



# Policy Brief

Stanford Institute for Economic Policy Research

## Teacher Quality and Teacher Salaries

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**A**mong the aspects of American primary and secondary schools that receive regular attention in professional discussion and public debate, two stand out. First, existing shortages of teachers in certain specialties – math and science instruction, special education, and bilingual – are likely to intensify and to expand to other areas as unusually large proportions of current teachers approach retirement. Second, distress about student achievement leads naturally to calls for increasing the quality of teachers. Interestingly, both concerns point to a common problem – the low pay of teachers – and a common solution – raise salaries to a competitive level. Yet this seemingly obvious economic answer is likely neither to be followed nor to address the problem effectively if it were followed.

### Some facts about schools

There has been sustained interest in improving American schools over several decades. The campaigns of the last two presidents, for example, have featured educational policy issues even though the federal government has a relatively limited role in K-12 education. Correspondingly, at the state level where policy is actually made, no candidate for governor has been able to avoid educational issues. The result has been introduction of new policies and regulations and a steady increase in expenditures.

On the spending side of the ledger, real expenditures per pupil (i.e., inflation adjusted) have more than tripled since 1960. In 1960, an average of \$2,235 per student was spent on K-12 education, compared with \$7,591 in 2000.

What happened with the additional spending? Pupil-teacher ratios fell dramatically. Teachers obtained more advanced education. Teacher experience grew to a postwar high. And the proportion of funds going to programs and people outside the classroom increased dramatically. By conventional thinking, at least the first three trends should lead to improved student performance.

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Yet, in the face of dramatic increases in expenditures, little progress has been made. Student performance today stands essentially the same as it was in 1970. Periodic examinations of a representative sample of the nation's students show performance in math, science, and reading to languish since first measured in the 1970s. And the level of performance is not competitive with student outcomes elsewhere in the world. On a series of international math and science exams, U.S. students consistently have performed in the bottom half of the distribution. This is a poor record of performance by any standard and should not be permitted to continue.

## Teacher salaries and qualifications

Since they have been commonly identified as the culprit, let us examine teacher salaries. We have surprisingly poor data about teacher salaries over time. Nonetheless, the available data indicate two things: Teacher salaries have risen over time, but teacher salaries have not kept up with those of other college graduates.

Figure 1 displays the pattern of average salaries for young teachers compared to nonteaching college graduates. Since 1940, teacher salaries relative to those of other college graduates have fallen, but this is especially pronounced for women, as old occupational barriers have fallen and they have moved steadily into higher paying jobs. Teaching was once an above-average profession for women in terms of pay; now, more than 60 percent of young college-educated women earn more outside schools than teachers of the same age.

Given these salary trends, shortages of qualified teachers are not surprising. In 2000, over 20 percent of the middle school math teachers lacked a major, a minor, or state certification in math. Over 30 percent of high school math teachers and over 25 percent of high school science teachers do not meet a tightened standard of requiring either a major or state certification.

But the real story is not quite so simple. Each year the nation's teacher colleges produce many more potential teachers than required to meet the demand for new teachers. The difficulty shows up in attracting and retaining teachers in specific schools and specific subjects. Over several decades, for example, people who

have math and science skills have had good opportunities outside of teaching.

Dealing with the problem, nonetheless, has proven quite difficult. The normal market reaction – increased price in response to scarcity – does not occur in schools, given the institutionalized pay structure. With few exceptions, school districts operate with a single salary schedule varying only for experience and for graduate education. The schedule doesn't vary for specialty, location or quality.

Increasing the salaries of qualified high school math teachers is possible only if the salaries of districts' physical education teachers also are increased. As a result, when opportunity costs vary by specialty, either the physical education teachers are overpaid or the math teachers are underpaid. This issue has been recognized for decades, but it continues to plague school personnel policy.

Alarmingly, this may not be the most serious salary problem. The single salary schedule implies that good teachers and bad teachers are paid the same as long as they have the same experience and education. By many accounts, the most pressing policy issue in education is improving the quality of teachers – but this is difficult to do if teachers are paid the same regardless of quality. Bad teachers like higher salaries as much as good teachers.

## Policy options

The pattern in Figure 1 demonstrates that salaries of teachers have slipped relative to salaries in other occupations. This decline surely has affected the people who are initially attracted into teaching. However, returning teacher salaries to prior parity would be not only prohibitively expensive but also unlikely to be effective. What would happen if salaries were returned to their old relative position? First, retirement rates of current teachers would decline precipitously. After all, current teachers would, with a single salary schedule, find that both their salaries and their future retirement benefits would increase noticeably if they continued teaching. Both good and bad teachers would find it attractive to stay longer.

