Transform the Teaching Profession

Across-the-board salary increases and merit pay systems cannot transform teaching because they do not reliably target resources at the best teachers. Universal salary hikes are self-defeating because they attract more low-quality applicants. Bureaucratic, public-sector merit pay systems are usually disappoint-

ing because teaching depends too heavily on qualities that are difficult or impossible for statisticians to measure.

School choice is not frequently suggested as a way to change the makeup of the teaching profession. Too often, debates about choice envision reallocating students among existing schools with existing personnel. But research suggests that private and charter schools have very different hiring practices than do traditional public schools. The introduction of market forces on a broader scale could thus change the way teachers are chosen and compensated, transforming the teaching profession by attracting new and different workers.

To show that school choice can change teaching in a positive way, advocates must offer evidence that school administrators respond to competition by hiring better teachers. Demonstrating that this is true is hard for many of the same reasons that it is hard to show that teachers matter.

Competition Raises Teacher Quality

Once the Rivkin Group had found a way to show that teachers matter, Hanushek and Rivkin turned their attention to whether they could use similar methods to determine whether competition increases teacher quality.³⁹ Using the same data set they used as part of the earlier Rivkin Group study, they compared the within-school variation in teacher quality in districts that were subject to substantial competitive pressures (due to Tiebout choice)⁴⁰ with the quality variation within schools in less-competitive districts.

Their approach builds directly on Ballou's finding, discussed earlier in this paper, that public school administrators do not systematically prefer job applicants with attributes (such as high test scores or a math degree) that we know are related to teaching performance.⁴¹ Ballou reasoned that if administrators don't prefer to hire teachers with those qualities, they probably also will not prefer to hire teachers with more-difficult-to-measure performance-enhancing characteristics. That would explain why the variation in teacher

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quality measured by the Rivkin Group is so large.

Hanushek and Rivkin examined the link between competition and the variance in teacher quality with the idea that competition should, if Ballou is right, lead to less variance in teacher quality.⁴² That would occur because administrators responsible for hiring and retaining teachers would respond to competitive pressures by hiring applicants likely to be high performing, rather than hiring on the basis of attributes loosely related or unrelated to performance, such as popularity among fellow teachers.⁴³

Competition affects public school personnel practices significantly, the researchers found. Greater competitive pressures were systematically related to a smaller variation in teacher quality, suggesting that administrators in competitive districts gave quality higher priority in their hiring and retention processes.⁴⁴

Competition improves teacher quality the most in school districts that serve large numbers of low-income students.⁴⁵ Hanushek and Rivkin found that improvements were strongest in schools in which 75 percent or more of the students had family incomes low enough to qualify them for subsidized lunches.⁴⁶ Policies that increase competition should therefore reduce the current educational disparities between wealthy and poor students.

Competition Increases Demand for Important Teacher Attributes

Hanushek and Rivkin's work on competition and teacher quality is useful because, like the Rivkin Group's work, it captures and measures changes in the presence of the "teacher spark"—those hard-to-measure attributes of great teachers. But as does the literature relating teacher attributes and student achievement, the research relating competition and teacher characteristics provides some more specific clues about school hiring practices and priorities.

Harvard's Caroline Hoxby analyzed survey data from public, private, and charter schools to find specific ways in which the presence of choice changes the characteristics

of teachers.⁴⁷ She found that schools subjected to competition hire more teachers who have the specific qualities that have been tied to performance by past research: high tested ability and experience with math and science.

Public schools subject to the highest level of public school, or Tiebout, competition, had teachers from colleges whose average SAT scores were 4.391 percentiles higher than the alma maters of teachers in less-competitive districts.⁴⁸ Teachers in competitive schools were also more likely than others to have majored in math and science or to have taken significant coursework in those subjects.⁴⁹

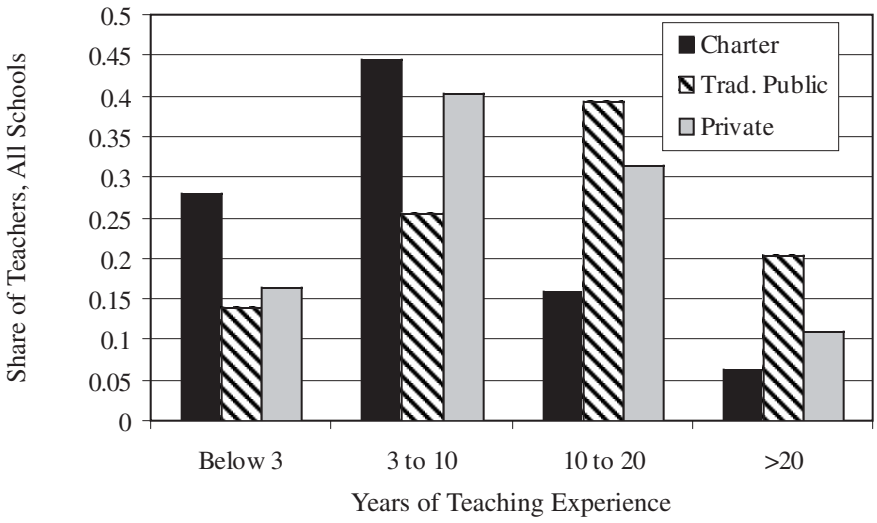
Personnel policies of charter schools reflect similar preferences. About 30 percent of charter schools offer higher pay to teachers with expertise in hard-to-staff subject areas such as math and science.⁵⁰ Teachers at charter schools are even more likely than their private school counterparts to hail from colleges with high average standardized test scores, indicating relatively high tested ability.⁵¹ Charter schools were also more likely than traditional public schools to consider salary at a previous nonteaching job and evidence of superior performance when determining compensation.⁵²

A Newer, Smarter Group

A seemingly magical property of private and charter schools is their ability to simultaneously keep teaching quality high and student/teacher ratios low, all while spending less on salaries per teacher than the public system.⁵³ Recent research points to a likely explanation for this seeming impossibility: these schools are less likely to offer their teachers annual raises based solely on years of experience.⁵⁴ By refusing to provide large raises solely on the basis of seniority, private and charter schools maintain a cheaper, younger but highly capable workforce (Figure 3).

Because private and charter schools do not reward seniority as richly as public schools do, they have more resources available to reward high-performing teachers. Hoxby argues that increased school choice would cause less-skilled and less-motivated incumbent teachers

Figure 3
Distribution of Teaching Experience



Source: Michael Podgursky and Dale Ballou, “Personnel Policy in Charter Schools,” Thomas B. Fordham Foundation, August 2001, p. 8.

to receive smaller raises than many of their colleagues. As a result, she suggests, they would be more likely to quit, thus reversing the current, unfortunate pattern of higher-ability teachers exiting the profession, leaving behind their weaker colleagues.⁵⁵ Under a system of widespread school choice, the demographics of public school teachers would more closely track those of their counterparts in schools already exposed to substantial competitive pressures.

Conclusion

Teacher quality and the measurable improvements in student achievement it can produce are important to parents who want their children to succeed. Higher-quality teachers, as measured by their academic abilities and expertise in the subjects they teach, can produce better educational outcomes for their students, especially in poor school districts. To improve the quality of the American education system, school administrators must find ways to attract and retain high-quality teachers who are all too often lured away by other, more lucrative professions.

Truly great teachers have—in addition to their quantifiable skills—enthusiasm, drive, and a love of teaching that are difficult to predict during the hiring process. However, the experience of charter and private schools demonstrates that motivated administrators can select high-performing teachers on the basis of both measured academic achievement and more subtle qualitative talents. Moreover, private schools have developed compensation practices, such as differential pay and individualized hiring negotiations, that make it possible to reward the best teachers, encouraging them to enter and remain in the profession at higher rates than teachers at schools where pay scales are compressed.

Under a system of school choice, public school administrators would have a powerful incentive to improve the quality of their teachers. Choice would not only motivate existing teachers to improve their job performance; it would also change the composition of school faculties to include more high-quality teachers among future hires. Those administrators who were unwilling or unable to select the best teachers would see their schools’ performance decline relative to that of their competitors and either be driven to improve or find them-

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selves replaced with higher-quality administrators who were better able to attract and retain high-performing faculty.