New job openings would decline, and even if a different group were attracted to teaching, it would take considerable time before new teachers were a substantial part of the teacher force and before they could have any real impact on student performance. Long before any impact was felt, the public surely would become disenchanted with such a policy.

Alternatively, the most popular approach today is to tighten up on requirements to be a teacher. The gist is instituting tough entry exams to get into education programs and then to require subject matter majors and master's degrees in teaching practice as part of certification. The immediate effect of such a policy would be to make entry into teaching more expensive, thus reducing the supply of potential teachers. Economic theory would suggest that this reduction might be offset by improving salaries of those meeting the requirements. Unfortunately, in the present context, there is very little evidence that such tightened certification requirements would improve classroom performance and student outcomes, regardless of teacher salary.

At the same time, the idea of merit pay has received little support from educators. Many have argued that better teachers should be paid more, and indeed many districts have tried some system of differential pay. These pilots generally have

failed and have been eliminated by districts experimenting with them. The reasons for failure involve a complex set of factors: union resistance, insufficient rewards for merit, budgetary pressures on districts, unwillingness to make tough quality judgments, and so forth.

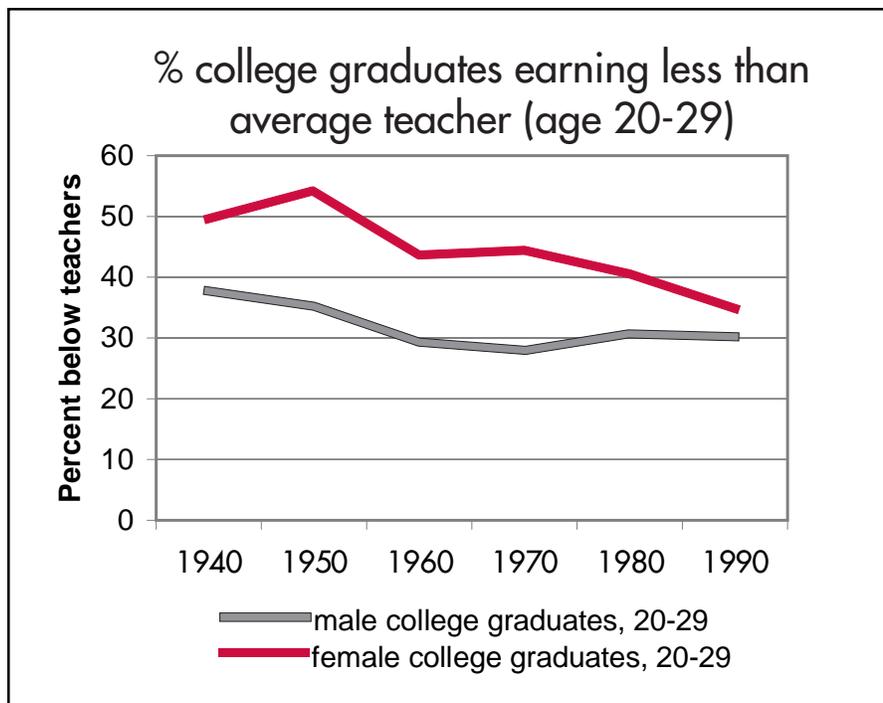
Despite the depressing record of differential pay, the accumulated evidence of labor economics suggests that there are few substitutes for paying for quality – and for not paying for lack of quality. Thus, what has gone wrong with past approaches in education? First, the differential reward for being a good teacher has been too small. Second, people have concluded that merit pay has not worked by looking at the wrong thing. The central mechanism for improving teaching is not to get teachers to work harder, because it appears that the majority of current teachers already work very hard. Instead, it will work through selection into teaching, through getting and keeping a new and different group of people in teaching. Third, it is doubtful that a full merit pay plan can work without a commensurate set of policies related to retention that is also based on teacher quality – policies almost totally lacking today.

Ideas of expanded choice of schools – whether public school choice, development of charter schools, or the introduction of

full vouchers – can be thought of as changing the incentives of schools so that they pay attention to teacher quality. If schools must compete on quality, they almost certainly must pay attention to teacher quality. Other ways of introducing more rational pay structures also may be feasible. Unfortunately, we currently have too little information on how best to institute and structure better salary systems.

Improving schools will require paying substantially higher teacher salaries – for the people we want. Getting to that point should be perhaps the highest priority for policy makers, schools, and the American public.

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## About the author



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