Teacher quality can be improved dramatically when hiring managers understand the attributes that make for good teachers and are given the right incentives to make good hiring decisions. Many of the current public policy proposals to improve educational quality in American public schools, such as merit pay and hiring bonuses for teachers with subject-specific expertise, attempt to create the same economic stimuli that are naturally present in competitive markets. Allowing families to choose their schools, and giving schools the freedom and market incentives to make wise personnel decisions, will reward good schools and good teachers, providing more students with the high-quality education they deserve.

Notes

1. See for example Lori Higgins, "Teachers Who Leave Cost State Millions," *Detroit Free Press*, August 16, 2005.
2. J. S. Coleman et al., *Equality of Educational Opportunity* (Washington: U.S. Government Printing Office, 1966).
3. Richard D. Kahlenberg, "Learning from James Coleman," *Public Interest*, Summer 2001, http://www.findarticles.com/p/articles/mi_m0377/is_2001_Summer/ai_76812255.
4. Eric Hanushek writes, "Highly motivated parents search out schools they think are good, and they attempt to place their children in classrooms where they think the teacher is particularly able." Eric A. Hanushek, "Some Simple Analytics of School Quality," NBER Working Paper 10229, January 2004, p. 13, <http://www.nber.org/papers/w10229>.
5. Steven G. Rivkin et al., "Teachers, Schools, and Academic Achievement," *Econometrica* 73 (2005): 417.
6. *Ibid.*, p. 419. Hanushek elaborates, "If a student had a good teacher as opposed to an average teacher for five years in a row, the increased learning would be sufficient to close entirely the average gap between the typical low income student and a student not on free or reduced lunch." Hanushek, p. 14.
7. Rivkin et al., p. 419.
8. "A reasonable estimate is actually that differences in quality are twice that lower bound (0.22 sd)." Hanushek, p. 14, referring to a prepublication version of Rivkin et al.
9. Rivkin et al., p. 449.
10. "Experience is not significantly related to achievement following the initial years in the profession." *Ibid.*, p. 419.
11. See generally Heather C. Hill et al., "Effects of Teachers' Mathematical Knowledge for Teaching on Student Achievement," *American Educational Research Journal* 42 (2005): 371. See also John E. Mullins et al., "The Contribution of Training and Subject Matter Knowledge to Teaching Effectiveness: A Multilevel Analysis of Longitudinal Evidence from Belize," *Comparative Education Review* 40 (1996): 139.
12. The high within-school variation in teacher quality may also be partly explained by the fact that administrators do not have strong incentives to hire the most capable teachers. I explore this possibility later.
13. Dale Ballou, "Do Public Schools Hire the Best Applicants?" *Quarterly Journal of Economics* 111 (1996): 101.
14. *Ibid.*, p. 120.
15. *Ibid.*, p. 103.
16. The selectivity of a teacher's alma mater, the proxy used by Ballou to measure a teacher's tested ability, has been found by several researchers to be positively related to student achievement. *Ibid.*, p. 103.
17. Ballou provides a lengthy and interesting discussion of reasons why school district administrators might choose some applicants and not others. He suggests that education majors were more likely to be hired than other applicants because administrators "felt more comfortable with teachers of similar backgrounds." *Ibid.*, p. 126.
18. "Despite a highly publicized shortage of qualified mathematics and science teachers, the possession of a degree in these areas is less useful [in the hiring process] to the prospective teacher than a degree in education." *Ibid.*, p. 120.
19. Derek Neal, "How Vouchers Could Change the Market for Education," *Journal of Economic Perspectives* 16 (2002): 32.
20. Caroline M. Hoxby and Andrew Leigh, "Pulled Away or Pushed Out? Explaining the Decline of Teacher Aptitude in the United States," December 2003, <http://post.economics.harvard.edu/fac>

ulty/hoxby/papers/hoxbyleigh_pulledaway.pdf.

21. Ibid.

22. The Alliance for Excellent Education estimates that recruitment and training costs associated with attrition are about \$2.2 billion each year nationwide. In fact, these costs may be entirely compensated by the fact that new teachers receive lower salaries than the more experienced teachers they replace. See Alliance for Excellent Education, "Teacher Attrition: A Costly Loss to the Nation and to the States," issue brief, August 2005, p. 1, www.all4ed.org/publications/TeacherAttrition.pdf.

23. Associated Press, "More Teachers Ready to Ditch Class," August 17, 2005.

24. Teachers with high scores on the SAT and the NTE are more likely to leave teaching than those with lower scores. Ballou, p. 124.

25. Ibid.

26. Hanushek, p. 16.

27. Ballou, p. 125, citing Eric Hanushek, "Throwing Money at Schools," *Journal of Policy Analysis and Management* 1 (1981): 19.

28. National Education Association, "Professional Pay," issue brief, <http://www.nea.org/pay/index.html>, accessed July 24, 2006.

29. Ballou, p. 99.

30. Ballou writes, "The evidence strongly suggests that public school officials undervalue cognitive skills and subject matter knowledge when screening new applicants and that hiring decisions are suboptimal as a result. Ibid., p. 130. See also Richard J. Murnane et al., *Who Will Teach? Policies That Matter* (Cambridge, MA: Harvard University Press, 1991).

31. See Dale Ballou and Michael Podgursky, "Recruiting Smarter Teachers," *Journal of Human Resources* 30 (1995): 328. Some other interesting research suggests that teachers tend to prioritize good working conditions far more highly than salary. As a result, "it would take enormous across-the-board [salary] increases to stem these flows [of teachers away from inner-city schools]." Eric A. Hanushek et al., "The Revolving Door," *Education Next*, Winter 2004, p. 78. This article, like Ballou's research, suggests that salary increases are no panacea for the problem of poor teacher quality.

32. See Ballou and Podgursky, p. 330.

33. Hanushek, p. 17.

34. Randall Eberts et al., "Teacher Performance Incentives and Student Outcomes," *Journal of Human Resources* 37 (2002): 913.

35. A retention bonus was paid to a teacher if 80 percent or more of the students originally assigned to a class were still enrolled at the end of the semester. See Eberts et al., p. 919.

36. See Ibid., p. 924.

37. Hanushek, p. 19.

38. Frederick M. Hess, "Teacher Quality, Teacher Pay," *Policy Review*, April 2004, <http://www.policyreview.org/apr04/hess.html>.

39. See generally Eric A. Hanushek and Steven G. Rivkin, "Does Public School Competition Affect Teacher Quality?" http://edpro.stanford.edu/Hanushek/files_det.asp?FileId=91, reprinted in Caroline M. Hoxby, ed., *The Economics of School Choice*, National Bureau of Economic Research Conference Report, 2003.

40. Economist Charles Tiebout developed a model of public choice that suggested that individuals will move among local communities in order to find one that provides the public goods that best maximize their personal utility. His model has been shown to be particularly effective in areas where a small geographical move will provide an individual with a different set of services, which is often the case with local public schools. See C. Tiebout, "A Pure Theory of Local Expenditures," *Journal of Political Economy* 64 (1956): 416.

41. See Hanushek and Rivkin, p. 22, citing Ballou.

42. Hanushek and Rivkin, p. 16.

43. Ballou, p. 126.

44. Hanushek and Rivkin, p. 23. In any large-scale study, a smaller variation in a characteristic—quality in this case—is likely to reflect its increased role in the selection mechanism (e.g., employment practices) that produced the observed subjects of the study. Here, Hanushek and Rivkin reasonably infer that an increased focus on quality that results from more competition is a focus on high quality, because it is hard to see why administrators would respond to competition by trying harder to recruit low-quality teachers.

45. "The results suggest that public school competition is much more important for lower income students." Hanushek and Rivkin, p. 24.

46. Ibid.

47. Caroline M. Hoxby, "Would School Choice

- Change the Teaching Profession?" *Journal of Human Resources* 37 (2002): 846.
48. *Ibid.*, p. 866.
49. *Ibid.*, p. 867.
50. Michael Podgursky and Dale Ballou, "Personnel Policy in Charter Schools," Thomas B. Fordham Foundation, August 2001, p. 16.
51. The average public school teacher attended a college in the 46.1 percentile, the average private school teacher's alma mater was at the 51.6 percentile, and the average charter schoolteacher graduated from a college at the 54.3 percentile, as measured by average standardized test scores. See Hoxby, p. 872.
52. Podgursky and Ballou, pp. 16–17.
53. "Private schools typically pay teacher salaries that are about 60 percent of local public school salaries." Hoxby, p. 850.
54. About 30 percent of charter schools do not consider experience as a factor at all when determining salary. See Podgursky and Ballou, p. 17.
55. Hoxby, p. 883.

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